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EFFECT OF INFORMATION ON ANXIETY LEVELS OF ADULTS UNDERGOING
A PERCEIVED THREATENING EVENT

THE UNIVERSITY OF ARIZONA

M.S. 1984
EFFECT OF INFORMATION ON ANXIETY LEVELS
OF ADULTS UNDERGOING A PERCEIVED
THREATENING EVENT

by
Carol Dee Falk

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COLLEGE OF NURSING
In Partial Fulfillment of the Requirements
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MASTER OF SCIENCE
In the Graduate College
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1984
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ABSTRACT

A field experiment was conducted to examine the effect of preparatory information on anxiety levels of adult females (N=40) undergoing a perceived threatening event. The threatening event was the possibility of experiencing discomfort from the placement and increased inflation of a blood pressure cuff. The two factors in the 2x2 factorial design were information (procedural or sensation) and media (print or audio). Subjects were randomly assigned to one of four treatment groups. All subjects completed the state portion of the State-Trait Anxiety Inventory (STAI) which measured pre and post procedure anxiety levels. All three hypotheses were accepted at the .05 level. Subjects receiving sensation information displayed significantly less anxiety than did subjects receiving procedural information. Type of media used did not show significant differences among the groups. This study suggested that sensation information decreased the anxiety in patients undergoing a perceived threatening event.
CHAPTER 1

INTRODUCTION

An aim of nursing is to help patients and families achieve their fullest potential. Nurses do this by intervening when disease inhibits that potential and also by being involved in health promotion.

An intervention used by nurses to assist the patient and family achieve their potential is patient teaching. An expectation for patient teaching is that learning will take place. However, according to Sarason (1975) patients may experience anxiety that can interfere with that learning.

The question this thesis was designed to examine was: What effect does preparatory information have on the anxiety levels of individuals? Specifically, what type of preparatory information, either procedural or sensation, will have the greatest effect in reducing anxiety levels for individuals undergoing a perceived threatening event. The possibility of experiencing discomfort from placement and inflation of a blood pressure cuff on a subject's arm was the procedure used as a threatening event in this study. In addition, this study was designed to determine which single instructional media used for delivery of the preparatory information would have the greatest effect in reducing anxiety levels.

The effect of anxiety on learning was studied by Spielberger and Smith (1966). The study involved the use of a list of nonsense
syllables. Participants were required to learn the list of nonsense syllables under two different conditions. One group of subjects was required to learn the list under the threat that their speed of learning reflected their intelligence. The second group of subjects was allowed to learn the list without the threat that their learning speed reflected intelligence. All subjects had previously been given the Taylor (1953) Manifest Anxiety Scale and were grouped as having low or high anxiety levels. Results showed that subjects high in anxiety out performed low anxiety subjects by learning easier words more rapidly. However, high anxiety subjects had more trouble learning the difficult words than did the low anxiety subjects. Spielberger and Smith (1966) concluded from the results that a greater amount of threat impairs the performance of anxious subjects. Thus, providing the type of information that best reduces anxiety is an important component within the process of patient teaching.

Several studies reported on the effects of the psychological intervention known as patient teaching. An analysis of the literature by Mumford, Schlesinger and Glass (1982) reflects the overall positive effect of information in reducing emotional response.

The investigations have shown the effects of various types of preparatory information on the emotional responses of individuals during stressful events, such as being hospitalized, or undergoing diagnostic procedures and having surgery. Several of those studies used the cognitive view of emotions as the basic framework (Lazarus, 1968; Leventhal, 1970; Schacter, 1966). That basic framework developed
out of findings that cognition plays a major role in emotional response, thus leading investigators to examine the effects of different types of cognitive input on such responses. The research indicated that preparatory information may be an effective way of reducing emotional distress during threatening situations.

In nursing practice, different types of preparatory information are commonly given to patients. The usual teaching format includes information touching on every aspect of the procedure. The content of preparatory procedural information closely resembles that which nurses have been taught about the procedure or event and contains step-by-step explanations. Providing procedural information is based on the rationale that patients simply need to know as much as possible about what will happen to them (Linn & Lewis, 1979). However, Mills and Krantz (1979) found that in some situations, providing individuals with too much information can lead to an increase in patient distress.

Another type of preparatory information is a description of the sensory features of the pending event (touch, taste, sight, smell, sound). Preparatory sensory information has led to reduction of emotional distress in laboratory situations producing ischemic pain (Johnson, 1973) and cold pressor pain (Mills & Krantz, 1979), and also in clinical situations such as endoscopic examinations (Johnson, Morrissey, & Levanthal, 1973; Johnson & Levanthal, 1974), pediatric cast removal (Johnson, Kirchhoff, & Endress, 1975), pelvic examinations (Fuller, Endress, & Johnson, 1978), and surgery (Egbert, Battit, Welch,

Ask a nurse how to improve patient teaching, and the response will be "find me more time". Unfortunately, finding more time for a nurse to spend with the patient does not appear to be a solution within reach. Thus, in the absence of more time for teaching, attention has been turned again to the potential of the media for increasing education productivity.

Media help to deliver a message and should not be used carelessly in patient education. A variety of media can be creatively used to help patients learn more, to help them retain better what they have learned, and to encourage the development of skills. The effort to select the most productive media for instruction goes on continuously. Unfortunately, nurses and other health care professionals seldom have formal training in media selection and application, and they consequently look for guidance in these areas.

There is no shortage of research available on instructional media, only a shortage of the kind of research that would be most helpful. Out of several media studies, about half are experimental studies of instructional media— that is, investigations in which attempts have been made to assimilate laboratory conditions, control necessary variables, and examine the statistics. The greatest proportion of studies deals with instructional television, the next largest with programmed instruction and film. Relatively few are concerned with single instructional
media such as radio, film-strips, slides or audiotapes and almost none with printed material.

Campeau (1974), in an extensive literature review, focused on research that would guide the selection of media for teaching adults. The results showed that approximately a dozen experimental studies were the only ones that gave evidence and assurance that findings were even interpretable. What the review did show was that instructional media were being used extensively but that the decision of choice was based on administrative and organizational requirements and not on evidence of instructional effectiveness.

In some hospitals there has been a lack of funds to purchase films, videotapes, television equipment and other expensive instructional media (Rankin & Duffy, 1983). In addition, many hospitals are experiencing reduced patient occupancy rates resulting in a decrease of staff. What hospitals are being faced with are fewer numbers of personnel who have less time to do interventions such as effective patient teaching and essentially little or no funds to purchase audiovisual teaching aides. Also, there are an increasing number of patients in outpatient settings that require patient teaching information. Thus, a more efficient, low-cost method for providing information to patients is needed both in hospitals and outpatient settings alike.

One way of providing this information is to utilize single instructional media in the form of printed materials or audio materials. Unfortunately, there is a paucity of studies intended to determine under what conditions and for what purposes a single medium may be
superior to another. In addition, a high proportion of the experiments that do address the problem are deficient in some way, either in design or in realism.

According to Rankin and Duffy (1983), printed materials such as pamphlets and information sheets are among the most commonly used patient teaching tools. Specific printed materials are ideal teaching tools because they have large print, emphasize important points, use language appropriate for a specific patient audience, and reinforce learning. Printed materials not only convey illness related information to the patient, but can help to explain common health problems and their management, as well as make the public more aware of health risks and prevention/wellness. The distribution of written information seems to be a quick and easy way to teach without requiring the time of health professionals engaging in verbal exchanges with the patients. However, this is a misconception held by many health care professionals. The handing out of written materials does not ensure a transfer of knowledge. In addition, patients may be unable to understand it and more importantly, many patients are anxious about the information contained in the literature. Unfortunately, the message may not be received even when the printed matter is evaluated and used appropriately.

Another type of single instructional media involves the use of audio materials. Audiotapes, usually cassette tapes, offer a distinct advantage for some patient-teaching situations. Cassette tapes can be made available on a variety of topics, are economical, and can be used almost anywhere. Audiotapes can be made by the teachers and tailored...
to the situation to reinforce facts, directions and support. Patients may use them in the home or office as well as in the hospital or clinic.

Audio materials are helpful in delivering messages to patients who enjoy radio and who benefit from repetition and reinforcement. Relaxation and stress reduction exercises are also well suited to delivery by audiotape. Illiterate patients can be taught by audiotapes with accompanying pictures. For many patients suffering from diabetic retinopathy, audio cassettes are a very practical media.

