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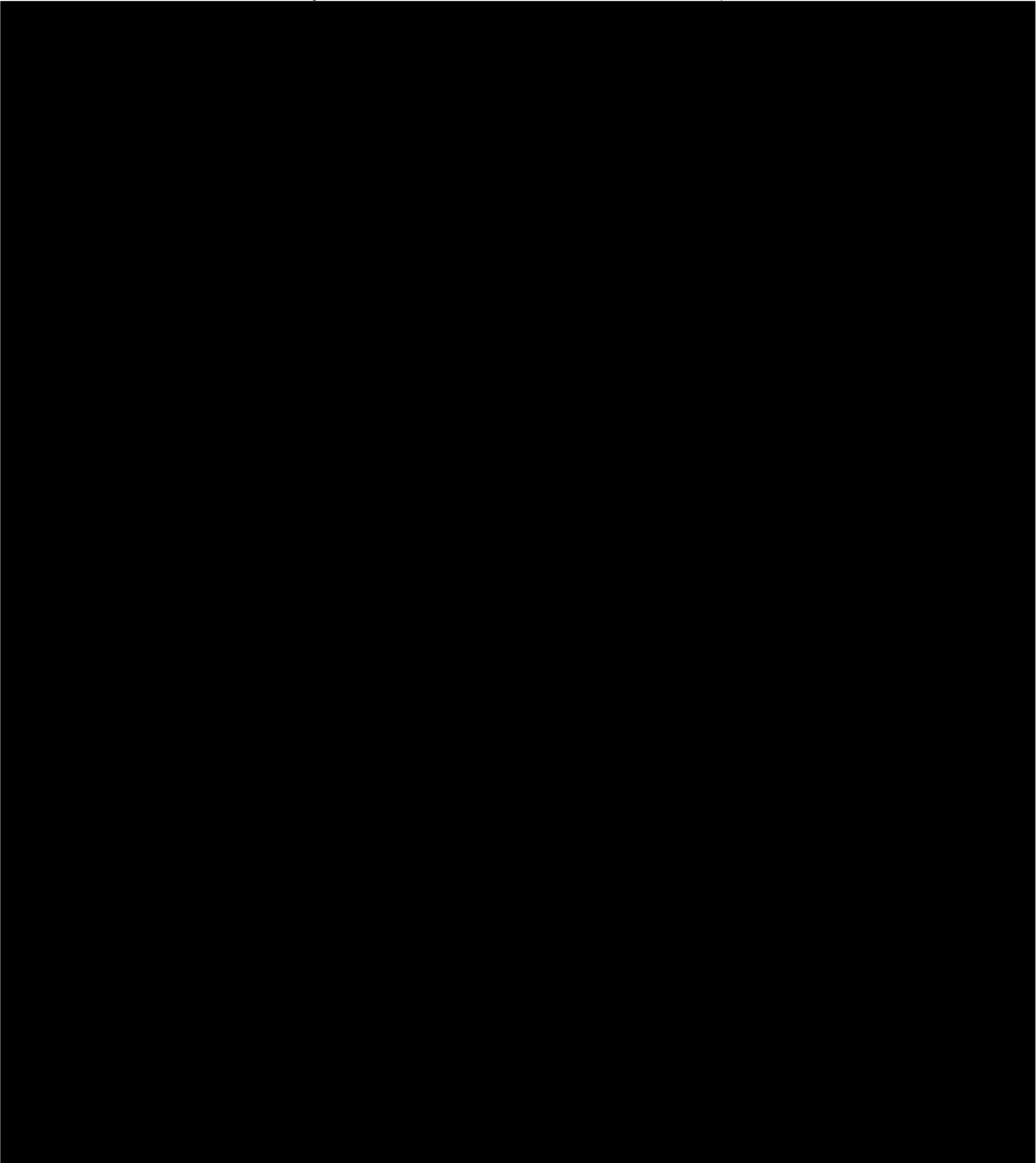
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THE EFFECT OF USING FOREIGN LANGUAGE TEACHING THEORY METHODS ON  
RECALL OF HEALTH INFORMATION IN ADULT LEARNERS

by

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## Introduction

Current trends in morbidity in this country reflect an increasing prevalence of chronic illness. This is causing much more attention to be paid to the patient's role in the management of his illness and from this, more emphasis on patient education. Nursing, to some extent, has accepted the role of patient teacher. An abundance of literature on what to teach patients has appeared in the nursing journals over the last decade. However, nurses who try to prepare themselves to teach patients find a paucity of information on how to teach patients this content.

This study was designed and implemented in order to investigate the effectiveness of a patient teaching strategy which would utilize principles accepted by teaching learning theory and by foreign language teaching theory. If nurses employ such techniques when teaching patients it is anticipated that they would be able to provide their patients with a sound understanding of the health related vocabulary. From this, it is expected that these patients would be more knowledgeable about their disease and consequently they could participate in their treatment plan more effectively.



## Chapter 1

### OVERVIEW OF THE PROBLEM AND REVIEW OF LITERATURE

#### Introduction

This chapter will overview the need for communication between health care provider and health care recipient; will explore some of the barriers to this communication and propose a possible solution to one of these barriers. The literature relevant to the following areas will be reviewed: the patient teaching function in nursing, the level of knowledge patients have of health terminology, the historical development of foreign language teaching theory, and learning abilities in older adults.

#### Overview of the Problem

#### Statement of the Problem

Optimal health care delivery is often compromised because health care providers are unable to communicate accurately with their clients due to lack of a common vocabulary between these two groups.

#### Need for Communication

The need for accurate communication with clients about health care maintenance and illness management is a well accepted concept among health care administrators, nurses, physicians, health educators and health care technicians. The "Patients' Bill of Rights," adopted by the American Hospital Association in 1973 (Redman, 1976, p. 3), directly addresses the patient's right to information concerning his diagnosis,

treatment, prognosis, alternatives for care and fiscal charges, in terms he can understand.

The health care literature speaks of the benefits of patient understanding of health promotion and illness management behaviors. A series of studies by Johnson (Johnson, 1973; Johnson & Leventhal, 1974; Johnson & Rice, 1974; Johnson, 1975; Johnson, Kirchhoff, & Endress, 1975; Ibid., 1976) demonstrate that patients will participate in diagnostic procedures and medical or surgical treatment with fewer adverse emotional reactions if they have been informed of what they can expect to experience. Studies on the value of pre-operative instruction in children and adults have consistently shown increased comfort, decreased pain and fewer complications by patients post-operatively as a result of teaching, that is, of communication with nurses about the surgical experience (Lindeman, 1971; Duman, 1963; Egbert, 1964; Axford, 1977). Redman (1976, p. 6) speaks to the benefits of nurse-patient communication in eliciting health promoting behaviors as well as aiding management of long-term self-care and rehabilitation.

This literature all emphasizes the benefit of accurate communication from health care provider to client. Communication by definition is two directional -- health worker to patient and patient to health worker. There is considerably less literature available concerning communication in the latter direction. Samora (1961) speaks to the issue of accurate communication from patient to physician or nurse as fundamental to correct diagnosis and appropriate therapy planning.

#### Sources of Communications Barriers

There are a number of barriers to communications between health

care providers and health care recipients which have been recognized. These can be identified as health worker centered barriers, patient centered barriers or relationship centered barriers.

Health worker centered barriers to communication or teaching with patients have emerged because the health care provider may be benefited in some way (Moore, 1949). The perceived benefits of limiting or obstructing this communication include: preserving the privileged social position of the health worker by keeping certain information privy (Skipper, 1964; Freidson, 1970), promoting the production values and goals of the health care institution by rewarding task-oriented behaviors by health workers (Moore, 1949), and protecting the health worker's image of "knowing-all" and always working for the client's best interest (Dodge, 1961).

Patient centered barriers to communication can be categorized to include: patient anxieties, lack of trust, and erroneous assumptions (Pluckhan, 1978). A patient who is particularly anxious about a physical examination may have an altered perception of pain and thus communicate distorted information about symptoms. Distrust is often manifested as inhibition or embarrassment. A diabetic patient suffering from retrograde ejaculation or from impotence may be embarrassed to discuss this and consequently not communicate this health problem. Patient assumptions about the relevance of past medical history are often in error. A hypertensive patient may not relate his sexual problems to antihypertensive medications he is taking and therefore not see the need to communicate this information.

Barriers centered around the health care provider-health care recipient relationship frequently occur because health care activities

necessitate an interface between at least two people, often with quite dissimilar cultural and educational backgrounds (Skipper, 1963). Communication problems with patients from a culture foreign to the health worker are commonly recognized and frequently associated with language translation or differences in cultural values (Paynich, 1964). A second relationship-centered barrier to communication is due to differences in understanding of vocabulary commonly used in health related discourse (Hammond and Kern, 1959; Samora, 1961). Patients often have no knowledge of or only vague, often inaccurate understanding of words health care providers use to explain health and illness management (McKinlay, 1975). This problem of communications barriers between health care providers and health care recipients caused by vocabulary differences is the central focus of this study.

It has been suggested that the communications problems which arise from vocabulary differences could be resolved if health care providers would restrict the vocabulary they use with patients to only those words already well understood by the patient (Samora, 1961; Redman, 1976). To the degree that this is practical, this is an excellent suggestion. In many instances, however, it is neither practical nor possible to use lay terminology exclusively, especially in patient teaching.

Much of the subject matter taught patients about self-care of a chronic disease does not lend itself to "translation" into lay terminology. Diabetic teaching is a prime example of this. "Insulin," "diabetes," "ketones," "exchange," and "pancreas" are words very commonly used in diabetic patient teaching (Thrush & Lanese, 1962). Studies of familiarity of health terms shows that these words are out of the vocabulary range for most adults (Chall & Dale, 1950). Since these words are very

basic to understanding diabetes mellitus and its management and since they do not have suitable substitutes in the "common language" it is apparent that if accurate communication between health care worker and patient is to be achieved, patients do need to learn some of the vocabulary in this "foreign language" of health terminology.

There are three "spin-off" benefits from patients learning the foundational vocabulary relative to a health problem they may have. Familiarity with the basic terminology of their health problem enables patients to maximize the potential value of using written patient teaching materials. Pamphlets, books and instruction sheets can serve to supplement and to reinforce individual instruction (Mohammed, 1964). With sufficient familiarity with the health terms used in these printed materials, patients can be provided with answers to questions and points of clarification at times when patient teaching personnel are not available to them.

Another benefit is that patients who are able to understand their health problem and its management and are able to use the related vocabulary appropriately are more likely to communicate better with their physician and consequently have better care. This applies to relating their history and symptomatology more accurately as well as to having their questions answered more frequently and more comprehensively.

Given the argument that patients will benefit from learning health related vocabulary, the question "How does one teach new vocabulary?" must be raised. Teaching-learning theorists advise assessing "readiness" in the learner, providing motivation extrinsically and intrinsically and providing reinforcement for the learned behavior among other things, but

foreign language teaching theory addresses itself specifically to teaching new vocabulary and language structure. It follows, therefore, that health care providers should seek guidance from the discipline of foreign language teaching for information on how new vocabulary is most effectively taught.

### Purpose of the Study

The purpose of this study is to investigate whether older adults will learn and recall more information relating to a disease process and therapeutic regime if taught disease related vocabulary by a teaching method that uses foreign language teaching theory than if they are taught by "traditional methods," i.e., methods employing teaching-learning theory but without attention to foreign language teaching theory.

### Review of Relevant Literature

To provide background for this study, literature of the following content areas will be reviewed: (1) the patient teaching function within the discipline of nursing, (2) the current status of content and methodology of patient teaching, (3) an evaluation of patients' knowledge of health vocabulary, (4) the development of foreign language teaching theory, (5) recognized differences in learning abilities of older adults.

### The Patient Teaching Function in Nursing

Historically, patient teaching has been a part of nursing practice since the mid-nineteenth century. Florence Nightingale in her Notes on Nursing stresses the importance for the nurse to teach women caring for the sick to attend to matters of sanitation, ventilation and nutrition

(reprinted 1946). Lillian Wald engaged in health education in the Henry Street Settlement House by teaching nursing care, hygiene and cooking to her immigrant clients in 1893 (Axford, 1969).

Nursing associations have formally advocated the teaching function of nursing for many decades. The National League for Nursing Education Curriculum Guide (1937) states: "the nurse is essentially a teacher and an agent of health in whatever field she may be working." The American Nurses' Association's statement on the functions, standards and qualifications for practice states that "the general duty nurses' functions include assisting in patient education and rehabilitation, including mental and physical health, and recognizing and utilizing opportunities for health teaching of patients, relatives and visitors (Pohl, 1965)."

Leaders of the nursing profession also speak to the function of patient teaching as basic to the definition of nursing and therefore an essential component of comprehensive nursing care. Henderson (1964) in speaking to the "Nature of Nursing," singles out nursing as the health discipline charged with the task of meeting the patient's need for knowledge. Lambertsen (1964) in defining a philosophy of nursing states that "nursing is first a dynamic, therapeutic and educative process in meeting society's health needs." Pohl (1965) addresses the issue that nursing is a profession with independent functions and states that patient teaching is one of the independent functions of nursing that defines it as a profession. Redman (1965, p. 9), in applying theories of education to patient teaching activities, implies that since all nurse-patient interactions contribute to the teaching-learning process, teaching is therefore a part of the definition of nursing.

Recent years have shown both a massive amount and an increase in the literature on the content of patient teaching. A glance at the Cumulative Nursing Index reveals well over two hundred journal articles on specific content of patient teaching programs in the last three years. These cover the entire breadth of traditional nursing practice including mental health nursing (Sclafani, 1976; Travers, 1974), maternal and child nursing (Sumner, 1976; Leahey, 1975), community nursing (Dignan, 1978; Hyner, 1978), and physiological nursing (Felton, et al, 1976; Graber, 1977). Nursing specialties are also well represented in the patient teaching literature (Wolf, 1976; Thomas, 1976). These articles concern themselves with information about patient teaching content ranging from helpful bits, useful in a wide variety of settings (Lenahan, 1968), to comprehensive accounts of specific programs (Garber, 1975).

The same abundance of literature is not found with respect to the effectiveness of specific patient teaching strategies, methodologies, or approaches. The studies comparing the effects of different teaching methodologies (oral versus written, group versus individual) have shown learning to occur as a result of teaching but have not shown one method to be superior to others (Hegyvary & Chamings, 1975; Lindeman, 1972; Cross & Parsons, 1971).

