

SOURCE CREDIBILITY OF A NURSE AS PERCEIVED  
BY A HOSPITALIZED PATIENT

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## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS . . . . .	iii
TABLE OF CONTENTS . . . . .	iv
LIST OF TABLES . . . . .	vii
LIST OF FIGURES . . . . .	ix
Chapter	
1. INTRODUCTION . . . . .	1
Problem Statement . . . . .	5
Justification of Problem . . . . .	7
Conceptual Framework . . . . .	16
Assumptions . . . . .	22
Research Questions . . . . .	23
Definition of Terms . . . . .	23
Limitations . . . . .	27
Summary . . . . .	28
2. REVIEW OF THE LITERATURE . . . . .	30
Source Credibility . . . . .	31
Trust . . . . .	35
Communication . . . . .	39
Perception . . . . .	42
Summary of Source	
Credibility Studies . . . . .	46
The Use of Factor Analysis in	
Source Credibility Research . . . . .	68
Semantic Differential . . . . .	79
Summary . . . . .	81
3. PROCEDURE FOR COLLECTION AND TREATMENT OF DATA . . . . .	83
Setting . . . . .	85

	Page
Population and Sample . . . . .	85
Protection of Human Subjects . . . . .	86
Instrument. . . . .	87
Pilot Study . . . . .	87
Instrument Development. . . . .	87
Setting . . . . .	88
Population and Sample . . . . .	88
Protection of Human Subjects . . . . .	89
Data Collection . . . . .	90
Treatment and Analysis of Data . . . . .	90
Data Collection . . . . .	93
Treatment of Data . . . . .	94
 4. ANALYSIS OF DATA . . . . .	 96
Description of Sample . . . . .	96
Findings . . . . .	111
Summary . . . . .	152
 5. SUMMARY OF THE STUDY . . . . .	 153
Summary . . . . .	154
Discussion of Findings . . . . .	155
Conclusion and Implications . . . . .	161
Recommendations for Further Study . . . . .	163
APPENDIX A . . . . .	165
APPENDIX B . . . . .	169
APPENDIX C . . . . .	171
APPENDIX D . . . . .	173
APPENDIX E . . . . .	176
APPENDIX F . . . . .	179
APPENDIX G . . . . .	182

	Page
APPENDIX H . . . . .	184
APPENDIX I . . . . .	190
APPENDIX J . . . . .	195
APPENDIX K . . . . .	200
APPENDIX L . . . . .	204
APPENDIX M . . . . .	208
APPENDIX N . . . . .	213
APPENDIX O . . . . .	215
APPENDIX P . . . . .	218
APPENDIX Q . . . . .	224
REFERENCES CITED . . . . .	231

# LIST OF TABLES

Table	Page
1. Source Credibility Research-- Number of Scales and Size of Sample . . . . .	77
2. Age Distribution of Sample . . . . .	98
3. <u>t</u> -Test for Difference in Age Distributions of Hospitals . . . . .	99
4. <u>z</u> -Test for Difference in Sex Distributions of Hospitals . . . . .	101
5. Race Distributions of Hospitals . . . . .	102
6. Median Test for Difference in Length of Hospitalization Distributions of Hospitals . . . . .	104
7. Median Test for Difference in Distributions of the Number of Hospitalizations of Hospitals . . . . .	107
8. Reliability Analysis--Instrument Reliability . . . . .	112
9. Squared Multiple Correlations (SMC) of Each Variable with All Other Variables . . . . .	119
10. Comparison of Varimax and Oblique Rotations--Pattern Loadings . . . . .	124
11. Factor Correlations for Rotated Factors-- Oblique Rotation . . . . .	129
12. Iteration for Initial Factors . . . . .	132
13. Communalities Obtained from Three Factors after Five Iterations . . . . .	134
14. Variance Explained by Three Factors-- Oblique Rotation . . . . .	139

Table	Page
15. Structure Factor Matrix-- Structure Loadings. . . . .	141
16. Sorted Pattern Loadings of Selected Variables on the Three Factors . . . . .	146
17. Sorted Structure Loadings of Selected Variables on the Three Factors . . . . .	149

## LIST OF FIGURES

Figure	Page
1. Conceptual model source credibility of a nurse as perceived by a hospitalized patient . . . . .	17
2. Model of the concept trust . . . . .	37

## CHAPTER 1

### INTRODUCTION

In a hospital setting, there is frequent communication between a nurse and a patient, and this communication is highly influenced by a patient's perception of the credibility of a nurse as a source of communication. The hospital setting designates that a hospitalized patient be in intermittent and sometimes constant interaction with a nurse. The interaction between a patient and a nurse provides an opportunity for extensive exchange of verbal and nonverbal communication. Communication takes place in professional nursing practice through the exchange of a wide variety of meaningful symbols; and these symbols are composed of sounds, visual signs, touch, taste, and smell (Sierra-Franco, 1978).