Ideally, nurses would like to find in the research and theoretical literature the precise kind of guidance as to the choice of media for instruction. That kind of guidance does not really exist in any reliable form. Rather, the research evidence requires consideration of the situation and conditions of learning, and even then gives relatively little specific guidance.

To the extent that the selection of media is a rational act, the nurse is likely to have to consider a vast amount of complex information. The search for that information will lead the nurse to consider carefully the needs and abilities of the patients to be taught, the precise nature of the learning events to be brought about, and then the media or medium to be chosen for delivery of the message. If information was available to increase the knowledge on the procedure of patient teaching media selection, which is complex and difficult at best, then that information is worth obtaining.
Purpose of the Study

The purpose of this study was to test the following hypotheses:

1. Subjects receiving preparatory sensation information about a perceived threatening event will display lower scores of state (transitory) anxiety than subjects receiving preparatory procedural information when undergoing a perceived threatening event.

2. There will be no significant difference in the state (transitory) anxiety scores displayed by subjects who receive preparatory information about a perceived threatening event delivered by either one of two single instructional media: audio or print.

3. There will be no significant two-way interaction effect between the type of information and type of media as measured by the state (transitory) anxiety scores displayed.

Significance of the Problem

Providing information to patients has been an integral part of nursing practice. However, finding the time to teach patients within the hospital setting is becoming an increasingly difficult task. In many instances patients are now hospitalized for shorter periods of time and decreased staffing is the trend in most institutions. Nurses need to find ways to convey instructions and/or health information
which compensate for the reduced amount of time that nurses and patients are together. In addition, many patients require the information to be delivered to them outside the traditional hospital setting and in a more cost-effective way.

Of equal importance is the increase in the older adult population which has an obvious impact on the need and delivery of health and supportive services in this country. The majority of the physical health problems of the older adult are chronic conditions which require more medical care and nursing intervention to reduce physical and emotional disability (Neuhaus & Neuhaus, 1982). According to Neuhaus and Neuhaus (1982) the older adult population accounts for 10 percent of the population (U.S. Census Bureau, 1980). Even so, they utilize a significant amount of the available health resources: 33 percent of the nation's hospital beds, 95 percent of the long-term beds and 70 percent of the home-health services. In addition, persons over the age of 65 have a greater chance of being hospitalized during the year than those aged 60 to 64. Those people age 75 years and older spend an average of 4.5 times as many days in short-stay hospitals as the national average and 70 percent more than persons 65 to 74 years of age (Neuhaus & Neuhaus, 1982). Patient teaching for the older adult requires special consideration of the person's health and the aging process. Many health professionals, recognizing that the older patient is different from the younger or middle-aged adult patient, approach him as if he were a child. Although there are some qualities of the two age groups that
are held in common, to take this approach is insulting to the patient and demonstrative of the health professional's lack of sensitivity toward this population of older adults.

According to Steinberg (1983) as people grow older their cognitive efficiency declines. What this does not mean is that the older person has little or no use for patient teaching information. Actually, the need for patient teaching information is the same for any population, but the instructional methods used may need to be individualized for different populations. The implications for patient education for older adults are that nurses must take more time in teaching and the educational materials must be presented in a manner appropriate to the learner. In some cases, this means accounting for physical changes in the older adult. However, Neuhaus and Neuhaus (1982) report that significant hearing loss is found in only about 29 percent of the older adult, and this is more common than visual loss, as only about 10 percent of the older adult population have vision impairment. Therefore, patient teaching materials need to be designed and delivered to the older adult in such a manner as to meet their needs without ignoring diminished sensory acuity.

**Theoretical Framework**

The present study was conducted to examine the effects of two types of preparatory information and two single instructional media used to deliver that information about an impending threatening event on subjects' anxiety levels. The perceived threatening event in this study
was the possibility of experiencing discomfort from placement and inflation of a blood pressure cuff on a subject's arm.

Spielberger's (1966) State-Trait theory and the work of the Johnson-Levanthal group provided the theoretical framework for examining these effects. According to Spielberger (1966), when an individual appraises a situation as threatening, an emotional response (anxiety) is evoked, as shown in Figure 1. This emotional response, referred to as anxiety, can be measured by the state anxiety inventory (Spielberger, 1970).

Anxiety is a multidimensional, complex emotional reaction (Izard, 1971). The emotional reactions generated can be a result of stress, produced by external (environmental) or internal stimuli (Lipowski, 1970). The stimuli initiate the arousal of anxiety states involving a sequence of events. These stimuli are then perceived by the individual to be threatening. Spielberger, Gorsuch, and Lushene (1970), make the distinction between anxiety as a relatively stable personality trait (A-Trait) and as a transitory state (A-State).

Anxiety trait refers to an individual's anxiety proneness or the probability that he will develop the anxiety state in response to
a stimulus. Anxiety trait is unaffected by situational stress and relatively stable over time (Spielberger et al., 1970). Therefore, A-Trait is not operationalized in this study.

State Anxiety (A-State) refers to the emotional reactions evoked when an individual appraises a specific situation as threatening. Stimuli perceived as threatening function as stressors and the anxiety state begins to develop. Recognizing the presence of an anxiety state, the individual may try to alter his appraisal of the situation. Behaviors most frequently utilized were those which had previously reduced or eliminated the unpleasantness of anxiety state reactions (Spielberger, 1972). A-States vary in intensity and fluctuate over time as a result of the stresses perceived by the individual. The level of anxiety also tends to increase with prolonged duration and increased severity of threat (Spielberger, 1972).

Information about a threatening event may not eliminate the emotional response, but does enhance a feeling of safety and security, when the person is given information about the event (Hudak, Gallo, & Lohr, 1977). Thus, psychological tension is reduced, less energy is expended and the person "feels" less anxious (Hudak et al., 1977). Likewise, information about a threatening event can provide a sense of structure to the event. This allows some prediction about the nature of the situation thereby allowing for reappraisal of the threatening event with some lessening of the emotional response (Mechanic, 1968).

The general theoretical position on the relationship between information and emotional response was that when sensation information
was given to individuals who were to undergo threatening procedures, their emotional responses would be reduced. The premise addressed was that the intensity of an emotional response during a threatening situation increases in proportion to the incongruency between expected and experienced sensations (Johnson, 1973). Johnson and her associates (Fuller, Endress & Johnson, 1978; Johnson and Leventhal, 1974) found that in general, preparatory information that described sensations reduced the discrepancies between expected and experienced sensations and thereby reduced emotional response. Again, anxiety was the emotional response studied.

Information has a curvilinear effect on the emotional response, anxiety. Within limits, information may reduce the level of anxiety, however, as Mills and Krantz (1979) identified, too much information can be an overload for the individual and actually increase the level of anxiety. The effect of too much information, causing an overload, will not be operationalized in this study. This relationship is shown in Figure 2.

![Figure 2: Amount of Information in Relation to Emotional Response](image-url)
The frameworks and studies by Spielberger (1966) and the Johnson-Levanthal group (1974) combine to form the theoretical framework for the present study. The model in Figure 3 depicts the framework. An individual perceives an event as threatening, evoking an emotional response. If the individual receives information about the threatening event, the emotional response will be reduced. The information was operationalized as procedural information (information which describes the sequence of events) or information describing the sensations most likely to be experienced while exposed to the threatening event. Also, the delivery of the information was operationalized through one of two single instructional media: audio or print. The anxiety level was measured through administration of Spielberger's (1970) State-Trait Anxiety Inventory (STAI).
Perceived Threatening Event

Information

Type
- Procedural
- Sensation

Media
- Audio
- Print

Emotional Response (Anxiety)

State-Trait Anxiety Inventory

State Anxiety

Figure 3: Theoretical Framework
CHAPTER 2

REVIEW OF LITERATURE

The review of the literature focused on studies utilizing different types of preparatory information. Research on instructional media is also discussed.

**Preparatory Information About the Threatening Event and Instructions in Coping Strategies**

In an early study of surgical patients by Egbert, Battit, Welch, and Bartlett (1964), the information given was that of the event to be experienced and instructions in a coping strategy. The 97 patients were both males and females undergoing various types of abdominal surgery. The experimental group received information preoperatively about postoperative pain and instruction in muscle relaxation and ways to move to minimize discomfort. Patients in the control group received no information. Significantly fewer analgesics were required by patients in the experimental group (p<.01). These patients also had shorter postoperative hospitalizations by 2.7 days than did patients who did not receive the intervention. In this study, combined information about the event as well as instruction in a specific coping strategy was thought to significantly affect decisions made by staff members about patients' need for pain medication and readiness for discharge.
A study that tested the effects of preparatory information similar to that in the study by Ebgert et al., (1964) was conducted by Schmitt and Wooldridge (1973). The information was provided to 50 patients in group meetings and content varied at each meeting. Each group was informed about the sequence of events for the day of surgery, the type of surgery and other procedures. Instructions were also given for deep breathing activities and ways to move about which decreased discomfort. The group studied consisted of male patients who had various surgical procedures performed. The results were consistent with the Ebgert et al., study, in that patients who received the information not only required fewer analgesics (p < .005), but also had shorter post-operative stays by 2.1 days (p < .01) than those patients who did not receive the information. Although the results were consistent in the studies of Ebgert et al., (1964) and Schmitt and Wooldridge (1973), it is difficult to determine if it was the information about the event or the instructions for a coping strategy which contributed to the patients' ability to cope with postoperative experiences.