A classic in this field is Lindeman's study (1971) on the effects of structured versus unstructured preoperative teaching on adult surgical patients. This study is widely quoted, but there is reason to carefully examine the internal validity of the study. Lindeman measured (1) patients' abilities to perform a "stir-up" regime (defined as



coughing, turning, deep breathing and leg exercises) postoperatively, by using three measures of respiratory function; (2) the average length of hospital stay; and (3) their need for analgesic medications postoperatively. A pretest-posttest static group design was used. The sample (N=261) consisted of adults admitted for non-emergency surgery of various types, all undergoing a general anesthesia. The nurses were taught teaching-learning principles and specific preoperative teaching content in order to better prepare them to teach patients. The ability of patients to cough and deep breathe post-operatively was significantly improved ( $p=.05$ ) and the length of hospital stay was significantly decreased ( $p=.02$ ) by the structured pre-operative teaching method. It was noted that because the control patients were hospitalized in May and June and the experimental patients in November, it was possible that the experimental group was discharged from the hospital earlier because of the holiday season. This poses serious problems for the internal validity of the study, relative to the dependent variable, length of hospital stay.

Bille (1977) replicated the Lindeman study with medical patients following myocardial infarction and measured compliance with a post-hospitalization medical regime (including medications, diet, physical activity, avoiding stress, work, weight loss, smoking, and alcohol). He found no statistically significant difference between the control and the experimental groups. His study was limited, however, by small sample size (N=12) and further hampered by two extraneous variables, that of large differences in patients' time schedules for learning and differences in amount of behavior change which was required by the infarction. These results may indicate that there can be a certain

expected degree of effectiveness of any teaching methodology that has a sound basis for teaching-learning theory.

#### Patients' Knowledge of Health Vocabulary

Repeated efforts have been made over the last four decades to determine patients' level of understanding of health terminology. A pioneering study by Redlich (1945) asked a group of neuro-psychiatric inpatients to define sixty medical terms which frequently occurred in discourse with their physicians. The sample (N=25) excluded patients with marked personality changes, feeblemindedness and aphasia. All subjects were literate in English, and none had greater than a high school education. Understanding was scored on a four-point scale by two physicians. It is not clear from the report whether the physicians' ratings were made independently or not. Collins (1955), in a later study surveyed a group of women (N=100) attending a prenatal clinic and assessed their understanding of words relating to nutrition that were frequently used by the health personnel. A list of twenty words was selected by the health workers as typical and presented in an interview format to these women with each word being used in context in a sentence to assist understanding. This study was limited by the imprecise measurement of the dependent variable as "any reasonable definition" was accepted (presumably by the author) and no rating scale was employed.

Many times, health workers think patients understand more terminology and vocabulary than they actually do. For example, a study by Pratt, et al (1957) focused on general understanding of questions about ten common conditions (tuberculosis, diabetes, syphilis, asthma, change of life, arthritis, stroke, stomach ulcer, leukemia and coronary thrombosis). A sample of out-patients was presented with a self-administered multiple

choice test in an effort to assess level of information in the patient population. Besides using a relative large sample (N=214), a further aspect of this study was the inclusion of eighty-nine physicians from the same clinic who were asked to assess both what the patient's level of information should be, as well as what they actually thought it was. These two assessments were then compared with the responses of the patients themselves. Physicians thought patients should know 82 percent of the "facts" presented. In assessing what patients actually knew, well over half of the estimates made by the doctors were in error by greater than 20 percent. Patients knew an average of 55 percent of the questions asked.

Several aspects of these three studies were repeated by Samora, et al (1961). The sample in this study (N=125) was more heterogeneous than in the studies previously cited (including gynecological, general medicine and surgical patients of varying age, sex and race). A list of fifty words in common use with patients was selected and placed in the context of a sentence during an interview, as in the study by Collins (1955), and the level of comprehension was rated on a four-point scale as was done by Redlich (1945). The rating procedure involved immediate scoring by the interviewer without recording the patient's actual response, thus precluding the possibility of checking the consistency of these scores. No other testing of the reliability of these scores was reported. Patients' understanding of words presented (i.e., those judged adequate for communication) ranged from eleven to forty-seven words, with a median of twenty-nine words.

Although some of these studies are quite old, and some of the words and conditions are no longer prevalent, all of these studies clearly point to the marked discrepancy between what vocabulary clients actually understand and what health workers assume they understand. This assumption is undoubtedly as true today.

### The Development of Foreign Language Teaching Theory

There is disagreement among different authors in describing the historical development of foreign language teaching theory; however, certain trends and patterns repeat themselves. Understanding the history of foreign language teaching is useful in understanding the current thinking of foreign language teaching theory development.

The literature on foreign language teaching most often describes three schools or methods of foreign language teaching that reflect the ideologies predominant in the last century (Iodice, 1961; Childer, 1964; Harding, 1967). Early in the twentieth century, the "grammar-translation method" (also called the "classical method") was used almost exclusively. This method held that grammatical rules should be stated and committed to memory; that repetition of patterned drills in phrases and sentences is the mode of vocabulary learning; and that exercises were the best means of validating a student's competence in the language. The "grammar-translation method" had a strong traditional footing in the teaching of the classics, i.e., Latin and Greek. After World War I, learning of modern languages became much more common in the United States. These spoken languages were better learned by the "direct method." The "direct method" held that language is made up of sounds, not letters, and therefore speaking should be the first aim of foreign language teaching. The by-words of this approach were "training the ear and the tongue should precede that of the eye" (Childers, 1964). The "direct method" was also a proponent of practice. It stated that students should learn grammar inductively and advocated that the "grammar-translation method" should be discarded.

After World War II, modern foreign language teaching methods were described as "eclectic" and took a "common sense" approach to language learning (Childers, 1964). The "modern method" advocates: (1) oral practice of sounds, (2) careful gradating of vocabulary, (3) deductive explanation of basic grammar to save time, though students can induce further grammar rules as their skills increase; and (4) translation yielding to appropriate analogies in the mother language. The "Army method," an off-shoot of the "modern method" came into vogue at this time because of the rapidity with which previously unschooled learners were able to learn foreign language sufficiently well to serve as interpreters, interrogation officers and intelligence persons during World War II. The use of small group learning, drills, language laboratories and "immersion" techniques characterize this method (Grittner, 1969).

Iodice (1961) also describes an "audio-lingual method" which stresses the aural-oral sequence of vocabulary learning and the "audio-visual method" which stresses learning word concepts in the context of their use. An example of the audio-visual contextual learning would be that the new language word for "egg" is associated with the picture of or object "O" rather than being associated with the translation of the visual cue of "e-g-g." The "audio-visual method" supports the use of language laboratories. The "audio-lingual" and the "audio-visual methods" were basic to the development of the so-called "Peace Corps method" which, like the Army method, also incorporates small group learning, language laboratories, and "immersion" techniques.

Research as to the effectiveness of the components of these different methods is extremely limited (Green, 1973). One experimental study

on foreign language teaching (Jarvis & Hatfield, 1971) looks at the effect of a specific practice technique on language skill development. A Pretest-Posttest Control Group Design was used with a sample of college students taking beginning French (N=292). The independent variable, a specific technique of contextual vocabulary learning, was applied to seven of the fourteen classes taught by seven instructors, who also taught a control class which used "drill techniques." Having each instructor teach one experimental class and one control class controlled for individual teaching style, time of day classes were taught, and the sequence in which the instructors taught their classes. The same textbook was used for both classes. Methodologically, the teaching approach was "eclectic." The experimental class scored significantly higher on posttests for language skills ( $p=.01$ ) and for writing skills ( $p=.01$ ). The results were interpreted as evidence supporting the inclusion of "contextual practice" in instructional strategy.

It is hoped that additional research as to the effectiveness of other foreign language teaching techniques will be forthcoming and provide a more substantial theoretical basis for methods employed.

While it is widely accepted that more research on the value of specific methods is needed (Roucek, 1968; Carroll, 1965; Green, 1973), many authors favor a synthesis of the ideas of the different schools of language learning (Hammerly, 1971; Harding, 1967) until the results of such research are available in practice. Harding (1967) addresses this very issue and offers the following principles as a suggested synthesis of the ideas of the different schools as a proposed foreign language teaching theory:

1. To learn a language is to acquire new behaviour patterns. This means that there are fresh skills and habits to be learned, and these can only be learned by constant practice, which is therefore central to language learning.
2. The use of the spoken language is essential to any language learning. Only by using the spoken language can there be adequate practice in the skills involved. The natural order in which language activities should be taught is (i) aural comprehension, (ii) oral expression, (iii) reading comprehension, (iv) expression in writing.
3. The linguistic items to be presented to the learner need careful limitation and grading (both in degree of difficulty and numbers of new words presented).
4. The learner must master the structures of the language. This is even more vital than an extensive knowledge of vocabulary, because without structure, especially sentence structure, language cannot operate at all.
5. Linguistic items presented to the learner must be placed in a context. It is the situation in which an item of language is used that makes its meaning clear and provides affective overtones.
6. Useful comparisons with the mother tongue can greatly assist language learning. This does not mean translation, but an emphasis on those aspects of the target language in which the interference of the mother tongue could spoil the learner's achievement. Such work must be based on a contrastive analysis of the two languages.

These principles form the basis for the theoretical framework of this study and will be discussed further and operationalized in Chapter 2 in the presentation of the theoretical framework as well as in Chapter 4 in the development of the specific teaching plan.

### Learning Abilities in Older Adults

The idea that adults learn differently from the way children learn was pioneered by Thorndike (1928). More recently, in support of this differentiation, Knowles (1973) popularized the term "andragogy." This term does not imply clear-cut differentiation between children and

adults as learners. Rather, it differentiates between assumptions about learners that have traditionally been made in the practice of pedagogy (the teaching of children) in contrast to assumptions made in andragogy (the teaching of adults).

Andragological theory is based on four main assumptions that are different from those of pedagogy (Knowles, 1973, p. 45). The first assumption is that as a person grows and matures, his self-concept moves from one of dependency to one of increasing self-directedness (Erikson, 1959). With this, the individual develops a deep psychological need to be perceived by others as self-directed. Any experience in which he finds he is not allowed to be self-directed or is being "treated like a child" is bound to create conflict and interfere with learning. The second assumption is that, as an individual matures, he accumulates an expanding reservoir of experiences that provide him with a broadening base to which to relate new learning. Studies of cognitive changes in adults (Flavell, 1970; Botwinick, 1967) provide evidence that both programmed learning experiences (marriage, child rearing, job experiences) produce changes in the way adults approach problem solving and organize their thinking processes. That is, past living experiences provide a basis to which adults relate new learning.

Andragogy's third assumption is that children and adults become "ready to learn" based on quite different factors. Pedagogy assumes that children are ready to learn those things they "ought to" because of their development biologically and academically. Andragogy assumes that learners are ready to learn those things they "need" to learn because of the developmental phase they are approaching in their roles as workers,



spouses, parents, leisure time users, health-care consumers, etc. Fourth, pedagogy assumes that children are conditioned to have a subject-centered orientation to learning, while andragogy assumes that adults tend to have a problem-centered orientation to learning. Generally, adults come into an educational activity because they are experiencing some inadequacy in coping with current life problems.

These andragological assumptions about learning in adults differentiates only between attributes of adults learners as a group and child learners.

From the present literature, it is difficult to determine if aged adults learn differently from other adult age groups. Studies comparing learning outcomes among different age groups in the adult population are limited and quite inconclusive. Fox (1947) compared vocabulary learning in two adult age groups. Her experimental sample (N=30) was a cohort of seventy to seventy-nine years old, while the control group's age ranged from forty to forty-nine (N=30). Subjects were from approximately equal educational levels and socio-economic backgrounds. Recognition of and definitions for lists of words were compared. No statistically significant difference was found between the two groups.

Significantly, this early study first alluded to the major problem in studying learning in older adults. Older adults vary widely in their ability to function both cognitively and socially due to a number of factors including variable sensory loss, degrees of immobility, and environmental stimulation, among other things.

According to Savage, et al (1973), the lack of an adequate definition and measurement of the "functional age" of an individual is a major obstacle in assessing an individual's ability to learn about and adapt

to situational and environmental changes. Without the ability to evaluate functional age, researchers must continue to evaluate learning relative to chronological age, even though this is a poor indicator of cognitive abilities which are greatly affected by vascular changes in the brain, differences in mobility and exposure to new learning events, and differences in reception of sensory input among the aged.

Woodruff and Walsh, in reviewing a number of studies on learning in the aged, explained that performance differences in learning tasks between contemporary cohorts of young people and old people is due but to the older cohort's need for increased response time, not to cognitive ability. Hallburg (1976) speaks to perceptual differences in aged adults including visual loss due to changes in the lens, the iris and the retina; loss of auditory acuity and sensitivity; and central nervous system changes that affect reaction time, and motor processes. In order to minimize these effects, she offers twenty guidelines to help teachers of aged adults optimize teaching opportunities. Among them, she advises: select teaching aids that minimize the need for precise hearing and visual acuity, seek to maximize the strength and clarity of sensory input, utilize strategies that allow the learner to control the pace of content presented, and provide a temporal and physical environment free from competing stimuli. Application of these guidelines would minimize the difference in performance that might be expected in an aged population.

## Chapter 2

### CONCEPTUAL FRAMEWORK, RESEARCH QUESTION AND HYPOTHESIS

#### Introduction

This chapter will develop a framework for teaching health information by drawing together the essential elements of foreign language teaching theory and Gagné's conditions of learning. This provides the foundation for the teaching strategies employed as the independent variable. The rationale for the selection of the measure of recall as the dependent variable for the study will also be developed.

#### Conceptual Framework

#### Supporting Framework: Foreign Language Teaching Theory and Teaching-Learning Theory

The conceptual framework for this study is based on a marriage of the foreign language teaching theory proposed by Harding (1967, p. 66) and the teaching-learning theory of Gagné (1965, p. 33). From this union, the specific elements of patient teaching strategy will be conceived.

The principles of foreign language teaching theory that are particularly applicable to patient teaching include:

1. the practice of new vocabulary words
2. vocabulary taught in the "natural order": (1) aural comprehension, (2) oral expression, (3) reading comprehension, and (4) expression in writing.