The application of the communication process in professional nursing practice is called therapeutic communication. Therapeutic communication is a planned, effective interaction that is consciously used to influence the patient in the direction of his highest level of health (Hein, 1980). Therapeutic communication is the means by which a nurse knows a patient, identifies

his needs, and attempts to meet these needs. A nurse's use of therapeutic communication is a vehicle for attaining the goal of a therapeutic nurse-patient relationship, which is essential in providing quality nursing care to a patient (Fuerst, Wolff, & Weitzel, 1974). A therapeutic nurse-patient relationship is an interaction that is based on interpersonal trust and is considered beneficial by both the nurse and patient in moving them toward a common goal that is defined in terms of the patient's needs (Simmons, 1976).

Therapeutic communication is effective, purposeful, persuasive, authentic, credible, and consonant with the attitudes of caring (Hein, 1980). Thus, therapeutic communication is essential in professional nursing practice and a necessary element of a trusting nurse-patient relationship. A nurse that is therapeutic in the communication process must have specific, identifiable characteristics that promote a patient's acceptance of the nurse as a source of information. Giffin (1969) identified that a patient's perception of a nurse as a credible source is an essential aspect of effective, persuasive communication. Giffin (1967) noted that the credibility of a source in the communication process is



an important aspect of interpersonal trust. The research of Hovland, Janis, and Kelly (1953) indicated that the source in the communication process must be perceived as credible by the receiver for effective communication to take place.

There has been extensive speculation and research within the fields of philosophy, sociology, psychology, and communication to determine the characteristics of a credible source. Aristotle (cited in Cooper, 1932) identified ethos (source credibility) to include intelligence, character, and goodwill. Berlo, Lemert, and Mertz (1969) identified safety, qualification, dynamism, and sociability as essential characteristics of source credibility. The question that is unanswered in the literature and in professional nursing deals with the characteristics or dimensions that make up the concept source credibility. The aim of this descriptive study was to determine the dimensions of source credibility of a nurse as perceived by a hospitalized patient.

A semantic differential instrument was developed by the researcher in a pilot study and utilized in this study to measure the source credibility of a nurse as perceived by a hospitalized patient. The semantic

differential has been proven to be an effective instrument in the measurement of meaning of a concept such as source credibility (Osgood, Suci, & Tannenbaum, 1965).

The data obtained with the newly developed semantic differential instrument were factor analyzed. There is an unanswered question among source credibility researchers as to which factoring rotation, the orthogonal or oblique, is the more accurate and effective means of analyzing data to determine the dimensions of the concept source credibility. Berlo et al. (1969) utilized the orthogonal rotation in their study because this rotation forced the dimensions to be uncorrelated, and, thus, clearly identified distinct, separate dimensions of the concept source credibility. McCroskey (1966) also utilized the orthogonal rotation so specific, uncorrelated dimensions of source credibility could be identified. Tuppen (1974) and Liska (1976) indicated that there was an overuse of the orthogonal rotation in source credibility studies, and that an oblique rotation allowed the factors to be correlated and had the potential to provide a more accurate and complete identification of the dimensions of source credibility.

A comparison of the orthogonal and oblique factoring rotations was done in this descriptive study to determine which rotation was more accurate and effective in analyzing the data obtained from the hospitalized patients.

No studies were found that measured the source credibility of a nurse in any setting. The hospital setting was selected for this study because of the extensive interaction between a nurse and a patient and because a significant number of people receive nursing care as patients in hospitals. A patient's perception of a nurse as a credible source of communication in a hospital setting was evaluated to determine the dimensions or characteristics of the concept source credibility. The oblique and orthogonal factoring rotations were compared to designate which rotation method produced the more informative and accurate analysis of the credibility data.

#### Problem Statement

This descriptive study involved the exploration of the concept source credibility in the profession of nursing. The problem was twofold: (a) the identification of the dimensions of the concept source credibility

of a nurse as perceived by a hospitalized patient, and (b) the comparison of the orthogonal and oblique factoring rotations in analyzing the data obtained from a semantic differential instrument administered to hospitalized patients.

A semantic differential instrument, consisting of 55 scales, was developed by the researcher in a pilot study and utilized in this study to measure the source credibility of a nurse as perceived by a hospitalized patient. The scales were bipolar adjectives that were generated from patient interviews and were also selected from the scales utilized by Berlo et al. (1969) and McCroskey (1966) to measure the source credibility of a public speaker. The scales were composed of terms that patients utilized to describe a nurse that was credible, or not credible as a source in the communication process. The data, collected from administering this 55-scaled semantic differential instrument to 150 subjects, were factor analyzed to identify the source credibility dimensions.