**Preparatory Information Consisting of Coping Strategy Instructions**

Two other studies have examined the effects of information containing instructions in the use of coping strategy. Aiken and Henrichs (1971) focused on psychological processes in a study of 30 male open heart surgery patients. The investigation utilized the technique of systematic relaxation, as a specific coping strategy, to
examine the effect on the occurrence of impairment of consciousness. The experimental group was taught how to systematically relax prior to surgery. The tape recording was available postoperatively and patients were instructed to use it four times a day. The control group received only the care given to all patients. Impairment of consciousness signs occurred in fewer patients who had been instructed in the coping strategy as compared with the control patients. Consequently, instruction in a coping strategy relevant to affective reactions appeared to reduce psychological reactions.

Lindeman and Van Aernam (1971) studied the effects of preoperative information that consisted of postoperative activity instructions about deep breathing and moving. The experimental group consisted of 126 surgical patients who were instructed by nurses using audiovisual aids. The 135 patient control group received no instructions on deep breathing and movement. Postoperative hospitalization was shorter by 1.91 days for those patients who received the postoperative activity instructions than for the control group. Unlike the results of the Egbert et al. (1964) and the Schmitt and Wooldridge (1973) studies, Lindeman and Van Aernam (1971) identified a trend for the experimental group to receive more analgesics than the control group. Absent in the reported studies of Lindeman and Van Aernam (1971) and Schmitt and Wooldridge (1973) were data on patients' subjective evaluations of the postoperative courses, which might have indicated that certain psychological processes contributed to a more rapid recovery. Support for
the conclusion that information that contains coping strategy instructions increase patients' ability to cope with postoperative courses is provided by the studies of Aiken and Henrichs (1971) and Lindeman and Van Aernam (1971).

Preparatory Information About the Threatening Event

Field (1968) studied the effects of event information on the postoperative courses of 32 male orthopedic patients in a Veterans Administration Hospital. A tape-recorded message consisting of information about the sequence of events of surgery was heard by the experimental group. The control group also listened to a tape-recorded message about the hospital facilities so as to hold constant the amount of attention received by the patients. Field (1968) reported no significant differences between the groups' subjective evaluations of pain, anorexia and insomnia, although 50 percent of the experimental group subjectively reported the tape helpful in reducing their fear compared to three percent of the control group.

Vernon and Bigelow (1974) also studied the effects of information about the event on the postoperative course. The study focused on the effects of information on postoperative moods and attitudes. All 40 patients were male and undergoing herniorrhaphy surgery. The experimental group heard a taped message describing the events a patient undergoing herniorrhaphy surgery might experience. No preparatory message was given to the control group. Patients who heard the tape reported fewer incidents that made them angry and verbalized more
confidence in their nurses than did the control group patients. Length of hospital stay and analgesic usage data were not reported.

Interaction Between Threatening Event Information and Coping Styles

Two studies of surgical patients pursued the interaction between preparatory information about the threatening event and coping styles. Andrew (1970) classified 40 male surgical patients into one of three groups according to coping style. Each patient within a coping-style group was then assigned either to receive preoperative information or not to receive the information. A tape-recorded message was used to deliver the preoperative information. Only patients within the "non-specific defenders" coping-style group, defined as people who do not routinely utilize specific coping strategies (Goldstein, 1965), and who received the preoperative information, appeared to benefit. The results indicated a decreased analgesic usage of approximately 10 percent (p < .005) and the length of hospital stay being shortened by an average of two days (p < .01).

DeLong (1970) studied 64 female patients scheduled for either a cholecystectomy or hysterectomy. The experimental group heard a tape-recorded message containing specific information about the surgical events while the control group heard a tape-recorded message giving general information about the hospital. Classification of patients by coping style was accomplished according to responses to a sentence completion test developed for the study. Analysis of the results comparing the types of preparatory information showed that specific
information about the surgical events reduced length of postoperative stay, use of analgesics, minor complications and decreased the number of complaints (p<.01). Contrary to the Andrew (1970) study, however, analysis of the effects of information for each coping style revealed that "sensitizers", defined as people who previously utilized coping strategies (Goldstein, 1965), benefited the most from specific information. According to Cohen and Lazarus (1973) the inconsistencies among the studies do suggest, however, the possibility that given coping processes may be more useful for certain stressful situations than for others.

Thus far, the studies involving the effects of preparatory information on surgical patients' ability to cope with the experience, have focused on information about the threatening event and instruction in a specific coping strategy. Little attention has been given to the content of the information.

The content of the information commonly used has generally come from descriptions used in textbooks of nursing and medicine (Langer, Janis, & Wolfer, 1975). Health care workers are oriented to this type of information so as to provide care and observe the patient. Surgeries and procedures to be done have been described in terms of sequence of events the patient will experience, with little emphasis on the experiences from patients' viewpoints. Several studies utilizing preparatory information that describe the sensations likely to be experienced from the patients' viewpoint have been found to effect emotional responses.
In the laboratory setting, Johnson and Rice (1974) conducted an experiment designed to test the effect of giving sensory information that varied in its degree of accurateness and completeness. The experiment involved 52 male subjects. The results indicated that information which described only two common sensations was found to be as effective at reducing distress as information that gave a complete description of every sensation the subject experienced. Johnson and Leventhal (1974) studied emotional responses of patients undergoing gastroendoscopic examination. In those studies, patients who received information before the exam that described sensations most likely to be experienced, required less medication and had more stable heart rates than patients who heard procedural or no information. A study involving 84 children undergoing cast removal produced similar results. Johnson, Kirchoff and Endress (1975) concluded that preparatory information which describes the sensations that children experience during cast removal will result in reduced distress during cast removal. In addition, Fuller, Endress and Johnson (1978) investigated the use of preparatory information, which emphasized the sensory experiences usually accompanying an aversive event. The study involved 24 women undergoing a routine pelvic examination. Subjects who received sensory information prior to the examination showed less distress than subjects who received only health education information. These findings were evidenced by fewer distress behaviors and less increase in pulse rates.

A replication study by Johnson, Fuller, Endress and Rice (1978) re-examined the effects of sensation information, procedural information
and specific coping behavior information involving 115 patients undergoing two different types of surgery: cholecystectomy and herniorrhaphy. The findings were consistent with the observations of the original study by Johnson, Rice, Fuller and Endress (1978). Notable effects demonstrated in both studies were the significant reduction in length of postoperative stay. Information found to be most effective contained sensory information combined with instructions of a specific coping behavior. Interestingly enough, the results were only significant for the 59 cholecystectomy patients who received the sensation information. None of the three types of preparatory information had any significant effect on the postoperative recovery of the herniorrhaphy patients. Both studies offered only mixed support for the effectiveness of sensation information in reducing emotional responses.

Hartfield and Cason (1981) investigated the emotional responses of 20 adults undergoing a barium enema procedure. Subjects who received sensation information had significantly less negative emotional responses when compared to the procedural information group.

The trend of results in the studies involving different types of preparatory information indicates that information which describes sensations reduces emotional responses more than procedural or no preparatory information.

Instructional Media Research

There is a considerable amount of research on methods of teaching with media. However, very few combinations of media, subject
matters, and learners have been tested in comparative studies (Schramm, 1972). Several studies emphasize the advantage and clarity in media instruction, yet most of these studies were done with film and television. Research on the smaller single media: tapes, filmstrips, slides, and printed text, has been minimal (Campeau, 1974).

Gagne and Briggs (1974, pp. 151-152) report about the lack of research:

Unfortunately, research has not yielded data permitting sweeping generalizations about media. It may be found desirable to make a separate medium selection for each event; alternatively, it may be possible to use a single medium in such a way as to introduce all the events for a lesson.