3. careful limitation and grading of new vocabulary
4. new vocabulary placed in context
5. comparisons of new vocabulary to analogies in the "mother" language.

The element of foreign language teaching theory that relates to language structure does not apply because both the structure for health teaching and the "vernacular" of the patient is English language structure.

Robert Gagné (1965) in The Conditions of Learning describes learning as a hierarchy of eight distinct types of learning, each with its own required set of conditions. Briefly, these are:

Type I. Signal Learning. The individual learns to make a general, diffuse response to a signal.

S — R

S=stimulus  
R=response

Type II. Stimulus-Response Learning. The learner acquires a precise response to a discriminated stimulus.

Ss —▶ R

S=stimulus  
s=accompanying internal proprioceptive stimulation  
R=response  
—▶ =discriminative nature of the capability

Type III. Chaining. A chain of two or more stimulus-response connections are acquired.

Type IV. Verbal Association. Verbal association is a form of chaining. The possession of language by the individual makes it a special type of chaining because internal links or coding may be selected from the individual's previous learned repertoire of language.

Type V. Discrimination Learning. The individual learns to make a certain number of different identifying responses to as many different stimuli, which may resemble each other in physical appearance to a greater or lesser degree.

- Type VI. Concept Learning. The learner acquires the ability to make a common response to a class of stimuli that may differ from each other widely in physical appearance. The learner is able to identify an entire class of objects or events.
- Type VII. Rule Learning. The learner is able to chain two or more concepts.
- Type VIII. Problem Solving. Two or more previously acquired rules are combined to produce a new capability that can be shown to depend on a "higher-order" principle.

Gagné speaks specifically to the learning sequences that occur in foreign language learning. Of stimulus-response learning (Type I and Type II) he notes that students need first to acquire Ss → R connections that copy "sounds" of the new language. Idiomatic expressions or polysyllabic words are learned as chains and verbal sequences (Type III and Type IV). Multiple discrimination, concept learning and rule and principle learning (Types V through VIII) relate to differentiating false cognates and grammatical structure learning. Again, because grammatical structure does not apply to learning health vocabulary, these four learning types will not be discussed further.

Teaching has frequently been described by learning theorists as the arranging of the conditions that are external to the learner, that is, arranging the learning environment (Gagné, 1965; Hilgard & Bower, 1966; Skinner, 1968). Figure 1 shows the relationship of foreign language teaching principles to Gagné's learning theory and how the learning environment was arranged for teaching diabetic content according to foreign language teaching theory. The interrelationships implied in this figure serve as the basis for the development of the independent variable. The paradigm was operationalized in the form of a health teaching lesson plan (See Appendix A).

FIGURE 1

SYNTHESIS OF LEARNING THEORIES USED  
TO DEVELOP INDEPENDENT VARIABLE

Principles of Foreign Language Teaching Theory (Harding)	Conditions of Learning (Gagné)	Arrangement of Learning Environment (Patient Teaching)
1. Practice of new vocabulary	Type I. Signal Learning. Strengthened and reinforced by practice.  Type II. Stimulus-Response Learning. Ss→R link is strengthened and reinforced by practice.	New word heard by learner. Learner repeats new word.  Meaning or concept word implies presented to learner → learner selects and states word.
2. Vocabulary taught in the "natural order" (1) aural comprehension (2) oral expression (3) reading comprehension (4) expression in writing.	Reinforces Type I and Type II learning. S — R Ss → R	New vocabulary is presented by: (1) being heard by the learner (2) being repeated by the learner (3) being read by the learner (4) being written by the learner.
3. Careful limitation and grading of new vocabulary.	Type III. Chaining. Careful limitation and grading of vocabulary is essential to create each "link" of the chain.	Words presented in logical order with the number of new words carefully selected and limited. Reading material as well as verbal materials fit this description.
4. Mastery of language structures. Not applicable in this context because the structure of both "languages" is English structure.	--	--
5. New vocabulary placed in context.	Type IV. Verbal Association. Language context provides links to learner's previously learned repertoire of language. These links are internal.	Each item of vocabulary is presented with and linked to a pictorial representation of the vocabulary item. This provides the learner opportunity to make his own verbal association.
6. Comparisons of new vocabulary to vernacular.	Type IV. Verbal Association. Comparisons to vernacular provide links to learner's previously learned repertoire of language.	Explanations of cause and effect mechanisms of the health condition in the body are presented as analogies to familiar situations.

### Supporting Framework: Retention and Recall

Learning is defined as a change in behavior which is not simply ascribable to the process of growth and maturation. This behavior change is measurable (Gagné, 1970). Therefore, evaluation of learning requires the measurement of the behavior change at some point on a time continuum. Hall (1971), in evaluating experimental studies on learning, differentiates between single-trial recall and short-term retention. He maintains that recall represents the measure of a single item according to one performance criterion, e.g., re-statement of a "fact" presented to the learner. Retention represents the fundamental process associated with the behavior change. He proposes that a single item is always "learned" when it is first presented -- learned in the sense that the probability of its recall increases from a value near zero prior to the presentation of the item and approaches the value of one immediately following the presentation. However, when multiple items are presented, the number of items retained over time follows a sloping curve.

Travers (1967) describes curves of retention for several different kinds of learning tasks. Nonsense syllables show a retention curve which slopes downward dramatically for three days and levels off at approximately seven days. Curves of skill performance (without practice) show a curve which levels off between one and six months. He concludes that while it is not possible to point to a specific date as an accurate measure of retention, it is possible to select a time interval appropriate to a relative measure of retention.

For the purpose of this study, the dependent variable will be a

measure of ~~recognition~~ of multiple items at a specific point in time, seven to nine weeks after the presentation of the items. This will be termed recall.

#### Research Question

The research question for this study was the following: Will using foreign language teaching theory methods to teach new disease-related vocabulary to older adults result in significantly greater recall of content ( $p=.05$ ) than using "traditional methods" to teach the same concepts?

#### Hypothesis

The hypothesis tested in this study was as follows: Non-diabetic adults over sixty years old taught diabetic content and new vocabulary using Harding's foreign language teaching theory will have greater recall of content than non-diabetic adults over sixty years old taught the same content and new vocabulary without attention to foreign language teaching theory.



## Chapter 3

### METHODOLOGY

#### Introduction

The purpose of this chapter is to present the implementation of the study. The senior citizen service agencies and the individual participant samples will be discussed. The development of the independent variable, a teaching plan using foreign language teaching theory, and dependent variable, a diabetes knowledge test, will be described. The operationalization and implementation of these variables will be presented, followed by an explanation of the design and the procedures followed.

#### Agency Sample

The sample for this study consisted of 114 non-diabetic adults sixty years old or older from sixteen agencies providing services to senior citizens in a number of ways. These services included three day-time activity centers, four nutrition centers, three inpatient residential care facilities, two mobile home communities, and five apartment complexes.

No specific selection criteria were used to identify agencies for use in the study except that they were known to the investigator and agreed to participate in and cooperate with the study. The services provided by the agencies used in the study are quite representative of those services provided to people of the age group and degree of mobility of the research subjects. The location of these agencies was from a broad geographical distribution in northern California. Six agencies were from an urban area (San Francisco), six from suburban areas (east and south San Francisco Bay area) and four from small town or rural areas (towns with a population less than 15,000).

Agency directors were contacted for willingness to participate in the study. Individual participants were either self-selected following a general announcement of the study in newsletters, bulletin boards or verbal announcements at group meetings, or were selected, contacted, and asked to participate by the agency's administrator, social worker or activities director. Each agency agreed to provide a room with adequate seating, lighting and quiet for group instruction.

#### Individual Sample -- Rationale for Selection of Participants

Participants in the study were non-diabetic adults sixty years old or older and capable of self-care in activities of daily living. Non-diabetics were selected in order to control for previous exposure to information about diabetes and its management, and because of the greater availability of non-diabetic subjects. While it is recognized by the investigator that motivation to learn diabetes-related material would be greater in newly diagnosed diabetics, the practical consideration of availability of non-diabetic subjects took precedence. It is expected that motivational forces for both control and experimental subjects would be the same.

Senior citizens were selected because of their availability for participation in the study and because of the high incidence of diabetes in this age group. According to Gitman (1974), the sixth decade of life is the age of the highest incidence of diabetes mellitus. Thomas (1976) speaks to the fact that diabetes in the older person is basically the same disease as in younger persons and requires the same careful management. Participants were all capable of self-care and were alert and able to participate in the class. Self-care and cognitive abilities were

selected as criteria for participation since this is essential to self-management of diabetes. Compliance with these criteria was determined by the agency official or by administration of a ten question test to determine mental status administered to any participants whose cognitive abilities were questioned by either the agency official or the investigator. (See Appendix B for Mental Status Questionnaire.)

Small group instruction was selected because of its almost universal acceptance in foreign language teaching (Harding, 1967), and its time efficiency for health care providers (Lindeman, 1972). Each group was limited to eight to twelve participants, an acceptable size for small group instruction (Gage, 1963).

#### Demographic Characteristics of Participants

Of the one hundred fourteen subjects beginning the study, ninety-five completed the study. The following demographic characteristics were obtained by self-report. Table 1 depicts these descriptive characteristics for the total groups, as well as an analysis of differences between groups. Subjects were asked to complete a one-page questionnaire about their age, sex, educational background, previous contact with a person with diabetes mellitus, hearing and visual abilities, and their past experience learning a foreign language (see Appendix C for Demographic Data Questionnaire).

The age of the participants ranged from sixty to ninety-six. Twenty-seven percent of the participants were in their sixth decade of life, 36 percent in their seventh decade, 30 percent in their eight decade and 7 percent in their ninth. The sample was comprised of 21 percent male and 79 percent female participants. All subjects had some formal education

**Table 1**  
SIGNIFICANCE OF DIFFERENCES ON SPECIFIC DEMOGRAPHIC VARIABLES OF  
SUBJECTS IN CONTROL (45) AND EXPERIMENTAL (50) GROUPS:  
CHI SQUARE

<u>Variable</u>	<u>Groups</u>		<u>Total</u> (N=95) No. (%)	<u>Chi Square</u>	
	<u>Control</u> (N=45) No. (%)	<u>Experimental</u> (N=50) No. (%)			
<b>Age</b>					
60-69	10(10.5%)	16(16.8%)	26(27.4%)	1.53	
70-79	16(16.8%)	18(18.9%)	34(35.8%)		
80-89	15(15.8%)	13(13.7%)	28(29.5%)		
90-99	4( 4.2%)	3( 3.2%)	7( 7.4%)		
<b>Sex</b>					
Male	10(10.5%)	10(10.5%)	20(21.1%)	.00	
Female	35(36.8%)	40(42.1%)	75(78.9%)		
<b>Educational Background</b>					
Grade School	15(15.8%)	8( 8.4%)	23(24.2%)	4.39	
High School	14(14.7%)	16(16.8%)	30(31.6%)		
More than High School	16(16.8%)	26(27.4%)	42(44.2%)		
<b>Previous Contact with Diabetic</b>					
Lived with > 6 months	11(11.6%)	7( 7.4%)	18(18.9%)	3.96	
Lived with < 6 months	1( 1.1%)	0( 0.0%)	1( 1.1%)		
Known diabetic	21(22.1%)	32(33.7%)	53(55.8%)		
Never known diabetic	12(12.6%)	11(11.6%)	23(24.2%)		
<b>Hearing Ability</b>					
Wears hearing aid					
hears well	1( 1.1%)	0( 0.0%)	1( 1.1%)	3.38	
hears fair	4( 4.2%)	2( 2.1%)	6( 6.3%)		
hears poorly	1( 1.1%)	2( 2.1%)	3( 3.2%)		
Does not wear hearing aid					
hears well	24(25.3%)	32(33.7%)	56(58.9%)		
hears fair	14(14.7%)	12(12.6%)	26(27.4%)		
hears poorly	1( 1.1%)	2( 2.1%)	3( 3.2%)		
<b>Visual Ability</b>					
Wears corrective lenses					
sees well	16(16.8%)	20(21.1%)	36(37.9%)	0.96	
sees fair	19(20.0%)	17(17.9%)	36(37.9%)		
sees poorly	5( 5.3%)	7( 7.4%)	12(12.6%)		
Does not wear corrective lenses					
sees well	1( 1.1%)	2( 2.1%)	3( 3.2%)		
sees fair	3( 3.2%)	3( 3.2%)	6( 6.3%)		
sees poorly	1( 1.1%)	1( 1.1%)	2( 2.1%)		
<b>Experience Learning Another Language</b>					
Yes	26(27.4%)	13(13.7%)	39(41.1%)	8.61*	
No	19(20.0%)	37(38.9%)	56(58.9%)		

\* $x^2=8.61$ ;  $p > .01$

except one, who was deleted from the study. The formal educational background of the subjects included twenty-three who had some grade school education, thirty who had attended high school, and forty-two who had some formal schooling after high school.

Each subject reported that he or she did not have diabetes. Previous contact with a person with diabetes mellitus was assessed at four levels. Nineteen percent of the participants had lived with a person with diabetes for longer than six months. One percent had lived with a person with diabetes for less than six months. Fifty-six percent had known a person with diabetes but had not lived with this person and 23 percent stated they had never known a person with diabetes.

Sensory acuity was measured for hearing and vision in the following manner. Before each class hearing was assessed by the investigator speaking at three voice levels. The first was a moderately loud and slow tone as used for the class instruction, the second tone was a more normal volume and pace, and the third was a quieter tone paced the same as the second level. All classes were tape recorded and the tone and pace of the "test speech" was assessed by a language teacher after all sixteen classes were completed as reasonably the same for each group.

Those participants who could hear only the loud "classroom" voice were given a hearing rating of "poor," those hearing the normal tone were rated "fair" and those hearing the quietest tone were rated "good." No subjects were unable to hear the loud "classroom" voice. Ten percent of the subjects wore hearing aids. One percent of these heard "well," 6 percent had "fair" hearing and 3 percent were rated "poor" for hearing. Eighty-nine percent of the subjects did not use hearing aids. Of these, 60 percent heard "well," 27 percent had "fair" hearing and 3 percent were rated "poor" according to the hearing criteria.