The purpose of this study was to provide empirical evidence for establishing the criteria that were used by hospitalized patients to evaluate the credibility of

a nurse as a source of communication. The study determined how many dimensions composed the concept source credibility. Another purpose of this study was to determine which scales of the semantic differential instrument were required to measure each dimension of source credibility. The orthogonal and oblique factoring rotations were compared to determine the best analysis method for this group of data. The reliability of the instrument was determined. The following demographic data were obtained: age, sex, race, length of hospitalization, and number of hospitalizations. This study was an initial step in the development of a valid and reliable instrument for measuring the source credibility of a nurse as perceived by a hospitalized patient.

#### Justification of Problem

One aspect of nursing practice is the provision of evaluative, therapeutic, and rehabilitative services to patients to promote their wholeness and symphonic interaction with their environment (Rogers, 1970). The practice of nursing described above requires a therapeutic interaction of a patient and a credible nurse, and, thus, there is an increasing emphasis on the nurse-patient relationship as an instrument of therapy

(Rogers, 1970). A therapeutic nurse-patient interaction involves the effective use of verbal and non-verbal communication (Hein, 1980). Effective communication between a nurse and a patient requires the establishment of trust (Simmons, 1976).

Trust is a very complex concept that numerous researchers have attempted to define and measure. Erikson (1964) identified trust versus mistrust as the first stage of development, and trust of oneself and the world was the first component of a healthy personality. Thus, trust is a very basic aspect of the personality that is formulated early in life. Deutsch (1958) identified the importance of trust in the communication process, and Giffin (1969) identified the importance of trust in the helping professions to facilitate therapeutic communication. Giffin (1967) defined trust as the reliance upon the behavior of another person in order to achieve a desired outcome in a risky situation. A patient in a hospital setting does rely upon the behaviors of a nurse in order to achieve the highest possible level of health. Trust is a multidimensional concept, and an essential dimension of the concept trust is the perceived credibility

of the person (nurse) that an individual (patient) must rely upon (Giffin, 1967). A patient's perception of a nurse as a credible source in the communication process is one essential aspect of a trusting relationship. Identifying the dimensions of the concept source credibility will be an initial step in analyzing the components of the concept trust that is essential to a therapeutic nurse-patient relationship.

The concept source credibility has been theorized about and researched for numerous years. Source credibility has been used interchangeably in the literature with the concept ethos. Aristotle (cited in Cooper, 1932) identified ethos (source credibility) as an essential aspect of communication effectiveness. Hovland et al. (1953) documented in their research that a greater opinion change occurred when the source is perceived as highly credible by the listener. The research of O'Reilly and Roberts (1976) demonstrated that in a group of people perceived as having high credibility there was a significantly higher perception of information accuracy, communication openness, and higher interaction rates than in a group where the people were perceived as having low credibility. The

credibility of a source does influence the communication process, and the communication between a nurse and a patient will be influenced by a patient's perception of a nurse's credibility as a source. The importance of source credibility in communication has been clearly indicated, but the dimensions of the concept source credibility have not been specifically outlined with research.

In the last 25 years numerous research studies have been done in the field of communication to determine the dimensions (factors) that compose the perceived credibility of a communicator. A number of credibility factors have been identified by researchers. Berlo et al. (1969) identified the three factors: (a) safety, (b) qualifications, and (c) dynamism. Whitehead (1968) indicated that four dimensions composed the concept source credibility; which were (a) trustworthiness, (b) competence, (c) dynamism, and (d) objectivity. McCroskey (1966) reported two dimensions of source credibility: (a) authoritativeness and (b) character.

The credibility factors that were identified in the studies seem to depend on what kind of subjects were used; who did the study; what kind of sources were



used; what kind of situations were used; what kind of scales were used; and what kind of factor analyses were used (Cronkhite & Liska, 1976). Tucker (1971a) writes:

the derivation of factors via factor analysis cannot provide an underlying structure that can be expected to remain invariant over concepts, subjects, time, cultures, or experiments. (p. 128)

Applbaum and Anatol (1972, 1973) supported Tucker's (1971a) statement that the dimensions (factors) of the concept source credibility are not easily generalized. Applbaum and Anatol (1972) noted that the factors of credibility do change across different test situations. Applbaum and Anatol (1973) also noted that the factor structure of credibility will change over time.