According to Gagne (1965) most media can perform most instructional functions. Attention can be gained and controlled by an oral presentation of a teacher, likewise the use of paragraph headings in a printed text. Gagne (1965) further reports that it is an old idea that some people may be "visual-minded" (learn more readily from visual presentations), while others may be "auditory-minded" (learn more readily from auditory presentations). However, Gagne (1965) does point out that some individuals are physically restricted from using one type of media as efficiently as another. In addition, some individuals may be accustomed to or skilled in using one specific type of media versus another. Gagne (1965) concludes that no single instructional media is likely to have properties that make it best for all purposes. Likewise, when one media is compared with another media for instruction in any given subject, there is little significant difference in effectiveness.
of one media (Gagne, 1965). Gagne and Briggs (1974) do suggest that one method for making media selection is to determine what type of stimuli would be needed for the instructional event. Based on that information, some media alternatives can at once be excluded and others may be appropriate for consideration. Salomon (1974, pg.392) offered a rule for the selection of media. "The better a symbol system conveys the critical features of an idea or event, the more appropriate it is."

Allen (1967) summarized the presumed effectiveness of different instructional media for different learning objectives. Comparing audio recordings and printed text, the two single instructional media showed the same effectiveness for the learning of objectives in all areas except one. The area concerned with the learning of principles, concepts and rules favored printed text over audio recordings. Allen (1967) based these findings on a product of "common sense" and "good judgement", and further states that relatively little research in support of media judgements can be found.
CHAPTER 3

METHODOLOGY

The material presented in this chapter is the research design, population and sample, measurement tools and treatments, and method of data collection. Limitations of the study are also discussed.

Research Design

This investigation used an experimental 2x2 factorial research design to determine which type of preparatory information (procedural or sensation) about a perceived threatening event would have the greatest effect in reducing anxiety levels of adults experiencing the perceived threatening event. The perceived threatening event for this study was the possibility of experiencing discomfort from placement and inflation of a blood pressure cuff on a subject's arm. In addition, the study was designed to determine which type of single instructional media (print or audio) used to deliver the preparatory information had the greatest effect in reducing anxiety levels of the adults experiencing the perceived threatening event.

Protection of Human Subjects

Permission to conduct this study was obtained from the University of Arizona Human Subjects Committee (Appendix A). Permission was also obtained from the Mobile Home Park Manager to utilize residents living
within the park (Appendix B). Subjects were given a Disclaimer for Subject's Informed Consent for them to read (Appendix C).

Sample and Setting

The population for this study consisted of adult Caucasian females age 50-65 years. The subjects were volunteers recruited by the investigator. A convenience sample of 40 adult women was utilized from a mobile home part in a large southwestern city. All subjects were required to be able to hear, read, and write English. The procedure used for determining subject's ability to hear, read, and write English was to have subjects to do the following two tasks:

1. Read out loud from a printed card the following words:
   "Cowboys still ride the range in the West."

2. Listen to a taped message containing the following statement:
   "People play with toy boats on the lake" and write the same statement on a piece of paper provided to them.

The volume level of the taped statement was the same for all subjects. The same volume level was used in the information groups utilizing taped messages. No subjects were accepted into the study if they reported high blood pressure or other cardio-vascular disease.

Subjects were randomly assigned to one of four information conditions, with ten subjects in each of the four groups. The random assignment was performed in the following manner. Forty separate slips of paper were marked as follows: 40 slips were marked with the number 1;
10 slips were marked with the number 2; 10 slips were marked with the number 3; and 10 slips were marked with the number 4. All 40 slips of paper were placed into a box. One by one, the slips were drawn from the box. As each slip was drawn, the number showing on each slip was recorded on paper in the order that the slip was drawn from the box. The first slip drawn was designated as subject #1 and each slip was recorded in order of drawing until all 40 slips of paper were drawn from the box. Consequently, subject numbers 1 through 40 were then assigned to one of the four information conditions. Subjects' numbers were assigned to individuals in order of participation.

Measurement Tools and Treatments

Three measurement tools and two treatments were utilized in this study. The tools were a blood pressure manometer, the A-State scale from the State-Trait Anxiety Inventory (STAI)(Appendix D), entitled "Self-Evaluation Questionnaire", and the Personal/Demographic Data Sheet (Appendix E). The two treatments utilized in this study consisted of information given to the subjects. The first treatment was general information about the study, and the second treatment consisted of the specific group information given to each subject.

Blood Pressure Manometer

The blood pressure manometer was a standard aneroid manometer and adult cuff that had been accurately calibrated by the Bio-Medical Department in a local hospital. The blood pressure cuff was deflated
prior to each application on a subject's arm. The cuff was evenly and firmly wrapped about the upper arm with the center of the inflatable portion placed over the brachial artery and the rubber tubing along the medial aspect of the arm. The lower margin of the cuff was placed two to three centimeters above the antecubital fossa. The pressure in the cuff was rapidly increased to 200 millimeters of mercury pressure as indicated on the manometer dial. The possibility of experiencing discomfort from placement and inflation of the blood pressure cuff was the perceived threatening event in this study.

State-Trait Anxiety Inventory (STAI) (Form Y)

The State-Trait Anxiety Inventory was developed by Spielberger, Gorsuch, and Lushene (1967) and revised in 1980 to obtain reliable and objective measures of both state and trait anxiety using two easily administered, self-report scales. The self-report inventory is composed of two 20-item scales, one each to measure state and trait anxiety. Only the state anxiety scale was used in this study (Appendix D). Permission for use and reproduction of the STAI was obtained (Appendix F). The directions for the STAI are written on the scale. Possible scores for each of the state scales ranged from 20 to 80, with the higher scores indicating higher anxiety levels.

According to the STAI Manual (Spielberger et al., 1979, p.4), "instructions may be modified to evaluate the level of A-State intensity for any situation or time interval that is of interest to an experimenter." Since the anxiety state is a transitory state, the A-State scale asks the subject how he feels at a particular moment in time. For
the purpose of this study, the instructions for the A-State Scale were not changed. Thus, the A-State Scores obtained in this study reflected the degree of anxiety experienced by the subjects at the time the scale was administered. As discussed in the STAI Manual (Spielberger et al., 1983) the test-retest reliability of the STAI is relatively high for the A-Trait Scale. The A-State Scale, however, tends to have a lower test-retest reliability, possibly due to environmental and situational factors present at the time of the testing.

A high degree of internal consistency was demonstrated for both the A-State and A-Trait Scales (Spielberger et al., 1983). Both of the item-remainder correlation coefficient (median $r^2 = .63$) and alpha reliability coefficient (Median $= .92$) tend to be higher for the A-State Scale when given under stressful situations (Spielberger et al., 1970).

General measures of trait anxiety, such as Taylor (1953) Manifest Anxiety Scale, the Institute for Personality and Ability Testing (IPAT) Anxiety Scale (Cattell & Scheier, 1963), and the A-Trait Scale of the STAI are highly correlated with one another ($r = .80$, $r = .75$, respectively) (Spielberger, 1972). In two studies, one involving college students, and the other neuro-psychiatric patients, moderate correlations were established between the STAI and the Zuckerman (1960) Affect Adjustment Checklist ($r = .52$) (Spielberger et al., 1970).

The STAI Manual also lists many other studies which document the construct validity of the STAI for high school and college students, and for patient populations. Research studies utilizing patients include those of Auerbach (1973), De Long (1971), Edwards (1970), Florell (1971),
Gentry, Foster, and Haney (1972), Lucas (1972), Newmark (1972), Parrino (1971), and Spinetta (1972). These studies further contribute to the construct validity of the STAI.

Treatment: General Information for All Subjects

The following general information was given to all 40 subjects on a printed card for them to read:

If you recall the last time you were admitted to the hospital, or went to the doctor, you may have experienced situations that were uncomfortable for you. In this study, I am interested in learning more about people's feelings, thoughts and reactions when experiencing an uncomfortable situation.

In order to mimic a similar situation, I will be using a procedure that is similar to having your blood pressure measured. I will be placing a cuff around your arm. This may be uncomfortable but will cause you no harm. Afterward, you will be asked to complete another questionnaire, as I want to know what the experience is like for you.

Treatment: Specific Preparatory Information About A Threatening Event and Instructional Media Used for Delivery of the Information

Two types of preparatory information and two types of single instructional media were utilized for the four different information groups. The four information conditions were as follows:

Group I received preparatory information which described the procedure. The following information was given to subjects on a printed card for them to read.