Visual acuity was determined by self-report according to the following criteria: If subjects could read the newspaper, they were designated as seeing "well." If they could read the type of the questionnaire and the consent form (Appendices C and D), but could not read the newspaper, they were given a "fair" rating. These two documents were typed with "Orator" type. If they could not read the consent form and the questionnaire, their vision rating was "poor" and they were given assistance in reading the consent form and completing the questionnaire either by the investigator or by the agency official. Eighty-eight percent of the participants wore corrective lenses. Of these, 38 percent saw "well," 38 percent were rated "fair" and 13 percent were rated as "poor." Eleven percent of the participants did not wear corrective lenses. Of these, 3 percent saw "well," 6 percent were rated "fair" and 2 percent were rated "poor."

Participants were asked to report if they spoke another language besides English. Forty-one percent reported that they did. Fifty-nine percent reported that they did not.

#### Attrition

There was approximately 17 percent attrition in the study. The study began with one hundred fourteen subjects. Five were excluded from the study because cognitive function was such that they could not satisfactorily answer seven of the ten mental status questions at the time of posttesting (see Appendix B for Mental Status Questionnaire). Two moved from the area with no forwarding address, one was ill and in the hospital at the time of posttesting, and one died. Nine subjects refused to participate in answering the posttest. All subjects had some formal education except one who was deleted from the study. Although the attrition rate was high in this study,

it is not expected to bias the results because the reasons for lack of participation in post-testing cannot be ascribed to the nature of the independent variable.

### Design

A Solomon Four-Group design was used for this study (Campbell & Stanley, 1963, p. 24). This design can be diagrammed syntactically in the following way:

(Experimental Group One):	$Y_1$	X	$Y_2$
(Experimental Group Two):		X	$Y_3$
(Control Group One):	$Y_4$	$X_0$	$Y_5$
(Control Group Two):		$X_0$	$Y_6$

Since subjects were drawn from a wide geographical distribution, randomization of subjects was not possible; therefore, the sixteen agencies were randomly assigned to each of the four groups. The " $Y_1$ " and " $Y_4$ " represent a written multiple choice pretest of knowledge about diabetes (See Appendix E). The "X" refers to the application of the independent variable -- a class on diabetes using foreign language teaching theory methods. These two groups were referred to as the experimental groups. The " $X_0$ " refers to the control class in which the same content relating to diabetes was taught by traditional methods -- without attention to foreign language teaching theory methods (called traditional methods). These groups were referred to as control groups. The pretests " $Y_1$ " and " $Y_4$ " were administered either the day before or the day of the class (either experimental or control) was given. The posttests " $Y_2$ ", " $Y_3$ ", " $Y_5$ ", and " $Y_6$ " refer to the same multiple choice test questions used for the pretest and were administered six to eight weeks after the class.

This design was selected because it controls for an interactive effect between the pretest and the independent variable. It also controls for possible sensitization to the pretest. A Hawthorne effect is controlled for by both experimental and control groups being manipulated to the same degree by the investigator. Randomization of the groups controls for effects of history and maturation.

All classes were taught by the investigator to control for differences in teaching styles and teacher personality. Classes were tape recorded and critiqued by two nurse educators who agreed that content taught and teaching style employed were equivalent for all sixteen groups.

Groups of participants from the agencies were randomly assigned to either (1) pretested control, (2) non-pretested control, (3) pretested experimental and (4) non-pretested experimental groups. A table of random numbers was used for group assignment. The four groups were not significantly different for any of the demographic characteristics assessed except for prior exposure to learning a foreign language. Significantly greater numbers in the two control groups had previous experience learning a foreign language than in the two experimental groups ( $\chi^2=8.61$ ,  $p > .01$ ).

#### Independent Variable

The independent variable was a fifty-minute class titled "What is Diabetes," that operationalized the synthesis of Harding's foreign language teaching theory, Gagné's conditions of learning and the appropriate manipulations of the learning environment described in Figure 1. The lesson plan for the experimental class had a counterpart used for control group classes that used identical content, and employed Gagné's conditions of learning but did not use the foreign language teaching theory. (See



Appendices A and F). The lesson plans were critiqued by two nurse educators for similarity of content and application of teaching-learning theory.

The twenty vocabulary items used in the lesson were selected from lists of words identified as unfamiliar in earlier studies. Fourteen of the twenty words were identified by Thrush and Lanese (1962) in a list of 198 most frequently occurring unfamiliar words in the diabetic literature. (See Appendix G.) Six words were selected from a similar list published by Chall and Dale (1950) which related to more general health terminology. (See Appendix H.) The unfamiliarity of these words was reconfirmed by questioning two young adults who had completed high school and four senior citizens, each with some high school education. All twenty words were either unknown or defined incorrectly or incompletely by at least three of these six subjects.

The experimental lesson plan was critiqued by two experienced foreign language teachers familiar with foreign language teaching theory for the application of the appropriate techniques. Five principles of foreign language teaching theory were identified by each of the foreign language teaching experts independently of each other and of input by the investigator. These included (1) providing a foundation for new, unfamiliar words by building upon known concepts or words, (2) sequencing and repetition, (3) presenting new words in a familiar context, (4) varying the stimuli of the presentation and (5) limiting and gradating the number of new words presented. Four major differences were identified by the foreign language teachers between actual teaching of foreign language and health teaching. These were (1) the teaching of cultural differences implicit

in foreign language teaching are not present or at least not readily apparent in diabetic teaching, (2) the words presented in the class were not integrated into the speech pattern of the learner, (3) diabetic teaching does not focus on speed in speaking as does foreign language learning, and (4) there were essentially no new vowel or consonant sounds to be learned as is usually the case in foreign language learning.

Both foreign language teachers concurred that foreign language teaching theory had been operationalized in the lesson plan. Tape recordings of each experimental class were critiqued by two foreign language teachers for further verification of the correct application of foreign language teaching techniques. Also, two randomly selected control classes were critiqued to insure that foreign language methods were not used in these classes.

A nurse clinical specialist from a diabetic clinic and a well-controlled diabetic nurse (blood sugar determinations were within normal limits for at least one year) were asked to critique the lesson plans for content validity. Both stated that the lesson presented information essential to effective management of diabetes.

Standardization of the content taught in the sixteen classes was assured in the following ways. A felt board was used in both experimental and control groups to insure identical visual presentation of content in each of the sixteen different class environments. The two nurse educators critiqued four tape recordings of class sessions to verify that content in each class was essentially the same. Classes were timed. Class duration ranged from forty-five to fifty-five minutes with question/discussion time following the classes ranging from ten to thirty-five minutes. All classes

were held in the mid-morning or the mid-afternoon and the protocol outlined in the lesson plan (see Appendices A and F) followed precisely.

### Dependent Variable

A twelve-item multiple choice test designed to measure knowledge of diabetes-related material was developed by the investigator for use as a measure of the dependent variable. It was used as a pretest at "Y<sub>1</sub>" and "Y<sub>4</sub>" and as a posttest measure ("Y<sub>2</sub>", "Y<sub>3</sub>", "Y<sub>5</sub>", and "Y<sub>6</sub>") of subjects' recall of content taught in the experimental or control classes (see Appendix E). The diabetic knowledge test consisted of eighteen items as originally drafted and was critiqued for content validity by the nurse clinical specialist from the diabetes clinic and the well-controlled diabetic nurse (see Appendix I). Internal validity was assured by critiques and comparisons with the lesson plans by the two nurse educators. The preliminary eighteen item diabetic knowledge test was tested for reliability by a test-retest of twenty-four beginning students in health related fields. Twelve items with a high correlation coefficient ( $p > .05$ ) were selected for use as the pretest-posttest measurement tool of the dependent variable (see Table 2). These twelve items were further tested for discriminatory powers (see Table 3).

Table 2

TEST-RETEST CORRELATION COEFFICIENT OF TOOL  
DEVELOPED TO MEASURE DEPENDENT VARIABLE

<u>Question #</u>	<u>Question # on Pretest-Posttest</u>	<u>Pearson <math>r</math></u>	<u>Significance</u>
* 1	2	***	***
* 2	1	***	***
* 3	3	0.5606	0.024
4	-	-0.1260	0.642
5	-	-0.0667	0.806
* 6	4	***	***
* 7	6	0.6831	0.004
8	-	-0.1626	0.547
* 9	7	***	***
10	-	-0.0667	0.806
* 11	8	***	***
* 12	9	***	***
* 13	10	***	***
* 14	11	***	***
* 15	12	***	***
* 16	5	***	***
17	-	0.3026	0.255
18	-	-0.1429	0.598

\* Twelve questions marked with \* were selected because of high reliability and were hand scored to determine the percent of students with test scores greater than or equal to the median who answered correctly (modification of test for discriminatory power of test items).

\*\*\* Coefficient and significance could not be calculated because scores too close to a coefficient of 1.0

Table 3

DISCRIMINATORY POWER OF TWELVE ITEMS SELECTED  
TO MEASURE DEPENDENT VARIABLE

<u>Question #</u>	<u>Number missed by those with test scores <math>\geq</math> median (N=12)</u>
1	0
2	0
3	4
6	0
7	1
9	0
11	0
12	0
13	0
14	0
15	0
16	0

---

During the testing of subjects for the study, one question came under particular scrutiny by the investigator -- Question 5 of the diabetic knowledge test (number 16 on the preliminary eighteen item test). The investigator questioned whether subjects were reading this unusually long question completely before answering it. A test on discriminatory powers was done on this item on all posttest results. (See Table 4.)

Table 4

## DISCRIMINATORY POWER OF QUESTION FIVE

## ANALYSIS OF POSTTEST RESULTS (N=95)

<u>Total</u>	<u>Test scores of those in top quartile (N=24)</u>	<u>Test scores of those in bottom quartile (N=24)</u>
Right = 53	Right = 24	Right = 3
Wrong = 20	Wrong = 0	Wrong = 8
Did not know = 22	Did not know = 0	Did not know = 13

---

The investigator considered these results to be sufficient justification for including this question in pretest and posttest scores used for analysis.

Procedure

Data collection was begun on June 29, 1978, following a small pilot study of four control and four experimental subjects and was completed on November 9, 1978. Each agency was contacted by telephone for willingness to participate in the study. A follow-up letter was then sent to the agency official (administrator, social worker or activities director) to again specify the time the study would take place and the need for a room that was suitable in terms of lighting, seating and acoustics. Eleven of the sixteen agencies were visited by the investigator prior to the day of the class to briefly assess and become familiar with the

room. Five agencies were not visited prior to the day of the class because of their distance from the investigator's home. All agencies provided suitable rooms for the class. The class sessions started with a general introduction of the investigator, a review of the purpose of the study and what the investigator expected of the participants. Consent to participate was obtained, the demographic data questionnaire completed, and pretests applied to the appropriate groups. Three groups preferred to reconvene the next day for the class session and the remaining thirteen groups had a short break at this time. When the groups reconvened, they were asked for permission to tape record the class. None refused. A brief description of how the class would proceed was given. A forty-five to fifty-five minute lesson following the designated lesson plan was given with time following for specific questions and discussion. Posttesting was done individually and in person for eighty-four participants at the agencies. For eleven of the participants, posttesting was done by mail following explanation of the posttest by telephone. Those who completed the posttest by mail were also supplied with detailed written instructions on how to complete the posttest. Posttesting occurred forty-five to fifty-four days following the class presentation.

#### Intervening Variables

There were three readily identifiable intervening variables. On September 7, 1978, the San Francisco Chronicle ran a front page article about a new technological development in insulin production. Time magazine and at least one other weekly newsmagazine ran similar articles on the topic the weeks of September 11 and 18. All classes after this date (five) raised discussion questions relating to these publications. Three were

control and two were experimental group classes. It is expected that potential bias due to history was controlled by randomization of the groups.

The second, more serious, intervening variable related to the lack of measurement by the investigator of certain characteristics of the participants that could relate strongly to their ability to learn. Characteristics such as the amount of physical and social activity the individual engaged in and the amount of mental stimulation the individual received in the form of magazines, newspapers and books read could have served as better measures of learning ability than the measures of chronological age and educational background used. Differences in subjects' learning abilities is consequently an unknown quantity in this study.

Another parameter of learning ability that is not known to the investigator relates to the previous experience in learning a language. The eighth question on the demographic data questionnaire, "Do you speak another language besides English?" served to identify those subjects who had learned a second language. What was not determined was whether English was the mother tongue of the subject and in what context the additional language was learned -- formally in school or informally through day-to-day usage. A number of subjects identified themselves to the investigator as immigrants to this country and it is very likely that many of them learned English as a second or third language. It is not known if any subjects who may have learned English as a foreign language were having greater difficulty with the content of the class, speed of presentation of the class or speech patterns of the investigator (including idiomatic expressions, slang and accent).



### Summary

This chapter has described the procedures for carrying out the study. The agency and individual samples were described, the design was explained, the development of the independent and dependent variables was presented, the actual procedures were delineated, and three intervening variables were identified.

## Chapter 4

### RESULTS

#### Introduction

Results of data analysis will be presented and discussed in this chapter. The test of the hypothesis will be followed by additional analysis of data which aid in the interpretation of the results.

#### Test of the Hypothesis

It was hypothesized that non-diabetic adults taught a class about diabetes which utilized foreign language teaching theory would have greater recall of the content taught than non-diabetic adults who were taught the same content using traditional teaching methods. This hypothesis was tested by a weighted analysis of variance of posttest scores of the experimental and control groups. A weighted analysis of variance was used because although the size of the agency groupings was quite comparable in terms of the teaching experience (eight to twelve participants in each group), the size of the agency groupings differed considerably for the statistical analysis (three to nine participants per group) due to attrition and participant selection criteria. The hypothesis was upheld. Experimental groups showed significantly higher diabetes knowledge test scores ( $p > .05$ ) than the control groups (see Table 5).

Table 5

SIGNIFICANCE OF DIFFERENCE ON POSTTEST MEASURES  
OF DEPENDENT VARIABLE BY GROUP: ANOVA

<u>Group</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>F Prob.</u>
Experimental	30.25	1	10.08	6.44	0.03
Control	39.59	1	3.30		

N=95

Following the completion of data collection, the question was asked: do the experimental groups also show a greater increase in knowledge of diabetes content than the control group? Pretest scores were subtracted from posttest scores and this difference score was used in the analysis. Analysis of variance of these difference scores showed no significant difference (see Table 6).