I want to tell you more about what you can expect to happen while the cuff is on. You can expect to have a cuff placed on your upper arm and then pumped up to 200 millimeters of mercury pressure. The cuff is
a blood pressure cuff, but this procedure I use is different from having your blood pressure measured. I will be leaving the cuff pumped up on your arm for 30 seconds and I will not be taking your blood pressure.

Group II received preparatory information which described sensations the subject could expect to experience. The following information was given to subjects on a printed card for them to read.

I want to tell you more about what you can expect to feel in your arm and hand while the cuff is on. You can expect to feel pressure and sensations such as tingling and numbness. The cuff is a blood pressure cuff, but the procedure I use is different from having your blood pressure measured in that I will not be taking your blood pressure.

Group III received the same preparatory information that Group I received which described the procedure. However, Group III received the information by listening to a pre-recorded tape containing the information, instead of reading it from a printed card.

Group IV received the same preparatory information that Group II received which described sensations the subject could expect to experience. However, Group IV received the information by listening to a pre-recorded tape containing the information instead of reading it from a printed card.

The pre-recorded tape messages consisting of the preparatory information for Groups III and IV were recorded by an individual other than the investigator so as to help eliminate bias. Each pre-recorded tape message was approximately 30 seconds in length.
Method of Data Collection

The collection of data took place in subjects' homes. Each subject was asked to read a subject disclaimer and reassured that their participation was strictly voluntary. Demographic data consisting of age, sex, ethnic group, marital status and health status were obtained to determine acceptance of subjects into the study (Appendix F).

Each subject was first given the printed card containing the general information about the study. Next, each subject was asked to complete the A-State Scale from the STAI entitled "Self-Evaluation Questionnaire". The 20-item questionnaire took approximately four minutes to complete, however, subjects were given as much time as needed to finish.

Then each subject was given the preparatory information specific to the pre-assigned information condition group. The blood pressure cuff was then properly placed on the subject's non-dominant arm and inflated to 200 millimeters of mercury pressure. The cuff remained inflated at this pressure amount for 30 seconds; was then quickly deflated and the cuff removed. Subjects were then asked to complete a second A-State Scale entitled "Self-Evaluation Questionnaire". This second questionnaire was marked by the investigator as #2 to differentiate it from the same questionnaire being administered earlier in the study. All questionnaires and demographic data forms were assigned the subject's participation number. Amount of time required for each subject's participation in the study was approximately 30 minutes.
Scores for State anxiety were then tabulated for each of the two times the A-State Scale was administered.

**Limitations of the Study**

The lack of random sampling compromises this study. Without samples that were randomly selected, the bias of the researcher cannot be eliminated (Polit and Hungler, 1978). Random sampling would have provided more of a guarantee that differences and similarities in the characteristics of the samples were more a function of chance. Compounding the problem of a lack of random sampling was the sample size. Because of time limitations, the sample had to be limited to 40 subjects with 10 subjects in each of the four groups. As the sample size increases, the probability of error decreases (Kerlinger, 1973). Thus, as the sample size increases, the probability of greater variability among individual scores also increases.

In doing research with human subjects, the possibility of the Hawthorne effect can never be eliminated. Subjects knew they were participating in a study, and could have responded differently because of this participation.

Another important limitation for this study was the effect of social desirability response set. This refers to the subjects responding in a favorable manner, regardless of their true attitudes toward the question being asked. Some research subjects tend to respond in this socially desirable way so that they appear in a favorable light (Polit and Hungler, 1978).
CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

This chapter presents the results of the study. Findings related to the characteristics of the sample and the presentation and statistical analysis of the data are presented. The significance level was set at $p < .05$.

Characteristics of the Sample

The sample consisted of 40 adult Caucasian females, all without any diagnosis of high blood pressure or other cardio-vascular disease. The mean age of the sample was 60.78 years with a range of 51 to 65 years of age. Formal education of the subjects ranged from 12 to 18 years with a mean of 13.66 years. All 40 subjects were high school graduates, and of these, 18 (45%) had some level of college education or its technical equivalent. Three subjects (7.5%) completed graduate studies. Among the 40 subjects, 27 (67.5%) of them were married and 13 (32.5%) were either single, separated or widowed and lived alone.

Characteristics of the sample are further described according to the four groups within the study. Each group consisted of 10 subjects, who had been randomly assigned to one of the four groups prior to their participation in the study. Group I received preparatory information which described the procedure. The information was given to subjects on a printed card for them to read. Group II received preparatory
information which described sensations the subject could expect to experience. The information was given to subjects on a printed card for them to read. Group III received the same preparatory information that Group I received which described the procedure. However, Group III received the information by listening to a prerecorded tape containing the information instead of reading it from a printed card. Group IV received the same preparatory information that Group II received which described sensations the subject could expect to experience. However, Group IV received the information by listening to a prerecorded tape containing the information instead of reading it from a printed card.

Among groups, the mean ages of the four groups were very similar. Group I's mean was 60.30 years, with a standard deviation of 4.08 and a range of 51-65 years. Group II's mean was 60.70 years, with a standard deviation of 3.40 and a range of 56-65 years. The mean age for Group III was 61.70 years, with a standard deviation of 2.69 and a range of 57-65 years. Group IV's mean was 60.40 years, with a standard deviation of 3.94 and a range of 54-65 years (Table 1).

Years of formal education varied only slightly among the four groups, as shown in Table 2. The mean in Group I was 13.80 years, with a standard deviation of 1.89 and a range of 12-17 years. Group II's mean was 13.30 years, with a standard deviation of 1.69 and a range of 12-17 years. The mean for Group III was slightly higher at 14.15 years, with a standard deviation of 2.19 and a range of 12-18 years. Group IV's mean was 13.40 years, with a standard deviation of 1.66 and a range of 12-16 years.
### TABLE 1: Comparison of Means, Standard Deviations and Ranges of Age for Each of the Four Groups (N=40).

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>( \bar{X} )</th>
<th>S.D.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>10</td>
<td>60.30</td>
<td>4.08</td>
<td>51-65</td>
</tr>
<tr>
<td>II</td>
<td>10</td>
<td>60.70</td>
<td>3.40</td>
<td>56-65</td>
</tr>
<tr>
<td>III</td>
<td>10</td>
<td>61.70</td>
<td>2.69</td>
<td>57-65</td>
</tr>
<tr>
<td>IV</td>
<td>10</td>
<td>60.40</td>
<td>3.94</td>
<td>54-65</td>
</tr>
</tbody>
</table>

### TABLE 2: Comparison of Means, Standard Deviations and Ranges for Years of Formal Education for Each of the Four Groups (N=40).

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>( \bar{X} )</th>
<th>S.D.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>10</td>
<td>13.80</td>
<td>1.89</td>
<td>12-17</td>
</tr>
<tr>
<td>II</td>
<td>10</td>
<td>13.30</td>
<td>1.69</td>
<td>12-17</td>
</tr>
<tr>
<td>III</td>
<td>10</td>
<td>14.15</td>
<td>2.19</td>
<td>12-18</td>
</tr>
<tr>
<td>IV</td>
<td>10</td>
<td>13.40</td>
<td>1.66</td>
<td>12-16</td>
</tr>
</tbody>
</table>
A single sample chi-square test was used to determine whether the frequency of married subjects differed among the four treatment groups. The obtained $X^2 = .18$, df=1, was not significant at the .05 level. In addition, a single sample chi-square test was used to determine whether the frequency of subjects living alone (single, widow, separated) differed among the four treatment groups. The obtained $X^2 = .46$, df=1, was not significant at the .05 level. These figures are summarized in Table 3.

**Results**

**State Anxiety Inventory**

The A-State scale of the State-Trait Anxiety Inventory (STAI) is a self-report inventory composed of a 20-item scale, to measure state anxiety. Possible scores for the scale range from 20-80, with the higher scores indicating higher anxiety levels.