Table 6

SIGNIFICANCE OF DIFFERENCES BETWEEN PRETEST AND POSTTEST  
SCORES OF DIABETES KNOWLEDGE BY GROUP: ANOVA

<u>Group</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>F Prob.</u>
Experimental	0.64	1	0.21	0.40	0.56
Control	3.77	1	0.94		

N=53

These discrepant results force one to ask: were the four groups studied (pretested experimental, non-pretested experimental, pretested control, non-pretested control) similar before the application of the independent variable; or, was there an effect on the posttest attributable to sensitization or an interactive effect of the pretest?

Table 7 shows the mean values for each administration of the diabetes knowledge test.

Table 7

DIABETES KNOWLEDGE TEST MEAN VALUES

(Experimental Group One):	$Y_1$ (4.9)	X	$Y_2$ (6.7)
(Experimental Group Two):		X	$X_3$ (8.8)
(Control Group One):	$Y_4$ (3.5)	$X_0$	$Y_5$ (5.5)
(Control Group Two):		$X_0$	$Y_6$ (5.5)
N=95			

---

Scrutiny of possible differences in the non-pretested experimental subjects that would account for significantly higher posttest scores in only this group led the investigator to question whether one specific agency had provided subjects with greater learning ability or previous diabetes knowledge. Subjects from one agency had had informal conversation about their daily activities that led the investigator to believe that they were

more professionally and socially active than subjects from the other fifteen agencies. Analysis of variance used to test the hypothesis was redone with this group deleted to determine if the significance persisted. The significance level was reduced but did persist at the  $>.05$  level (see Table 8).

Table 8

SIGNIFICANCE OF DIFFERENCE ON POSTTEST MEASURES OF DEPENDENT VARIABLE BY GROUP WITH ONE SOURCE DELETED: ANOVA

<u>Group</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>F Prob.</u>
Experimental	14.27	1	4.76	4.68	0.05
Control	29.97	1	2.72		

N=89

---

An analysis of variance of the pretest scores of the pretested experimental and control groups was done to determine if it could be assumed that the experimental and control groups started with similar understanding of diabetes. (See Table 9).

Table 9

SIGNIFICANCE OF DIFFERENCE ON PRETEST MEASURES ON DEPENDENT VARIABLE BY GROUP: ANOVA

<u>Group</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>F Prob.</u>
Experimental	3.84	1	3.84	2.62	0.16
Control	8.79	1	1.47		

N=53

---

Analysis showed no significant difference between the experimental and control groups on the diabetes knowledge test taken before the class. The assumption that the pretested experimental and control groups were similar with respect to knowledge about diabetes prior to the classes was upheld. The diabetes knowledge level of the non-pretested groups prior to the application of the experimental or control class is an unknown quantity.

Chi square analysis of the demographic characteristics of age, sex, educational background, previous contact with diabetes, sensory ability, and previous experience learning a second language was done (see Table 1). Based on the similarity of demographic characteristics studied, it seemed logical to conclude that their pre-class diabetes knowledge would be similar.

The above chi square analysis of the demographic characteristics did show the control groups to have significantly more ( $p > .01$ ) participants who had previous experience learning another language. This difference may affect the outcome of the study: (1) if the language learning experience was in learning English as a foreign language and there was a comprehension barrier during the classes that affected posttest scores, or (2) if previous experience learning a foreign language contributed to an unknown factor, possibly boredom, which yielded less learning and lower posttest scores in individuals with previous language learning experience, or (3) if previous experience learning another language had sufficient impact on the control group subjects' ability to learn new vocabulary to obscure the effect of the independent variable on the diabetes knowledge test.

In reference to the question "was there an effect on the posttest attributable in some way to the pretesting of the subjects?" -- analysis of variance comparing posttest scores by pretesting or non-pretesting showed

no significant differences in the four groups (see Table 10).

Table 10

SIGNIFICANCE OF DIFFERENCE ON POSTTEST MEASURES OF DEPENDENT  
VARIABLE BY PRETESTING OR NON-PRETESTING: ANOVA

<u>Group</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>F Prob.</u>
Pretested	30.25	1	10.08	1.38	0.26
Non-pretested	39.60	1	3.30		

N=95

---

This analysis supports the assumption that the pretest does not have a sensitizing effect.

To determine if the pretest had an interactive effect with the independent variable, an analysis of variance of the posttest scores comparing pretested experimental and pretested control subjects was determined. These results were not significant (see Table 11).

Table 11

SIGNIFICANCE OF DIFFERENCE ON POSTTEST MEASURES OF  
DEPENDENT VARIABLE BY PRETESTED GROUP

<u>Group</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>F Prob.</u>
Pretested Experimental	3.13	1	3.31	1.83	0.22
Pretested Control	10.29	1	1.71		

N=53

---

It is not known whether there is a negative interaction of pretesting and the independent variable.

#### Summary

From these analyses, it can be concluded that the difference in post-test scores between control and experimental groups may be due to the independent variable. It was concluded that this difference was not due to sensitization by the pretest or by an interactive effect of the pretest and the independent variable. With the exception of previous language learning experience, it was determined that the groups were similar relative to pre-class knowledge of diabetes and demographic characteristics. The effect of language learning experience on subjects' ability to learn new vocabulary was not known. It was not possible to determine (1) if there was a negative interactive effect of the pretesting on the independent variable or (2) if the non-pretested experimental group had a greater baseline knowledge of diabetes prior to class instruction.



## Chapter 5

### CONCLUSIONS AND IMPLICATIONS

#### Introduction

This study has investigated the effects of using foreign language teaching theory in the context of patient education. The hypothesis predicted the effects of this teaching methodology on older adult, non-diabetic subjects' knowledge about diabetes after teaching had taken place. Following the analysis of data to address this hypothesis, an additional question was raised about the effect of the teaching methodology on increasing knowledge about diabetes in older adult, non-diabetic subjects. From the data analysis, the following conclusions and implications were drawn.

#### Conclusions

The initial hypothesis was accepted. Older adult non-diabetic subjects taught a class about diabetes using foreign language teaching theory methods scored higher on a written posttest of knowledge about diabetes than older adult non-diabetic subjects taught the same content and vocabulary by traditional methods. There was a significant difference in knowledge about diabetes among subjects taught by foreign language teaching theory methods. There was not, however, a corresponding significant increase in diabetes knowledge among those subjects on whom a pre-instruction measure was obtained. It would, therefore, be potentially inaccurate to conclude that the foreign language teaching theory methods do yield better understanding of the content taught. However, it can be concluded that any or

all of the following are affecting the results: foreign language teaching theory methods are more effective than traditional methods in teaching subjects about diabetes; there is interplay with previous experience in learning a foreign language and vocabulary learning; or there is interaction in a negative direction as a result of being pretested about the content and being taught using the foreign language teaching theory methodology.

#### Implications for Further Study

The individual and interactive effects of each of the previously mentioned variables needs to be determined. Further study is warranted to specify what the effects of previous language learning are on learning new vocabulary. Information is needed regarding what language was learned first and how the additional language or languages were taught. Study of the effects of reading ability and the use of symbolic representation of concepts in written form on vocabulary learning would provide information basic to assessment of the effectiveness of foreign language teaching theory methods.

Additional study about the effects of pretesting on teaching content with an abundance of new vocabulary when foreign language teaching methods are used is also warranted. Clarification of these issues could yield information with implications for the fields of patient care and teaching.

#### Implications for Patient Care

The many chronic illnesses which necessitate understanding and self-management by the patient are increasing. The examples of cardiovascular disease, pulmonary disorders, stress management and home hemodialysis all

require understanding of new vocabulary or new meanings of familiar vocabulary by patients and family members for effective disease management. This need for patient participation in illness management is expected to increase.

The increase in the size and variability of the aged population points again to the need to identify those parameters which serve to define an older adult's functional age. Earlier studies described chronological age as a poor indicator of cognitive ability in older adults. The wide chronological age range of the subjects in this study (greater than thirty-five years), may have served to confound the information obtained. Investigation of delimiters of functional age which could include physical and social activity level, sensory ability, frequency of exposure to learning situations, type and frequency of mental stimulation, and socio-economic status could serve to provide nurses with better guidelines for planning patient teaching.

#### Implications for Teaching

Nurse educators find themselves teaching not only disease management but many health concepts in which new vocabulary learning is paramount. Neophyte nurses may benefit from instruction that uses foreign language teaching theory to facilitate vocabulary learning. It is undoubtedly safe to project that foreign language teaching theory could be operationalized to improve teaching and facilitate learning of any content area in which there is a considerable amount of new terminology. One wonders if the theory could have application to individual instruction as well as to small group teaching. Further study in other content areas and with different group sizes would serve to validate the effectiveness of this methodology.

### Implications for Foreign Language Theory

Further study of the use of foreign language teaching theory in the health field can also serve to strengthen the knowledge base for foreign language teachers. Language teaching theory is described by foreign language teaching theorists (Harding, 1967) as being in its infancy. Language teaching stands to benefit from the broader knowledge gained about how adults learn new vocabulary. Foreign language teachers often exclude older adults from language instruction because of the expected difficulty they will have. The expected learning impediment could be the product of speed of presentation of new information and necessary speed of incorporation of the new words rather than problems with language learning in general. The discipline of foreign language teaching would therefore also benefit from the study of the application of its theory in specific age groups.

### Limitations

This study is limited by a number of factors relating both to the design of the study and to certain characteristics of the subjects who participate. The choice to keep agency groupings intact and to randomize by group and not by individual subjects led to the unanswered question: were different agencies utilized by senior citizens with markedly different cognitive abilities, thus creating major discrepancies in subjects' learning abilities? The choice to use a Solomon Four-Group design yielded an incomplete baseline assessment of subjects' pre-class knowledge about diabetes. Together, these raise major questions about the interpretation of the results of this study.

It was assumed that all subjects could read and speak English. Without baseline information of subjects' reading and language abilities, it

is not possible to say with certainty that the dependent variable, the diabetes knowledge test, measured knowledge about diabetes rather than measuring reading ability in English.

Study of learning about diabetes needs to be done with diabetic subjects in order to truly account for differences in motivation to learn. Also, the age range of subjects for this study was limited to the upper end of the spectrum for maturity-onset diabetics (sixty years old and older). A study of individuals forty years old and older would include greater than one-half the diabetic population (Gitman, 1974) and include those diabetics with the greatest life expectancy and the greatest need for self-care.

#### Summary

This investigation studied the effectiveness of one means to improve communication between health care provider and health care recipient specifically as communication problems relate to differences in understanding health terminology. An experimental design was employed to determine whether or not using a teaching methodology based on foreign language teaching theory would result in greater recall of content taught than teaching by traditional methods. Diabetes instruction was chosen as the content area because this disease requires a high degree of self-management as well as an understanding of many new and unfamiliar words by the patient to accomplish self-care effectively. The study showed that foreign language teaching theory methods did result in greater recall of new vocabulary and content and the hypothesis was accepted. More study is needed to differentiate between the main effect of using foreign language teaching theory methods, and the possible interactive effects of subjects'

previous exposure to language learning and to content via pretesting, before one can conclusively state that foreign language teaching theory is a more effective methodology for patient teaching.

## LESSON PLAN -- EXPERIMENTAL

SUBJECT: INTRODUCTION TO DIABETES -- USING FOREIGN LANGUAGE TEACHING METHODS WITH SPECIAL ATTENTION TO:

- (1) PRACTICE OF NEW VOCABULARY
- (2) SEQUENCING OF NEW VOCABULARY (AURAL, ORAL, READING, WRITING)
- (3) LIMITATION OF NEW VOCABULARY PRESENTED
- (4) PLACEMENT OF NEW VOCABULARY IN MEANINGFUL CONTEXT
- (5) USE OF MEANINGFUL ANALOGIES FOR NEW VOCABULARY

STUDENTS: GROUPS OF 8 TO 12 NON-DIABETIC ADULTS, 60 YEARS OLD AND OLDER, RANDOMLY DIVIDED TO PARTICIPATE IN THIS CLASS, HALF OF WHICH WILL BE PRETESTED.

ENVIRONMENT: SENIOR CITIZEN'S CENTER, CHURCH SOCIAL HALL, ACTIVITY OR "DAY" ROOM OF RESIDENTIAL CARE FACILITY.

TOPIC	VOCABULARY	METHOD	TOOLS
I. GENERAL INFORMATION A. WHO I AM B. REVIEW OF WHAT STUDY IS C. CONSENTS D. ACQUISITION OF DEMOGRAPHIC DATA E. RECHECK OF PHYSICAL ENVIRONMENT	--	--	TAPE RECORDER, FELT BOARD, CHECK SEATING, CHECK LIGHTING/VISUAL DISTRACTIONS, CHECK ACOUSTICS/HEARING DISTRACTIONS, CHECK AVAILABILITY OF CLOCK/WATCH, CHECK AVAILABILITY OF RESTROOM
II. BREAK	--	--	--
III. PRETESTS	--	--	PRETESTS, PENCILS
IV. BREAK	--	--	--
V. HOW BODY WORKS IN RELATIONSHIP TO "FUEL SUPPLY"	BODY, FOOD, STOMACH SUGAR, GLUCOSE BLOODSTREAM, PANCREAS INSULIN, ENERGY, CELLS	(1) PRACTICE -- REPEAT 3X (2) SAY AND REPEAT 3X SEE AND REPEAT 3X WRITE (3) 6 NEW WORDS (4) CONTEXT OF PICTORIAL REPRESENTATION	FELT BOARD, PAPER, PENCILS
VI. WHAT HAPPENS WITH DIABETES	DIABETES/DIABETES MELLITUS, HIGH BLOOD SUGAR, 0 SUGAR (FUEL) FOR CELL, PANCREAS "OUT OF ORDER"	(1) PRACTICE -- REPEAT 3X (2) SAY AND REPEAT 3X SEE AND REPEAT 3X WRITE (3) 3 NEW WORDS	FELT BOARD, PAPER, PENCILS
VII. WHAT DOES IT FEEL LIKE?	THIRST, FREQUENT "PEEING" (AT NIGHT), WEIGHT LOSS, HUNGER, TIRED & WEAK, ITCHY SKIN, DRY SKIN, BLURRY EYESIGHT, SORES (WON'T HEAL)	(1) PRACTICE -- REPEAT 3X (2) SAY AND REPEAT 3X SEE AND REPEAT 3X WRITE (3) 1 NEW WORD (4) REPEAT SYMPTOMS IN CONTEXT OF BODY'S ENERGY SOURCE	FELT BOARD, PAPER, PENCILS
VIII. WHAT IS DONE FOR DIABETES?	"CONTROL" IT, MEDICATION--INSULIN, PILLS, DIET--COUNT CALORIES, EXERCISE PLANNING/ACTIVITIES, TESTS--URINE, BLOOD KEEPING BODY CLEAN & CARED FOR, ESPECIALLY FEET AND EYES	(1) PRACTICE -- REPEAT 3X (2) SAY AND REPEAT 3X SEE AND REPEAT 3X WRITE (3) 8 NEW WORDS	FELT BOARD, PAPER, PENCILS
IX. WHAT ELSE?	TOO MUCH INSULIN-- LOW BLOOD SUGAR, TIRED, WEAK, NERVOUS, HEADACHE, SWEATY!!, CROSS, BLURRY EYESIGHT, TREATMENT= SUGAR + CALL DOCTOR	(1) PRACTICE -- REPEAT 3X (2) SAY AND REPEAT 3X SEE AND REPEAT 3X WRITE (3) 2 NEW WORDS (TOTAL 20) (4) MAKE ANALOGY TO EARLY MORNING "CRABBY"	FELT BOARD, PAPER, PENCILS
X. BOOKLET (FOR THEIR OWN INTEREST)	--	HANDOUT WITH MINIMAL EMPHASIS--FOR THEIR OWN INTEREST	BOOKLETS
XI. REMINDER OF POSTTEST DATE	--	HAVE EACH SELF-ADDRESS A POSTCARD WHICH WILL BE SENT TO THEM.	POSTCARDS

\* PRINCIPLES OF FOREIGN LANGUAGE TEACHING THEORY METHOD WHICH DIFFERENTIATE FROM TRADITIONAL METHOD.

## Appendix B

## MENTAL STATUS QUESTIONNAIRE

(Modified from: Kahn, R. L., Goldfarb, A. I., Pollack, M., and Peck, A.: Brief objective measure for the determination of mental status in the aged, American Journal of Psychiatry, 117:326, 1960.)

<u>Question</u>	<u>Presumed Test Area</u>
1. Where are we now?	Place
2. Where is this place located?	Place
3. What is today's date - day of month?	Time
4. What month is it?	Time
5. What year is it?	Time
6. How old are you?	Memory - recent or remote
7. What is your birthday?	Memory - recent or remote
8. What year were you born?	Memory - recent or remote
9. Who is president of the U. S.?	General information - memory
10. Who was president before him?	General information - memory

---

 RATING OF MENTAL STATUS QUESTIONNAIRE

<u>Number of Errors</u>	<u>Presumed Mental Status</u>
0 - 2	Chronic brain syndrome, absent or mild
3 - 5*	Chronic brain syndrome, mild to moderate
6 - 8*	Chronic brain syndrome, moderate to severe
9 - 10*	Chronic brain syndrome, severe
Non-testable*	Chronic brain syndrome, severe

\*Participants with Mental Status Rating of mild to moderate chronic brain syndrome were deleted from the study.



Appendix C

DEMOGRAPHIC DATA QUESTIONNAIRE

1. HOW OLD ARE YOU? \_\_\_\_\_

2. WHAT IS YOUR DATE OF BIRTH? \_\_\_\_\_

3. WHAT IS YOUR SEX? MALE \_\_\_\_\_ FEMALE \_\_\_\_\_

4. WHAT IS YOUR EDUCATIONAL BACKGROUND?

I HAVE HAD NO FORMAL EDUCATION \_\_\_\_\_

I HAVE ATTENDED GRADE SCHOOL ONLY \_\_\_\_\_

I HAVE ATTENDED HIGH SCHOOL \_\_\_\_\_

I HAVE ATTENDED A TRADE SCHOOL \_\_\_\_\_

I HAVE ATTENDED COLLEGE \_\_\_\_\_

5. WHAT IS YOUR PREVIOUS CONTACT WITH A PERSON WITH DIABETES?

I HAVE DIABETES \_\_\_\_\_

I HAVE LIVED WITH A PERSON WHO HAS DIABETES \_\_\_\_\_

HOW LONG \_\_\_\_\_

I HAVE KNOWN SOMEONE WITH DIABETES BUT HAVE NOT LIVED WITH THEM  
\_\_\_\_\_

I HAVE NEVER KNOWN SOMEONE WITH DIABETES \_\_\_\_\_

6. DO YOU WEAR A HEARING AID? YES \_\_\_\_\_ NO \_\_\_\_\_

HOW WELL DO YOU HEAR? WELL \_\_\_\_\_ FAIR \_\_\_\_\_ POOR \_\_\_\_\_

7. DO YOU WEAR CORRECTIVE LENSES (GLASSES OR CONTACTS)? YES \_\_\_\_\_ NO \_\_\_\_\_

HOW WELL DO YOU SEE? WELL \_\_\_\_\_ FAIR \_\_\_\_\_ POOR \_\_\_\_\_

8. DO YOU SPEAK ANOTHER LANGUAGE BESIDES ENGLISH? YES \_\_\_\_\_ NO \_\_\_\_\_

IF YOU DO, HOW MANY LANGUAGES DO YOU SPEAK? \_\_\_\_\_

(ORATOR size type was used on the Demographic Data Questionnaire to serve for assessment of visual acuity.)



SCHOOL OF NURSING  
Department of Nursing in  
Biological Dysfunction

SAN FRANCISCO, CALIFORNIA 94143

CONSENT TO ACT AS A RESEARCH SUBJECT

931204-01

PATIENT TEACHING THROUGH FOREIGN LANGUAGE THEORY STUDY

RITA AXFORD, A GRADUATE STUDENT IN NURSING, HAS EXPLAINED THE STUDY TO ME. SHE CAN BE REACHED AT (415) 564-6415 IF I HAVE FURTHER QUESTIONS.

I UNDERSTAND THAT THE PURPOSE OF THIS STUDY IS TO EXPLORE THROUGH A QUESTIONNAIRE, A TEST AND A CLASS ON DIABETES, HOW PATIENTS LEARN ABOUT AN ILLNESS THAT THEY MAY HAVE. I UNDERSTAND THAT I HAVE BEEN CHOSEN TO PARTICIPATE IN THIS STUDY BECAUSE I DO NOT HAVE DIABETES. NON-DIABETIC PERSONS HAVE BEEN CHOSEN BECAUSE THEY HAVE LIMITED PRIOR FAMILIARITY WITH DIABETES-RELATED VOCABULARY.

THE STUDY WILL TAKE APPROXIMATELY THREE (3) HOURS OF MY TIME AND THERE IS NO RISK TO ME. I UNDERSTAND THAT THE CLASSES WILL BE TAPE RECORDED. I ALSO UNDERSTAND THAT THE TAPE RECORDINGS, THE QUESTIONNAIRE AND THE TESTS ARE CONFIDENTIAL AND THAT EVERY PRECAUTION WILL BE TAKEN TO SAFEGUARD THE ANONYMITY AND TRUST OF THOSE WHO CONSENT TO PARTICIPATE.

I FURTHER UNDERSTAND THAT I CAN WITHDRAW AT ANY TIME WITHOUT PENALTY. I UNDERSTAND THAT THERE WILL BE NO BENEFITS TO ME PERSONALLY, BUT IS IS POSSIBLE THAT THE INFORMATION SOUGHT MAY CONTRIBUTE TO A BETTER UNDERSTANDING OF PATIENTS' LEARNING NEEDS. I WILL NOT BE COMPENSATED FOR MY PARTICIPATION.

SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

(ORATOR size type was used on the Consent Form to serve for assessment of visual acuity.)

## Appendix E

## DIABETIC KNOWLEDGE TEST

DIRECTIONS

READ EACH QUESTION.

MARK THE ONE ANSWER THAT YOU THINK BEST  
ANSWERS THE QUESTION.

IF YOU DON'T KNOW THE ANSWER, MARK "E"  
"I DON'T KNOW".

/ Denotes correct answer.

## Appendix E (Continued)

CODE NAME \_\_\_\_\_

DATE \_\_\_\_\_

## 1. WHAT IS THE PANCREAS?

- A. A DIABETIC
- ✓ B. AN ORGAN
- C. A SUBSTANCE USED BY THE CELLS FOR ENERGY
- D. ANOTHER WORD USED FOR SUGAR
- E. I DON'T REALLY KNOW

## 2. WHAT DOES THE PANCREAS MAKE?

- A. DIABETES
- ✓ B. INSULIN
- C. GLUCOSE
- D. KETONES
- E. I DON'T REALLY KNOW

## Appendix E (Continued)

3. WHAT HAPPENS IN DIABETES?

- A. THE PANCREAS MAKES TOO MUCH INSULIN
- ✓ B. THE PANCREAS IS "OUT OF ORDER"
- C. TOO MUCH SUGAR
- D. TOO LITTLE SUGAR
- E. I DON'T REALLY KNOW

4. WHAT DOES THE BODY USE FOR FUEL?

- ✓ A. GLUCOSE
- B. INSULIN
- C. CELLS
- D. DIABETES
- E. I DON'T REALLY KNOW

## Appendix E (Continued)

5. A PERSON WHO IS THIRSTY A LOT, "PEES"  
A LOT, LOSES WEIGHT, FEELS TIRED AND  
WEAK AND HAS SORES THAT WON'T HEAL:
- /A. SHOULD SEE A DOCTOR, HE MIGHT  
HAVE DIABETES
  - B. SHOULD SEE A DOCTOR, HE MIGHT  
HAVE LOW BLOOD SUGAR
  - C. SHOULD EAT FOOD WITH SUGAR IN IT  
AND CALL THE DOCTOR
  - D. SHOULD WATCH HIS DIET AND PLAN HIS  
ACTIVITIES
  - E. I DON'T REALLY KNOW

## Appendix E (Continued)

6. WHAT CAUSES DIABETES?
- A. EATING TOO MANY SWEETS AS A CHILD
  - B. THE STOMACH IS "OUT OF ORDER"
  - C. THE PANCREAS MAKES TOO MUCH INSULIN
  - /D. IT IS NOT KNOWN FOR SURE
  - E. I DON'T REALLY KNOW
7. WHAT IS THE TREATMENT FOR DIABETES?
- A. IT IS CURED WITH INSULIN
  - B. IT IS CURED WITH GLUCOSE
  - C. IT IS CURED WITH MEDICATIONS,  
DIET AND PLANNED EXERCISE
  - /D. IT IS CONTROLLED WITH MEDICATIONS,  
DIET AND PLANNED EXERCISE
  - E. I DON'T REALLY KNOW

## Appendix E (Continued)

8. THE BODY GETS ITS "FUEL" FROM:
- A. THE PANCREAS
  - B. INSULIN
  - C. THE STOMACH
  - ✓D. FOOD
  - E. I DON'T REALLY KNOW
9. THE CELLS OF THE BODY NEED GLUCOSE FOR:
- ✓A. ENERGY
  - B. LOW BLOOD SUGAR
  - C. HIGH BLOOD SUGAR
  - D. INSULIN
  - E. I DON'T REALLY KNOW



## Appendix E (Continued)

## 10. INSULIN IS NEEDED :

- A. FOR ENERGY FOR THE CELLS
- ✓B. TO HELP GLUCOSE GET INTO THE CELLS
- C. FOR LOW BLOOD SUGAR
- D. FOR THE PANCREAS TO WORK
- E. I DON'T REALLY KNOW

## 11. URINE AND BLOOD TESTS :

- ✓A. HELP TO SHOW THAT DIABETES IS CONTROLLED
- B. CURE DIABETES, BUT IT TAKES TIME
- C. ARE IMPORTANT MEDICATIONS FOR A PERSON WITH DIABETES
- D. ARE GOOD TREATMENT FOR LOW BLOOD SUGAR
- E. I DON'T REALLY KNOW

## Appendix E (Continued)

12. GLUCOSE IS ANOTHER NAME FOR :

- A. A BLOOD TEST
- B. INSULIN
- ✓ C. SUGAR
- D. TREATMENT
- E. I DON'T REALLY KNOW

## LESSON PLAN -- CONTROL

SUBJECT: INTRODUCTION TO DIABETES -- USING CONSISTENT METHODOLOGY WITH OUT OF "NATURAL-ORDER" SEQUENCING WITH ATTENTION TO THE FOLLOWING:

- (1) LIMITED PRACTICE OF NEW VOCABULARY (LIMITED TO REPEATED HEARING OF WORDS)
- (2) SEQUENCING OF VOCABULARY NOT IN NATURAL ORDER (OTHER THAN AURAL, ORAL, READING)
- (3) VOCABULARY ITEMS LIMITED TO 20 AS IN EXPERIMENTAL GROUP
- (4) VOCABULARY PLACED IN CONTEXT (WITH PICTORIAL REPRESENTATION)
- (5) NO USE OF ANALOGIES FOR EXPLANATORY PURPOSES

STUDENTS: GROUPS OF 8 TO 12 NON-DIABETIC ADULTS, 60 YEARS OLD AND OLDER, RANDOMLY DIVIDED TO PARTICIPATE IN THIS CLASS, HALF OF WHICH WILL BE PRETESTED.