The state anxiety raw scores for subjects prior to their specific information treatment ranged from 20-53 with a mean of 40.45 and a standard deviation of 8.88. These scores and the scores for each treatment group are shown in Table 4. Those subjects in Group I had a mean score of 40.70 and a standard deviation of 8.65. Subjects in Group II had a mean score of 39.70 and a standard deviation of 9.97. Subjects in Group III had a mean score of 43.20 and a standard deviation of 7.24 while subjects in Group IV had a mean score of 38.20 and a standard deviation of 10.00. Raw scores for Group I ranged from 24-50, raw scores for Group II ranged from 22-53, raw scores for Group III ranged from 31-49, and the raw scores for Group IV ranged from 20-53.
TABLE 3: Single Sample Chi-Square Tests for Homogeneity of Marital Status Among the Four Groups (N=40)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Chi-square ($X^2$)</th>
<th>df</th>
<th>Probability of chance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married Subjects</td>
<td>0.18</td>
<td>1</td>
<td>0.68</td>
</tr>
<tr>
<td>Subjects Living Alone</td>
<td>0.46</td>
<td>1</td>
<td>0.51</td>
</tr>
</tbody>
</table>

TABLE 4: Means, Standard Deviations and Ranges of Pre-Information Anxiety Scores for the Four Groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>10</td>
<td>40.70</td>
<td>8.65</td>
<td>24-50</td>
</tr>
<tr>
<td>Group II</td>
<td>10</td>
<td>39.70</td>
<td>9.97</td>
<td>22-53</td>
</tr>
<tr>
<td>Group III</td>
<td>10</td>
<td>43.20</td>
<td>7.24</td>
<td>31-49</td>
</tr>
<tr>
<td>Group IV</td>
<td>10</td>
<td>38.20</td>
<td>10.00</td>
<td>20-53</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>40.45</td>
<td>8.88</td>
<td>20-53</td>
</tr>
</tbody>
</table>

*Possible range for each group was 20-80.
Raw scores on the state anxiety scale after the perceived threatening event procedure had been administered are presented in Table 5. The mean score for all 40 subjects was 37.65 and a standard deviation of 8.60, while the scores ranged from 20-51. Group I had a mean score of 38.50 with a standard deviation of 9.28, Group II had a mean score of 34.8 with a standard deviation of 7.52. The mean score for Group III was 41.70 and the standard deviation was 9.09 and Group IV had a mean score of 35.60 with a standard deviation of 7.88.

An analysis of variance was performed on pre-information anxiety scores which disclosed that there was no significant difference (p<.05) between the two types of information (F=1.42, df=1, p=0.24). Also there was no significant difference (P<.05) between the two types of media (F=.12, df=1, p=0.73). The analysis displayed no significant interaction (p<.05) between type of information and type of media (F=.24, df=1, p=0.92). These figures are shown in the ANOVA Summary, Table 6.

Tests of Hypotheses

The three hypotheses presented in Chapter I were tested by performing an analysis of covariance to determine if there were any statistically significant differences among the groups. In addition, a paired t-test was performed on the means for the anxiety/pre-information scores and anxiety/post procedure scores for each of the four groups.

This initial t-test was performed to determine whether a significant difference (p<.05) existed between the sample means (anxiety test scores) in each group. There was a significant difference between
## TABLE 5: Means, Standard Deviations and Ranges of Anxiety Scores After the Threatening Event Procedure for the Four Groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Rang*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>10</td>
<td>38.50</td>
<td>9.28</td>
<td>24-47</td>
</tr>
<tr>
<td>Group II</td>
<td>10</td>
<td>34.80</td>
<td>7.52</td>
<td>22-42</td>
</tr>
<tr>
<td>Group III</td>
<td>10</td>
<td>41.70</td>
<td>9.09</td>
<td>28-51</td>
</tr>
<tr>
<td>Group IV</td>
<td>10</td>
<td>35.60</td>
<td>7.88</td>
<td>20-44</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>37.65</td>
<td>8.60</td>
<td>20-51</td>
</tr>
</tbody>
</table>

*Possible range for each group was 20-80.

## TABLE 6: Analysis of Variance Summary: Pre-Information Anxiety Scores.

<table>
<thead>
<tr>
<th>Source</th>
<th>D.F.</th>
<th>M.S.</th>
<th>F-Ratio</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>39</td>
<td>86.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Information</td>
<td>1</td>
<td>126.06</td>
<td>1.42</td>
<td>0.24</td>
</tr>
<tr>
<td>Type of Media</td>
<td>1</td>
<td>11.04</td>
<td>0.12</td>
<td>0.73</td>
</tr>
<tr>
<td>Information x Media</td>
<td>1</td>
<td>20.99</td>
<td>0.24</td>
<td>0.92</td>
</tr>
<tr>
<td>Error</td>
<td>36</td>
<td>88.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
anxiety/pre-information scores and anxiety/post procedure scores for Group I (t=2.97, df=9, p < .05) and Group II (t=3.66, df=9, p < .05), whereas Group III showed no significant difference (t=1.57, df=9) and Group IV showed no significant difference as well (t=2.59, df=9). The overall paired t-test did show a significant difference also (t=5.22, df=39, p < .05).

The analysis of covariance was used to control or "correct for" extraneous variation in the dependent variable before the effects of the nonmetric factors were assessed. With this design, the covariate (metric independent variable) was the pre-information anxiety score. This metric covariate was inserted into the design to remove extraneous variation from the dependent variable, post procedure anxiety score, thereby increasing measurement precision (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975).

Table 7 presents the figures for the analysis of variance with a covariate. In this table the overall main effects were significant (p < .05). Further investigation reveals that of the two main effects, information was the factor found to be significant (p < .05) whereas media was not. In addition, the 2-way interaction effect of information and media was not significant.

The ANOVA (Table 7) provided statistics necessary for testing the hypotheses. The fact that the effect of information was statistically significant merely indicated that the mean of at least one category of the factor information was different from the grand mean,
### TABLE 7: Analysis of Variance with Covariate

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>2881.10</td>
<td>39</td>
<td>73.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covariate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety/Pre-Procedure</td>
<td>2466.14</td>
<td>1</td>
<td>2466.14</td>
<td>256.06</td>
<td>.001</td>
</tr>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Media</td>
<td>50.79</td>
<td>1</td>
<td>50.79</td>
<td>5.27</td>
<td>.028</td>
</tr>
<tr>
<td>2-Way Interaction Info. x Media</td>
<td>2.97</td>
<td>1</td>
<td>2.97</td>
<td>0.30</td>
<td>.582</td>
</tr>
<tr>
<td>Explained</td>
<td>2544.02</td>
<td>4</td>
<td>636.00</td>
<td>66.04</td>
<td>.001</td>
</tr>
<tr>
<td>Residual</td>
<td>377.08</td>
<td>35</td>
<td>9.63</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
after appropriate adjustments were made. It was therefore important to examine the pattern of the information's relationship to the dependent variable.

A multiple classification analysis (MCA) further displays the net effect of the categories within the information factor. This analysis is shown in Table 8. The figures shown in the first column are the means of each category, expressed as deviations from the grand mean. The numbers in the second column indicate the adjusted mean values for each category (again expressed as deviations from the grand mean) when the other factors and covariate are adjusted for. The table shows the grand mean to be 37.65 for anxiety/post procedure scores. From the MCA table, the mean of each group may be calculated as 37.65 + 1.14=38.79 for procedural information and 37.65 - 1.14=36.51 for sensation information. As the numbers in the final column suggest, the sensation information group had the lowest of the two information means, which represents the lowest anxiety level score.

As a result of the analysis, hypotheses 1 which stated: Subjects receiving preparatory sensation information about a perceived threatening event will report lower scores of state (transitory) anxiety than subjects receiving preparatory procedural information when undergoing a perceived threatening event, was accepted. Hypothesis 2 which stated: There will be no significant difference in state (transitory) anxiety scores when reported by subjects who received preparatory information about a perceived threatening event delivered by either one of two
### TABLE 8: Multiple Classification Analysis

<table>
<thead>
<tr>
<th>Variable &amp; Category</th>
<th>N</th>
<th>Unadjusted Deviation</th>
<th>Adjusted for Independents + Covariate Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedural</td>
<td>20</td>
<td>2.45</td>
<td>1.14</td>
</tr>
<tr>
<td>Sensation</td>
<td>20</td>
<td>-2.45</td>
<td>-1.14</td>
</tr>
<tr>
<td><strong>Media</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print</td>
<td>20</td>
<td>-1.00</td>
<td>-.78</td>
</tr>
<tr>
<td>Audio</td>
<td>20</td>
<td>1.00</td>
<td>.78</td>
</tr>
</tbody>
</table>

**Grand Mean = 37.65**
single instructional media: audio or print. Hypothesis 3 (which accounts for the interaction effect) stated there will be no significant two-way interaction effect between the type of information and type of media as measured by the state (transitory) anxiety scores displayed. This hypothesis was also accepted.

**Data Exploration**

Two analyses of variance tests were utilized to analyze the differences between the means of the variables of age and educational status. The analyses of variance determined that there were no significant differences at the .05 level between the two groups receiving procedural information versus the two groups receiving sensation information for the variables of age (p=.70) and educational level (p=.30). The analyses of variance tests determined that there were no significant difference at the .05 level between the two groups receiving the preparatory information either by printed or audio media, for the variables of age (p=.64) and educational level (p=.71). These figures are presented in Tables 9 and 10.