ENVIRONMENT: SENIOR CITIZEN'S CENTER, CHURCH SOCIAL HALL, ACTIVITY OR "DAY" ROOM OF RESIDENTIAL CARE FACILITY

TOPIC	VOCABULARY	METHOD	TOOLS
I. GENERAL INTRODUCTION	--	--	TAPE RECORDER, FELT BOARD, CHECK SEATING, CHECK LIGHTING/VISUAL DISTRACTIONS, CHECK ACOUSTICS/HEARING DISTRACTIONS, CHECK AVAILABILITY OF CLOCK/WATCH, CHECK AVAILABILITY OF RESTROOM
A. WHO I AM			
B. REVIEW OF WHAT STUDY IS			
C. CONSENTS			
D. ACQUISITION OF DEMOGRAPHIC DATA			
E. RECHECK OF PHYSICAL ENVIRONMENT			
II. BREAK	--	--	--
III. PRETESTS	--	--	PRETESTS, PENCILS
IV. BREAK	--	--	--
V. HOW BODY WORKS IN RELATIONSHIP TO "FUEL SUPPLY"	BODY, FOOD, STOMACH, SUGAR, GLUCOSE, BLOODSTREAM, PANCREAS, INSULIN, ENERGY, CELLS	(1) PARTICIPATION=QUESTIONS (2) WRITTEN WORD PRESENTED FIRST, THEN TEACHER REPEATS 6X (3) 6 NEW WORDS (4) CONTEXT OF PICTORIAL REPRESENTATION	FELT BOARD
VI. WHAT HAPPENS WITH DIABETES	DIABETES/DIABETES MELLITUS, HIGH BLOOD SUGAR, 0 SUGAR (FUEL) FOR CELL, PANCREAS "OUT OF ORDER"	(1) PARTICIPATION=QUESTIONS (2) WRITTEN WORD PRESENTED FIRST, THEN TEACHER REPEATS 6X (3) 3 NEW WORDS	FELT BOARD
VII. WHAT DOES IT FEEL LIKE? SIGNS AND SYMPTOMS OF ELEVATED BLOOD SUGAR	THIRST, FREQUENT "PEEING" (AT NIGHT) WEIGHT LOSS, HUNGER TIRED & WEAK, ITCHY SKIN, DRY SKIN, BLURRY EYESIGHT, SORES (WON'T HEAL)	(1) PARTICIPATION=QUESTIONS (2) WRITTEN WORD PRESENTED FIRST, THEN TEACHER REPEATS 6X (3) 1 NEW WORD (4) REPEAT SYMPTOMS IN CONTEXT OF BODY'S ENERGY SOURCE	FELT BOARD
VIII. WHAT IS DONE FOR DIABETES?	"CONTROL" IT, MEDICATION--INSULIN, PILLS, DIET -- COUNT CALORIES, EXERCISE, PLANNING/ACTIVITIES, TESTS--URINE, BLOOD, KEEPING BODY CLEAN & WELL CARED FOR, ESPECIALLY FEET AND EYES	(1) PARTICIPATION=QUESTIONS (2) WRITTEN WORD PRESENTED FIRST, THEN TEACHER REPEATS 6X (3) 8 NEW WORDS	FELT BOARD
IX. WHAT ELSE?	TOO MUCH INSULIN--LOW BLOOD SUGAR, TIRED, WEAK, NERVOUS, HEADACHE, SWEATY!!, BLURRY EYESIGHT, TREATMENT= SUGAR + CALL DOCTOR	(1) PARTICIPATION=QUESTIONS (2) WRITTEN WORD PRESENTED FIRST, THEN TEACHER REPEATS 6X (3) 2 NEW WORDS (TOTAL 20)	FELT BOARD
X. BOOKLET (FOR THEIR OWN INTEREST)	--	HANDOUT WITH MINIMAL EMPHASIS -- FOR THEIR OWN INTEREST	BOOKLETS
XI. REMINDER OF POSTTEST DATE	--	HAVE EACH SELF-ADDRESS A POSTCARD WHICH WILL BE SENT TO THEM	POSTCARDS

\* PRINCIPLES OF FOREIGN LANGUAGE TEACHING THEORY METHOD WHICH DIFFERENTIATE FROM TRADITIONAL METHOD

## THRUSH &amp; LANESE WORD LIST -- 198 MOST FREQUENTLY OCCURRING

## UNFAMILIAR WORDS IN DIABETIC LITERATURE

accurate	*diet	medical	results
acetone	dietetic	*medication	routine
acid	dietitian (dietician)	menu	saccharin
action	difficult	method	sample
*activity	discuss	mild	scale
actually	disease	mixture	serious
acute	dosage	mold	severe
ADA	dose	necessary	site
addition	easily	negative	soften
advise	effect	nondiabetic	solution
alcohol	energy	normal	source
apply	entire(ly)	obtain	special
approximately	etc.	occur	specified
area	examine	onset	specimen
attach	examination	Orinase	sponge
available	example	ounce	standard
average	exercise	overweight	starches
avoid	factors	*pancreas	stopper
balance	fluid	particularly	strainer
beverages	forecast	patient	strength
bladder	frequent	per	substitute
callus	gangrene	per cent (%)	successful
*calories	gelatine	period	sufficient
carbohydrate	*glucose	permitted	suggestions
carotene	grams (gm.)	physician	supply
cleanse	grasp	plunger	sweetened
clinic	immediate	population	sweetener
Clinitest	include	portion	syringe
collect	increase	positive	syrup
coma	indicate	practical	system
combine	individual	pregnancy	test tube
common	infection	prescribe	therefore
complications	information	press	thoroughly
condition	inject	pressure	tissue
consider	injection	prevent	*treatment
constantly	injury	produces	tube
contain	insert	protamine	types
container	instructions	protein	U80
*control	*insulin	purchase	U40
convert	intermediate	quantity	unit
corns	invert	reaction	*urine
degree (°)	kidneys	reagent	usually
desirable	laboratory	recipe	variety
determine	lanoline	recommend	various
develop	limited	reduce	vary
diabetic	lower(ed) (verb)	regular	vial
*diabetes	maintain	relative	vitamin
*diabetes mellitus	margarine	replace	*weight
diagnosis	material	require	withdraw
		requirement	zinc

\*Words selected for use in class on diabetes, i.e., the independent variable (appear in capital letters on lesson plans).

## Appendix H

## CHALL &amp; DALE LIST OF HEALTH TERMS THAT ARE UNFAMILIAR TO ADULTS

Words known by about 26% to 55% of the people tested:

abdomen	diarrhea	nutrition
abdominal	disabled	offspring
abscess	discharge	opium
adenoids	disinfect	paralysis
adhesive	disinfection	pasteurize
anesthetic	dislocation	patent medicine
antiseptic	disposal	persistent
appendicitis	epidemic	perspiration
artery	exertion	physic
artificial respiration	exhaustion	pneumonia
bacteria	exposure	posture
*balanced diet	fatigue	precaution
bicarbonate	fracture	professional
bladder	gargle	protein
blood	germ	quarantine
*bloodstream	hemorrhage	reaction
*blood sugar	hoarseness	recovered
body tissue	hookworm	recovery
bowel(s)	hospitalization	refrigeration
bunion	humidity	rehabilitation
carbon dioxide	hypodermic	reinfection
carbon monoxide	indigestible	relapse
cavity	infantile paralysis	rheumatism
*cell	infection	sanatorium
circulation	inflammation	sprain
clinic	influenza	sterilize
clot	inherited	stomach
constipation	injurious	suffocate
consult	intestine	tuberculosis
consumption	invalid	unconscious
contact	isolate	*urine
contagious	isolation	vaccination
curable	laboratory	value
*diabetes	malaria	vision
diagnosis	narcotic	vitality
diaphragm	nicotine	yeast

The word "pancreas" was listed as known by less than 10% of the people tested.

\*Words selected for use in class on diabetes, i.e., the independent variable (appear in capital letters on lesson plans).

## Appendix I

EIGHTEEN ITEM DIABETIC KNOWLEDGE TEST DESIGNED  
AND TESTED FOR RELIABILITYDIRECTIONS

READ EACH QUESTION.

MARK THE ONE ANSWER THAT YOU THINK  
BEST ANSWERS THE QUESTION.

IF YOU DON'T KNOW THE ANSWER, MARK "E"  
"I DON'T KNOW".

✎ Denotes correct answer.

CODE NAME \_\_\_\_\_

DATE \_\_\_\_\_

\* 1. WHAT DOES THE PANCREAS MAKE?

A. DIABETES

~~B.~~ INSULIN

C. GLUCOSE

D. KETONES

E. I DON'T REALLY KNOW

2. WHAT IS THE PANCREAS?

A. A DIABETIC

~~B.~~ AN ORGAN

C. A SUBSTANCE USED BY THE CELLS  
FOR ENERGY

D. ANOTHER WORD USED FOR SUGAR

E. I DON'T REALLY KNOW

\*Test item selected for Diabetes Knowledge Test measure of dependent variable.

## Appendix I (Continued)

- \* 3. WHAT HAPPENS IN DIABETES?
- A. THE PANCREAS MAKES TOO MUCH INSULIN
  - /B. THE PANCREAS IS "OUT OF ORDER"
  - C. TOO MUCH SUGAR
  - D. TOO LITTLE SUGAR
  - E. I DON'T REALLY KNOW
4. FEELING, WEAK, NERVOUS, HEADACHE,  
SWEATY AND HAVING BLURRY EYESIGHT  
MIGHT MEAN:
- A. TOO HIGH BLOOD SUGAR
  - /B. TOO LOW BLOOD SUGAR
  - C. DIABETES
  - D. THE PANCREAS IS "OUT OF ORDER"
  - E. I DON'T REALLY KNOW

\*Test item selected for Diabetes Knowledge Test measure of dependent variable.



## Appendix I (Continued)

5. TO KNOW IF DIABETES IS CONTROLLED,  
THE DOCTOR MIGHT TEST A PERSON'S
- A. INSULIN
  - ✓ B. BLOOD
  - C. PANCREAS
  - D. DIET
  - E. I DON'T REALLY KNOW
- \* 6. WHAT DOES THE BODY USE FOR FUEL?
- ✓ A. GLUCOSE
  - B. INSULIN
  - C. CELLS
  - D. DIABETES
  - E. I DON'T REALLY KNOW

\*Test item selected for Diabetes Knowledge Test measure of dependent variable.

## Appendix I (Continued)

\* 7. WHAT CAUSES DIABETES?

A. EATING TOO MANY SWEETS AS A CHILD

B. THE STOMACH IS "OUT OF ORDER"

C. THE PANCREAS MAKES TOO MUCH INSULIN

✓ D. IT IS NOT KNOWN FOR SURE

8. IF A PERSON WITH DIABETES WERE TO FEEL TIRED, WEAK, NERVOUS, HEADACHE, SWEATY, AND CROSS, YOU MIGHT THINK THAT:

A. THEIR PANCREAS WAS "OUT OF ORDER"

B. THEY HAD HIGH BLOOD SUGAR

✓ C. THEY HAD LOW BLOOD SUGAR

D. THEY HAD GLUCOSE IN THEIR BLOOD-  
STREAM

E. I DON'T REALLY KNOW

\*Test item selected for Diabetes Knowledge Test measure of dependent variable.

- \* 9. WHAT IS THE TREATMENT FOR DIABETES?
- A. IT IS CURED WITH INSULIN
  - B. IT IS CURED WITH GLUCOSE
  - C. IT IS CURED WITH MEDICATIONS, DIET AND PLANNED EXERCISE
  - /D. IT IS CONTROLLED WITH MEDICATIONS, DIET AND PLANNED EXERCISE
  - E. I DON'T REALLY KNOW
10. IF A PERSON HAS LOW BLOOD SUGAR FROM TOO MUCH INSULIN, WHAT SHOULD HE DO?
- /A. TAKE FOOD WITH SUGAR IN IT AND CALL THE DOCTOR
  - B. TAKE HIS INSULIN
  - C. GO TO THE DOCTOR FOR A BLOOD TEST
  - D. KEEP HIS FEET CLEAN AND WELL CARED FOR
  - E. I DON'T REALLY KNOW

\*Test item selected for Diabetes Knowledge Test measure of dependent variable.

## Appendix I (Continued)

- \*11. THE BODY GETS ITS "FUEL" FROM:
- A. THE PANCREAS
  - B. INSULIN
  - C. THE STOMACH
  - /D. FOOD
  - E. I DON'T REALLY KNOW
- \*12. THE CELLS OF THE BODY NEED GLUCOSE FOR:
- /A. ENERGY
  - B. LOW BLOOD SUGAR
  - C. HIGH BLOOD SUGAR
  - D. INSULIN
  - D. I DON'T REALLY KNOW

\*Test item selected for Diabetes Knowledge Test measure of dependent variables.

## Appendix I (Continued)

\*13. INSULIN IS NEEDED :

- A. FOR ENERGY FOR THE CELLS
- ✓B. TO HELP GLUCOSE GET INTO THE CELLS
- C. FOR LOW BLOOD SUGAR
- D. FOR THE PANCREAS TO WORK
- E. I DON'T REALLY KNOW

\*14. URINE AND BLOOD TESTS :

- ✓A. HELP TO SHOW THAT DIABETES IS CONTROLLED
- B. CURE DIABETES, BUT IT TAKES TIME
- C. ARE IMPORTANT MEDICATIONS FOR A PERSON WITH DIABETES
- D. ARE GOOD TREATMENT FOR LOW BLOOD SUGAR
- E. I DON'T REALLY KNOW

\*Test item selected for Diabetes Knowledge Test measure of dependent variable.

- \*15. GLUCOSE IS ANOTHER NAME FOR:
- A. A BLOOD TEST
  - B. INSULIN
  - /C. SUGAR
  - D. TREATMENT
  - E. I DON'T REALLY KNOW
- \*16. A PERSON WHO IS THIRSTY A LOT, "PEES"  
A LOT, LOSES WEIGHT, FEELS TIRED AND  
WEAK AND HAS SORES THAT WON'T HEAL:
- /A. SHOULD SEE A DOCTOR, HE MIGHT HAVE  
DIABETES
  - B. SHOULD SEE A DOCTOR, HE MIGHT HAVE  
LOW BLOOD SUGAR
  - C. SHOULD EAT FOOD WITH SUGAR IN IT  
AND CALL THE DOCTOR
  - D. SHOULD WATCH HIS DIET AND PLAN HIS  
ACTIVITIES
  - E. I DON'T REALLY KNOW

\*Test item selected for Diabetes Knowledge Test measure of dependent variable.