Pearson product-moment correlations were calculated to determine any interrelationships between the variables age, education, anxiety/pre-information and anxiety/post procedure. A correlation of r=.32 or above is significant at the .05 level with a sample size of 40 (McCall, 1975). A moderately strong correlation was found between age and education (r=-0.43). No significant correlations between age and state anxiety/pre-information score (r=-0.23), age and state anxiety post
### TABLE 9: ANOVA Summary Table for Dependent Variable: Age.

<table>
<thead>
<tr>
<th>Source</th>
<th>D.F.</th>
<th>M.S.</th>
<th>F-Ratio</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>39</td>
<td>12.08</td>
<td>.16</td>
<td>.70</td>
</tr>
<tr>
<td>Information</td>
<td>1</td>
<td>2.00</td>
<td>.16</td>
<td>.70</td>
</tr>
<tr>
<td>Media</td>
<td>1</td>
<td>2.92</td>
<td>.23</td>
<td>.64</td>
</tr>
<tr>
<td>Infor. x Media</td>
<td>1</td>
<td>7.30</td>
<td>.57</td>
<td>.69</td>
</tr>
<tr>
<td>ERROR</td>
<td>36</td>
<td>12.74</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 10: ANOVA Summary Table for Dependent Variable: Education.

<table>
<thead>
<tr>
<th>Source</th>
<th>D.F.</th>
<th>M.S.</th>
<th>F-Ratio</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>39</td>
<td>3.34</td>
<td>0.12</td>
<td>0.30</td>
</tr>
<tr>
<td>Information</td>
<td>1</td>
<td>3.90</td>
<td>0.12</td>
<td>0.30</td>
</tr>
<tr>
<td>Media</td>
<td>1</td>
<td>0.50</td>
<td>0.14</td>
<td>0.71</td>
</tr>
<tr>
<td>Info x Media</td>
<td>1</td>
<td>0.17</td>
<td>0.05</td>
<td>0.99</td>
</tr>
<tr>
<td>ERROR</td>
<td>36</td>
<td>3.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
procedural score ($r=-0.16$), education and state anxiety/pre-information score ($r=.11$), education and state anxiety/post procedure score ($r=.12$). A very strong correlation existed between state anxiety/pre-information score and state anxiety/post-procedure score ($r=.93$). Table 11 summarizes these values.

TABLE 11: Correlation Matrix for the Variables (n=40).

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Education</th>
<th>Anxiety/Pre</th>
<th>Anxiety/Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety/Pre</td>
<td>-0.23</td>
<td>0.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety/Post</td>
<td>-0.16</td>
<td>0.12</td>
<td>0.93</td>
<td></td>
</tr>
</tbody>
</table>

Summary

The following conclusions are drawn from this study as a result of statistical analysis:

1. There were no significant differences among the four groups of subjects in relation to demographic variables of:
   a. age;
   b. education;
   c. marital status.

2. There were no significant differences in anxiety/pre procedure test scores among groups.
3. All three hypotheses were accepted.

4. In the sample population, there was no significant relationship between:
   a. age and state anxiety/pre-procedure;
   b. age and state anxiety/post procedure;
   c. education and state anxiety/pre-procedure;
   d. education and state anxiety/post procedure.

5. There was a significant negative correlation between age and education for the sample population.

6. There was a significant positive correlation between state anxiety/pre-procedure scores and state anxiety/post procedure scores of sample population.
CHAPTER 5

DISCUSSION OF FINDINGS AND CONCLUSIONS

In this chapter the findings and conclusions related to state anxiety levels of adults receiving preparatory information about a perceived threatening event are discussed. The implications for nursing practice and implications for future research are also discussed.

Discussion of Findings and Conclusions

This study was designed to determine the effect of preparatory information about a perceived threatening event on adult anxiety levels. Specifically, the study was designed to determine if preparatory information that consisted of sensations the subject may experience while undergoing a perceived threatening event would result in a greater reduction of anxiety than if the preparatory information contained only facts about the procedure itself, such as the sequence of events for the particular procedure. In addition, the study was designed to determine if the anxiety levels would be lower depending on the type of media (print or audio) used for delivery of the preparatory information.

Forty adult females comprised the convenience sample for this study. The 40 adults were randomly assigned to one of four information/media groups. Each group had 10 subjects. All 40 subjects received the same general information about the study, then each subject was asked to complete a self-evaluation questionnaire which measured their
state (transitory) anxiety level at that given moment. Next, each subject received the assigned specific preparatory information about the procedure that was to be performed on them. The procedure, similar to having a blood pressure measured, was performed and upon completion of the procedure, subjects completed another self-evaluation questionnaire that again measured state (transitory) anxiety levels at that given moment. The two self-evaluation questionnaires were the state anxiety (A-State) scale from Spielberger's (1970) State-Trait Anxiety Inventory.

Spielberger (1972) stated that the intensity of state (transitory) anxiety is in proportion to the amount of threat generated by a stimulus. If the stimulus is perceived as threatening, state anxiety will rise. In this study, subjects were initially told that a procedure, similar to having their blood pressure measured, would be performed on them. They were informed that the procedure may be uncomfortable but would cause them no harm. The assumption was that since the procedure was not exactly like that of having their blood pressure measured, the subjects would not know exactly what to expect, and thereby perceive the procedure as a threatening event. Consequently, subjects would then experience anxiety. The state anxiety scale (self-evaluation questionnaire) was administered at that time to reflect their anxiety level, which was presumed to be a result of knowing that a procedure to be performed on them might be threatening.

The state anxiety raw scores for subjects prior to their specific information treatment ranged from 20 to 53 with a mean of 40.45 and a standard deviation of 8.88. The mean score for Group I was 40.7 with a
standard deviation of 8.65, the mean score for Group II was 39.7 with a standard deviation of 9.97. Group III had a mean score of 43.2 with a standard deviation of 7.24, and Group IV had a mean score of 38.2 with a standard deviation of 10.0. The 2x2 factorial analysis of variance performed on the pre-information anxiety scores showed that there was no significant difference (p< .05) among the groups.

Additional 2x2 analysis of variance tests were performed to determine homogeneity between groups for the variables age and education. This testing determined that there were no significant differences at the .05 level among groups for the variables age and education. The single sample chi-square testing also showed no significant differences at the .05 level among groups for marital status, regarding subjects who were married versus subjects who were single, widowed or separated and living alone.

After receiving specific information about the procedure and having had the procedure performed, each subject then completed another state anxiety scale (self-evaluation questionnaire). These post procedure anxiety levels were measured to determine the effect of the specific preparatory information treatment.

The paired t-test performed showed there was a significant difference between anxiety/pre-information scores and anxiety/post procedure scores for Group I (t=2.96, df=9, p< .05) and Group II (t=3.66, df=9, p< .05). However, neither Group III (t=1.57, df=9) or IV (t=2.59, df=9) showed significant differences. These tests only indicated that differences in scores were significant (p< .05) for subjects who received
preparatory information consisting of either procedural or sensation information delivered in printed form. From these initial results, it appeared that media type may be the only factor to have an effect within the study. As Allen (1967) noted, printed text is favored over audio recordings, when dealing with areas concerned with the learning of principles, concepts and rules. However, Allen (1967) based these findings on a product of "common sense" and "good judgement" noting that relatively little research in support of media judgements can be found. Gagne (1965) concluded that when on single media type is compared to another, there is little significant difference in effectiveness of one media over another. Within this study there were no tests performed to measure whether any learning was taking place. A possible explanation for the t-test results may be that the printed information did afford subjects the opportunity to read and re-read the information without the researcher's knowledge if so desired, whereas no subjects asked for the audio tape of information to be replayed.

The analysis of variance with covariate was performed to further identify any differences among the groups. This test did show that information had a main effect on post procedure state (transitory) anxiety levels. The overall main effect of information was significant ($p < .05$) and still further investigation, which utilized a multiple classification analysis, showed that the group which received sensation preparatory information had the lowest post procedure anxiety mean. The mean for Group II (sensation information) was 36.51 compared to the mean of 38.79 for Group 1, who received procedural preparatory
information. The analysis of variance with covariate did not show media type to have a significant effect on anxiety levels overall. However, when comparing the two media type means on the multiple classification analysis table, the printed media type mean appears to be lower than the mean for audio type media (print/37.65 - .78=36.87, audio/37.65 + .78=38.43). As earlier noted, the media effect was not significant for this study, therefore, these results may only indicate a preference for printed media for delivery of preparatory information.