## Appendix I (Continued)

17. DIABETES MELLITUS IS :

✓A. ANOTHER NAME FOR DIABETES OR SUGAR  
DIABETES

B. CAUSED BY EATING TOO MUCH SWEETS

C. ANOTHER NAME FOR THE PANCREAS

D. ANOTHER NAME FOR TOO LOW BLOOD SUGAR

E. I DON'T REALLY KNOW

18. A PERSON WITH DIABETES TESTS HIS URINE  
TO KNOW :

A. IF THERE IS INSULIN IN HIS URINE

✓B. IF THERE IS TOO MUCH SUGAR IN HIS  
BLOODSTREAM

C. IF HIS DIABETES IS CURED

D. IF HIS PANCREAS IS "OUT OF ORDER"

E. I DON'T REALLY KNOW

## BIBLIOGRAPHY

- Abdellah, Faye G. and Eugene Levine. Better Patient Care Through Nursing Research. New York: The Macmillan Company, 1965.
- Axford, Rita L. and Linda Cutchen. "Using Nursing Research to Improve Preoperative Care," Journal of Nursing Administration, 7:16-20, December, 1977.
- Axford, Roger W. Adult Education: The Open Door. Scranton, Pennsylvania: International Textbook Company, 1969.
- Bergeron, J. "A Patient's Plea: Tell Me, I Need to Know." American Journal of Nursing, 71:1572, August, 1971.
- Bille, Donald A. "A Study of Patients' Knowledge in Relation to Teaching Format and Compliance," Supervisor Nurse, 8:55-62, March, 1977.
- Botwinich, J. Cognitive Processes in Maturity and Old Age. New York: Springer Publishing Company, 1967.
- Campbell, Donald T. and Julian C. Stanley. Experimental and Quasi-experimental Designs for Research. Chicago: Rand McNally College Publishing Company, 1963.
- Carroll, John B. "The Contributions of Psychology Theory and Educational Research to the Teaching of Foreign Languages," Modern Languages Journal, 49:273-281, 1965.
- Chall, Jeanne S. and Edgar Dale. "Familiarity of Selected Health Terms." Educational Research Bulletin, 29:197-206, November, 1950.
- Collins, Gretchen E. "Do We Really Advise the Patient?" Journal of Florida Medical Association, 42:111-115, August, 1955.
- Cross, Joanne E. and Carol R. Parsons. "Nurse-Teaching and Goal-Directed Nurse-Teaching to Motivate Change in Food Selection Behavior of Hospitalized Patients," Nursing Research, 20:454-457, September-October, 1971.
- Dale, Edgar and Jeanne S. Chall. "A Formula for Predicting Readability," Educational Research Bulletin, 27:11-20+37-54. January-February, 1945.
- DeTornyay, Rheba. Strategies for Teaching Nursing. New York: John Wiley and Sons, Incorporated, 1971.



- Dignan, M. B. "Rural and Community Health Education. A Community Based Patient Education Program in the Southeast Tennessee Area Health Education Center (S.E.T.A.H.E.C.)." Part I, Health Education, 9:10-13, May-June, 1978.
- Dodge, Jean S. "Nurses' Sense of Adequacy and Attitudes Toward Keeping Patients Informed." Journal of Health and Human Behavior, 2:213-216, Fall, 1961.
- \_\_\_\_\_. "How Much Should the Patient Be Told and By Whom?" Hospitals, 37:66-79, December, 1963.
- \_\_\_\_\_. "Factors Relating to Patients' Perception of Their Cognitive Needs." Nursing Research, 18:502-513, November-December, 1969.
- Dumas, R. C. and R. C. Leonard. "The Effect of Nursing on the Incidence of Post-operative Vomiting." Nursing Research, 12:12-15, Winter, 1963.
- Egbert, L. D. et al. "Reduction of Post-operative Pain by Encouragement and Instruction of Patients." New England Journal of Medicine, 270:825-827, 1964.
- Erikson, Erik H. Identity and the Life Cycle. New York: International University Press, 1959.
- Etzwiler, D. D. et al. "Diabetes Detection and Information Center," Minnesota Medicine, 53:1035-1039, September, 1970.
- Felton, Geraldine, Karen Huss, Elizabeth Ann Payne, and Kathleen Srsic. "Preoperative Nursing Intervention with the Patient for Surgery: Outcomes of Three Alternative Approaches," International Journal of Nursing Studies, 13:83-96, February, 1976.
- Flavel, J. H. "Cognitive Changes in Adulthood," Life-Span Development Psychology, eds. L. R. Goulet and P. B. Bates. New York: New York Academy Press, 1970.
- Fleming, Gretchen Voorhis and Ronald Anderson. Health Beliefs of the U. S. Population: Implications for Self-Care. Chicago: Center for Health Administration Studies, 1976.
- Fox, Charlotte. "Vocabulary Ability in Later Maturity," Journal of Educational Psychology, 3:482-492, 1947.
- Gage, N. D. (ed.). Handbook of Research on Teaching. Chicago: Rand, McNally and Company, 1963.
- Gagné, Robert M. Learning and Individual Differences. Columbus, Ohio: Charles E. Merrill Publishing Company, 1967.

- \_\_\_\_\_. The Conditions of Learning. New York: Holt, Rinehart and Winston, 1970.
- Garber, Rita. "The Use of a Standardized Teaching Program in Diabetes Education," Nursing Clinics of North America, 12:375-391, September, 1977.
- Gitman, J. "Clinical Aspects of Aging," Working With Older People: A Guide to Practice, Volume IV, ed., Austin Chinn. U. S. Department of Health, Education, and Welfare, 1974.
- Graber, Alan L., Barbara Christman, Maria T. Alogna, and John K. Davidson. "Evaluation of Patient-education Programs," Diabetes, 26:61-64, January, 1977.
- Green, Jerald R. (ed.). Foreign-Language Education Research: A Book of Readings. Chicago: Rand, McNally and Company, 1973.
- Grittner, Frank M. Teaching Foreign Languages. New York: Harper and Row, Publishers, 1969.
- Hallburg, Jeanne C. "The Teaching of Aged Adults," Journal of Gerontological Nursing, 2:13-19, May-June, 1976.
- Hammerly, Hector. "Recent Methods and Trends in Second Language Teaching," Modern Language Journal, 55:499-505, 1971.
- Hammond, Kenneth R. and Fred Kern, Jr. Teaching Comprehensive Medical Care. Cambridge, Massachusetts: Harvard University Press, 1959.
- Harding, David H. The New Pattern of Language Teaching. London: Longmans, Green and Company, Limited, 1967.
- Hegyvary, Sue Thomas and Patricia Ann Chamings. "The Hospital Setting and Patient Care Outcomes," Journal of Nursing Administration, 5:36-42, May, 1975.
- Henderson, Virginia. "The Nature of Nursing," American Journal of Nursing, 64-62-68, August, 1964.
- Hilgard, E. R., and G. H. Bower. Theories of Learning. New York: Appleton-Century-Crofts, 1966.
- Hynier, G. C. "Rural and Community Health Education - Bridging the Gap: Definition of Terms and Proposals for Patient Education," Health Education, 9:18-21, May-June, 1978.
- Iodice, Don R. Language Teaching in Classroom and Laboratory. Washington, D. C.: Electronic Teaching Laboratories, 1961.

- Jarvis, Gilbert A. and William N. Hatfield. "The Practice Variable: An Experiment," Foreign Language Annals, 4:401-410, May, 1971.
- Jarvis, O. R. "Time Allotment and Pupil Achievement," Education, 84:300-303, January, 1964.
- Jenny, J. "A Strategy for Patient Teaching," Journal of Advanced Nursing, 3:341-348, July, 1978.
- Johnson, J. E. "The Effects of Accurate Expectations About Sensations on the Sensory and Distress Components of Pain," Journal of Personality and Social Psychology. 27:261-275, 1973.
- \_\_\_\_\_, and H. Leventhal. "The Effects of Accurate Expectations and Behavioral Instructions on Reactions During a Noxious Medical Examination," Journal on Personality and Social Psychology. 29:710-718, 1974.
- \_\_\_\_\_, and V. H. Rice. "Sensory and Distress Components of Pain: Implications for the Study of Clinical Pain," Nursing Research. 23:203-209, 1974.
- \_\_\_\_\_, K. Kirchoff, and M. P. Endress. "Altering Children's Distress Behavior During Orthopedic Cast Removal," Nursing Research, 24:404-410, 1975.
- \_\_\_\_\_, K. Kirchoff, and M. P. Endress. "Easing Children's Fright During Health Care Procedures," American Journal of Maternal Child Nursing. 1:206-210, 1976.
- Jonas, Steven et al. Health Care Delivery in the United States. New York: Springer Publishing Company, 1977.
- Kahn, R. L., A. I. Goldfarb, M. Pollack and A. Peck. "Brief Objective Measure for the Determination of Mental Status in the Aged," American Journal of Psychiatry, 117:326, 1960.
- Kerlinger, Fred N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, Incorporated, 1964.
- Knowles, Malcom. The Adult Learner: A Neglected Species. Houston: Gulf Publishing Company, 1973.
- Krysan, Germaina. "How Do We Teach 4,000,000 Diabetics?" American Journal of Nursing, 65:105-107, November, 1965.
- Lambertsen, Eleanor C. "Nursing Definition and Philosophy Precedes Nursing Goal Development," Modern Hospital, 103:136, September, 1964.


- Leahey, M. D., S. A. Logan and R. G. McArthur. "Pediatric Diabetes: A New Teaching Approach," Canadian Nurse, 71:18-20, October, 1975.
- Lenahan, Mildred J. "Looking for Teaching Aids?" Nursing Outlook. 16:48-49, October, 1968.
- Lindeman, Carol A. and Betty Van Aernam. "Nursing Intervention with the Presurgical Patient: The Effects of Structured and Unstructured Preoperative Teaching," Nursing Research. 20:319-332, July-August, 1971.
- \_\_\_\_\_. "Nursing Intervention with the Presurgical Patient: The Effectiveness and Efficiency of Group and Individual Preoperative Teaching -- Phase Two," Nursing Research. 21:196-209, May-June, 1972.
- McKinlay, John B. "Who is Really Ignorant -- Physician or Patient?" Journal of Health and Social Behavior. 16:3-11, March, 1975.
- Melrose, J. "Audiocassettes Help Hospitals' Language Barrier to Care," Hospitals. 51:93-94, November, 1977.
- Mohammed, Mary F. Bucklin. "Patients' Understanding of Written Health Information," Nursing Research. 13:100-108, Winter, 1964.
- Moore, W. E. and M. M. Tumin. "Some Social Functions of Ignorance," American Sociological Review. 14:787-795, December, 1949.
- National League of Nursing Education. A Curriculum Guide for Schools of Nursing. New York: The League, 1937.
- Nickerson, Donna. "Teaching the Hospitalized Diabetic," American Journal of Nursing. 72:935-938, May, 1972.
- Nightingale, Florence. Notes on Nursing: What it is and What it is Not. Philadelphia: Edward Steen and Company, 1859 (Reproduced 1946).
- Ontog, Jane Padua. "Matching Readability to Educational Level," American Journal of Nursing. 78:1907, November, 1978.
- Payrich, Mary Louise. "Cultural Barriers to Nurse Communication," American Journal of Nursing. 64:87-89, February, 1964.
- Petit, Charles. "A Major Step in Insulin Production," San Francisco Chronicle. 196:1, Thursday, September 7, 1978.
- Pluckhan, Margaret. Human Communication: The Matrix of Nursing. New York: McGraw-Hill, Incorporated, 1978.

- Pohl, Margaret. "Teaching Activities of the Nurse Practitioner," Nursing Research. 14:4-11, Winter, 1965.
- Pratt, Lois, Arthur Seligmann and George Reader. "Physicians' Views on the Level of Medical Information Among Patients," American Journal of Public Health. 47:1277-1283, October, 1957.
- Redlich, Frederick C. "The Patient's Language: An Investigation into the Use of Medical Terms," Yale Journal of Biology and Medicine. 17:427-453, 1945.
- Redman, Barbara Klug. The Process of Patient Teaching in Nursing. Saint Louis: C. V. Mosby Company, 1976.
- Rosenberg, J. "The Case for Patient Education," Hospital Formulary Management. 6:6:14-18, June, 1971.
- Rosengren, W. R. and M. Lefton (eds.). Organizations and Clients: Essays in the Sociology of Service. Columbus, Ohio: Charles and Merrill Publishing Company, 1970.
- Roucek, Joseph S. (ed.). The Study of Foreign Languages. New York: Philosophical Library Incorporated, 1968.
- Samora, Julian, Lyle Saunders and Richard F. Larson. "Medical Vocabulary Knowledge Among Hospital Patients," Journal of Health and Human Behavior, 2:83-92, February, 1961.
- Savage, R. D., P. G. Britton, N. Bolton, and E. H. Hall. Intellectual Functioning in the Aged. Thetford, Norfolk: Lowe and Brydone, Limited, 1973.
- Sclafani, Michael. "School for Psychiatric Patients," American Journal of Nursing. 76:948-949, June, 1976.
- Skinner, B. F. The Technology of Teaching. New York: Appleton-Century Crofts, 1968.
- Skipper, James K. Jr., H. Mauksch and D. Tagliacozzo. "Some Barriers to Communication Between Patients and Hospital Functionaries," Nursing Forum. 2:14-23, 1963.
- \_\_\_\_\_, Daisy L. Tagliacozzo, and Hans O. Mauksch. "Some Consequences of Limited Communication Between Patients and Hospital Functionaries," Journal of Health and Human Behavior. 5:34-40, Spring, 1964.

- Sumner, G. "Giving Expectant Parents the Help They Need: The ABC's of Prenatal Education," Maternal Child Nursing. 1:220-225, July-August, 1976.
- Thomas, Katherine P. "Diabetes Mellitus in Elderly Persons," Nursing Clinics of North America. 11:157-168, March, 1975.
- Thorndike, Edward L., Elsie O. Bergman, J. Warren Tilton and Ella Woodyard. Adult Learning. New York: The MacMillan Company, 1928.
- Thrush, Randolph and Richard Lanese. "The Use of Printed Material in Diabetes Education," Diabetes. 11:132-137, March-April, 1962.
- Time, "Creating Insulin, with a Little Help from E. coli," September 18, 1978, p. 102.
- Travers, J. et al. "Teaching Behavior Modification to Patients' Families," American Journal of Nursing. 74:272-283, February, 1974.
- U. S. Department of Health, Education, and Welfare Public Health Service. Diabetes Source Book. (Publication No. 1168) Washington, D. C.: U. S. Government Printing Office, 1968.
- Vesta-Marston, Mary. "Compliance with Medical Regimens: A Review of the Literature," Nursing Research. 19:312-323, July-August, 1970.
- Wesley-Childers, J. Foreign Language Teaching. New York: The Center for Applied Research in Education, 1964.
- Wolf, Z. R. "What Patients Awaiting Kidney Transplant Want to Know," American Journal of Nursing. 76:92-94, January, 1976.
- Woodruff, Diane S. and David A. Walsh. "Research in Adult Learning: The Individual," The Gerontologist. 15:424-430, October, 1975.

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