The means previously discussed represent anxiety level scores on the state (transitory) anxiety scale. The lower the score, the lower the anxiety level. As such, the results of this study showed that adult subjects who received preparatory information that consisted of sensations they may experience during the procedure performed within the study, reported lower scores of anxiety than did adult subjects who received preparatory information that told only about the procedure. The effect of preparatory sensation information on anxiety levels of adults undergoing a perceived threatening event was in the predicted direction and similar to findings of the Johnson group.

The general trend of findings by Johnson and associates (Fuller, Endress and Johnson, 1978; Johnson, 1973; Johnson and Leventhal, 1974) indicated that information about sensations reduced emotional responses more than information about the procedure. Johnson offers the explanation that sensory information enhances patient's cognitive control by providing an accurate representation of the anticipated event. Patients' abilities to use coping strategies already existing in their repertoires
therefore are enhanced. This accuracy hypothesis proposes that patient anxiety may be lowered when the information received about a procedure corresponds to the actual experience (Johnson and Leventhal, 1974).

People experience events through their senses: that is, the basic elements of an experience consist of what is heard, seen, smelled, tasted and felt (Hinkle, 1973). When a person is about to encounter a new experience, forewarning of the sensations to be experienced could allow the individual to form an image of the impending event as it will be experienced. This forewarning may help the person to achieve cognitive control over the event. When cognitive control is achieved at the level of the sensory experience, it may be that the control influences the person's ability to purposefully select coping strategies that exist within their domain (Auerbach, Kendall, Cuttler, and Levitt, 1976). In addition, preparatory information that described typical sensations suggests that such experiences are normal and not be regarded as signs of danger, which may decrease the degree of perceived threat (Lazarus, 1968; Staub and Kellett, 1972).

In summary, subjects receiving sensation information reported significantly less anxiety than did subjects receiving procedural information. Although the effects of media type were not significant at the .05 level, indications are that the printed type of media used for delivery of information may be preferred.
Implications for Nursing Practice

In the study by Johnson, Rice, Fuller and Endress (1978) it was found that an intervention consisting of sensory information significantly increased rate of recovery from surgery, as measured by length of postoperative hospitalization and time after discharge before venturing out of the house. Other field experiments with hospitalized patients also suggest the potential value of preparatory communications (Egbert, Battit, Welch and Bartlett, 1964; Healy, 1968; Johnson and Leventhal, 1974; Lindeman and Van Aerman, 1971).

This line of research is valuable since it shows how positive patient outcomes can result from specific types of information. Education programs can be structured efficiently to be maximally beneficial to the largest number of patients, thus decreasing cost factors while increasing efficiency. Only a small amount of clinical staff time would be required to provide preparatory information on sensations to reduce patient distress. The briefness of this intervention and the delivery of the information by mechanical means (print or audio) would also place little demand on professionals' and patients' time.

Most practicing nurses would probably agree that the many activities that surround admission to the hospital the afternoon or evening preceding surgery create an environment that, at best, is almost chaotic. One way to reduce the demand on the patient and professional staff at the time of admission would be to provide patients with some of the necessary information beforehand. Information and instructions could be
presented in either booklet form or audio cassette to form a self-instructional teaching program; written instructions/information regarding the routine activities and policies of hospitalization could also be provided. Presenting information that would best reduce anxiety could increase attention and retention of the material presented (Sarason, 1972).

There are many benefits to be expected when patients' emotional responses are low. Patients who can maintain cooperative behavior during a treatment or diagnostic examination are more apt to receive maximum benefit from the procedure. There may be a less likelihood of injury from the equipment used during a procedure. There may be a reduced need for drugs to assist patients in maintaining emotional control and pain control. Perhaps experiencing low distress and anxiety during initial health care procedures will increase the number of people who would seek care aimed at prevention and early detection of pathological disease.

**Implications for Further Research**

Additional studies are needed in clinical settings to replicate the effect of sensation information on distress reduction. Additional research is needed to test the effects of individual differences on distress reduction. The findings indicate a need to investigate how sensation information modifies an individual's emotional response to a threatening situation. If congruence between expected and experienced sensation results in less emotional distress, what mechanism produces this effect?
Different populations to be considered for future study might include patients undergoing surgery or diagnostic procedures. Patients receiving outpatient services such as chemotherapy or radiation therapy might also be considered.

Further studies are recommended involving the different types of media. Identifying alternate ways of delivering the information could prove to be very cost effective for the patient and the institution.
APPENDIX A

HUMAN SUBJECTS COMMITTEE APPROVAL
To: Carol D. Falk, RN, BSN  
3411 S. Camino Seco #295  
Tucson, AZ 85730  

From: Ada Sue Hinshaw, PhD, RN  
Director of Research  

Katherine Young, PhD, RN  
Chairman, Research Committee  

Date: October 23, 1984  

Re: Human Subjects Review: The Effect of Preparatory Information on Anxiety Levels of Adults Undergoing a Perceived Threatening Event  

Your project has been reviewed and approved as exempt from University review by the College of Nursing Ethical Review Subcommittee of the Research Committee and the Director of Research. A consent form with subject signature is not required for projects exempt from full University review. Please use only a disclaimer format for subjects to read before giving their oral consent to the research. The Human Subjects Project Approval Form is filed in the office of the Director of Research if you need access to it.  

We wish you a valuable and stimulating experience with your research.  

ASH/fp
APPENDIX B

FACILITY LETTER OF APPROVAL
October 19, 1984
3411 S. Camino Seco #295
Tucson, Arizona 85730

Harry Simpson, Manager
Rincon Country Mobile Home Park
3411 S. Camino Seco
Tucson, Arizona 85730

Dear Mr. Simpson:

I am writing to ask your permission to gather data from 40 female residents who reside in the park. My thesis for my Master of Science degree includes investigating anxiety levels after two different types of patient education information have been presented.

I will be utilizing a two-part questionnaire to gather my data, and will require about 30 minutes of each subject's time. I plan to have them complete the questionnaire in their own home environment.

Thank you very much for your time and assistance.

Sincerely,

Carol D. Falk

Permission Granted:

[Signature]

10/20/84
APPENDIX C

SUBJECT DISCLAIMER
Effect of Information on Anxiety Levels of Adults Undergoing a Perceived Threatening Event

DISCLAIMER FOR SUBJECT'S INFORMED CONSENT

I am requesting your voluntary participation in a study utilizing a procedure similar to having your blood pressure measured. In addition, you will be asked to complete two questionnaires entitled "Personal/Demographic Data", and "Self-Evaluation Questionnaire". The purpose of this study is to learn more about people's feelings, thoughts, and reactions when experiencing an uncomfortable situation. The information obtained from this study will help other adults who may have to experience uncomfortable situations.

The procedure used, similar to having your blood pressure taken, may be uncomfortable but will cause you no harm. The personal/demographic data sheet is used to gather basic information about yourself. The self-evaluation questionnaire measures how you feel during your participation in the study.

If you decide to participate, please answer as many of the statements as you are able. There are no right or wrong answers. All information from this study will remain strictly confidential. For this reason your name is not being requested.

Your questions will be answered and you may withdraw from the study at any time without incurring ill will. Approximately 30 minutes of your time will be required for participation in this study. Completion of the questionnaires will indicate your consent as a willing participant in the study.

-Carol D. Falk, R.N.
SELF-EVALUATION QUESTIONNAIRE

Directions:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the number to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your feelings best.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all</th>
<th>Somewhat</th>
<th>Moderately so</th>
<th>Very much so</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel calm</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I feel secure</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I am tense</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I feel strained</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I feel at ease</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I feel upset</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I am presently worrying over possible misfortunes</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I feel satisfied</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I feel frightened</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I feel comfortable</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I feel self-confident</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I feel nervous</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I am jittery</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. I feel indecisive</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I am relaxed</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. I feel content</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I am worried</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. I feel confused</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I feel steady</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I feel pleasant</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

PERSONAL/DEMOGRAPHIC DATA
PERSONAL/DEMOGRAPHIC DATA

To be completed by subject:

Age: ______________________

Sex: M ____, F ____.

Race: ______________________

Marital Status: Single ____, Married ____, Separated ____, Divorced ____, Widowed ____.

Number years of formal education: __________

Do you have high blood pressure? Yes ____ , No ____.

Do you have any other cardio-vascular disease? Yes ____ , No ____.
APPENDIX F

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potentially stressful situation on responses to stress impact.