Thus, the dimensions of credibility identified in communication studies cannot be generalized to the field of nursing. In the communication studies the source was a specially selected public speaker versus the nurse who was the source in this study. The subjects of this study were hospitalized patients rather than the college student subjects used in the majority of the communication studies. The data were collected in hospital settings versus the data of communication

studies, that for the most part, were collected from university classrooms. The communication studies were an excellent reference for the design of this study, but due to the difference in source, subjects, and situation, the dimensions of source credibility found in communication studies are not generalizable to nursing. The source credibility of a nurse is an essential aspect of the nurse-patient relationship, therefore, the dimensions of source credibility require investigation in the nursing profession.

Communication researchers have extensively used the scales developed by McCroskey (1966), Whitehead (1968), and Berlo et al. (1969) in their credibility studies. Tucker (1971b) noted that these scales cannot be generalized across sources, situations, and subjects, for varying the source-type, situation-type, and subject-type causes the dimensionality of the scales to change. Tucker (1971b) has written:

If the scales are chosen intuitively, or if they are borrowed from another experiment, the researcher should accept the responsibility of providing a logical basis for his choices. Demonstrating reliability, in short, remains the responsibility of the researcher. (p. 190)

Thus, the source credibility of a nurse as perceived by a hospitalized patient needed to be measured

by a newly developed instrument, composed of specially selected scales derived from interviews with hospitalized patients. An instrument to measure the credibility of a nurse would be beneficial for professional nursing, in that the instrument would provide a means of collecting data about a patient's perception of a nurse as a credible source. The perceived credibility level of a nurse could be assessed. The dimensions of source credibility that were identified empirically could be stressed in nursing education and to the practicing nurse, with the end goal of improving the credibility of a professional nurse.

Factor analysis was used in this study to rearrange and reduce the data to the underlying pattern of relationships observed in the data, to identify the interdependencies among a set of variables, and to determine the factor structure of an identified concept (Nunnally, 1978). Factor analysis consists of two types of rotations: orthogonal (uncorrelated) and oblique (correlated). A problem dealt with in this study was the determination of which rotation, orthogonal or oblique, would be more effective in analyzing the credibility data obtained from hospitalized patients. The majority of

communication researchers has used the orthogonal rotation to identify distinct, unrelated factors. Tuppen (1974) indicated that the oblique rotation revealed more factors in the structure of the concept source credibility. The choice of the rotation depends on the research problem.

In other words, there are many statistically equivalent ways to define the underlying dimensions of the same set of data. This indeterminacy in a factor solution is in a way unfortunate because there is no unique and generally accepted best solution. On the other hand, not all statistical factor solutions are equally meaningful in theoretical terms. Some are more parsimonious and simpler than others; some are more informative than others; and each tells us something slightly different about the structure of the data. Therefore, one is left to choose the best rotational method to arrive at the terminal solution that satisfies the theoretical and practical needs of the research problem. (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975, p. 472)

In order to determine the best rotation method for this research study, a comparison of the orthogonal and oblique rotations was done. The comparison of rotations indicated which rotation did provide the most accurate and informative interpretation of the factor structure of the source credibility of a nurse as perceived by a hospitalized patient.

In summary, source credibility is an ambiguous concept without clearly defined dimensions, and there is no valid or reliable instrument available to measure this concept. No credibility research was found in professional nursing. This research was an initial step to determine the dimensions of source credibility of a nurse as perceived by a hospitalized patient. The most accurate identification of these dimensions was determined by a comparison of factoring rotations, orthogonal and oblique.

The perceived credibility of a nurse is an essential aspect of a trusting, helping relationship between a nurse and a patient. There is a necessity for the patient and public to perceive nurses as credible, if professional nursing is to advance. The dimensions of the concept source credibility need to be identified, and a scale developed to evaluate a nurse as a credible source. With this background in credibility research, measures could be taken to promote the credibility of nurses in the perceptions of the hospitalized patients and also the public. If nursing is to be a significant member of the health care team, the public must recognize nurses as credible sources.

### Conceptual Framework

The conceptual framework for this study incorporates the concepts of trust, communication, and perception as integral aspects of the concept source credibility. The conceptual model (Figure 1) outlines the relationship of these concepts in researching the dimensions of source credibility of a nurse as perceived by a hospitalized patient. The concept source credibility is a product of the communication literature. The conceptualization of the term source in this study is from Berlo's (1960) communication model, where a source is a person (nurse) or group of persons (nurses) with ideas, needs, intentions, information, and a purpose for engaging in communication with a receiver (hospitalized patient). Credibility is conceptualized as containing the dimensions of expertness, professionalism, safety, trustworthiness, dynamism, and character (Berlo et al., 1969; McCroskey, 1966; Whitehead, 1968). A nurse who possessed these dimensions of credibility would be perceived as an acceptable and believable source of information by a hospitalized patient.

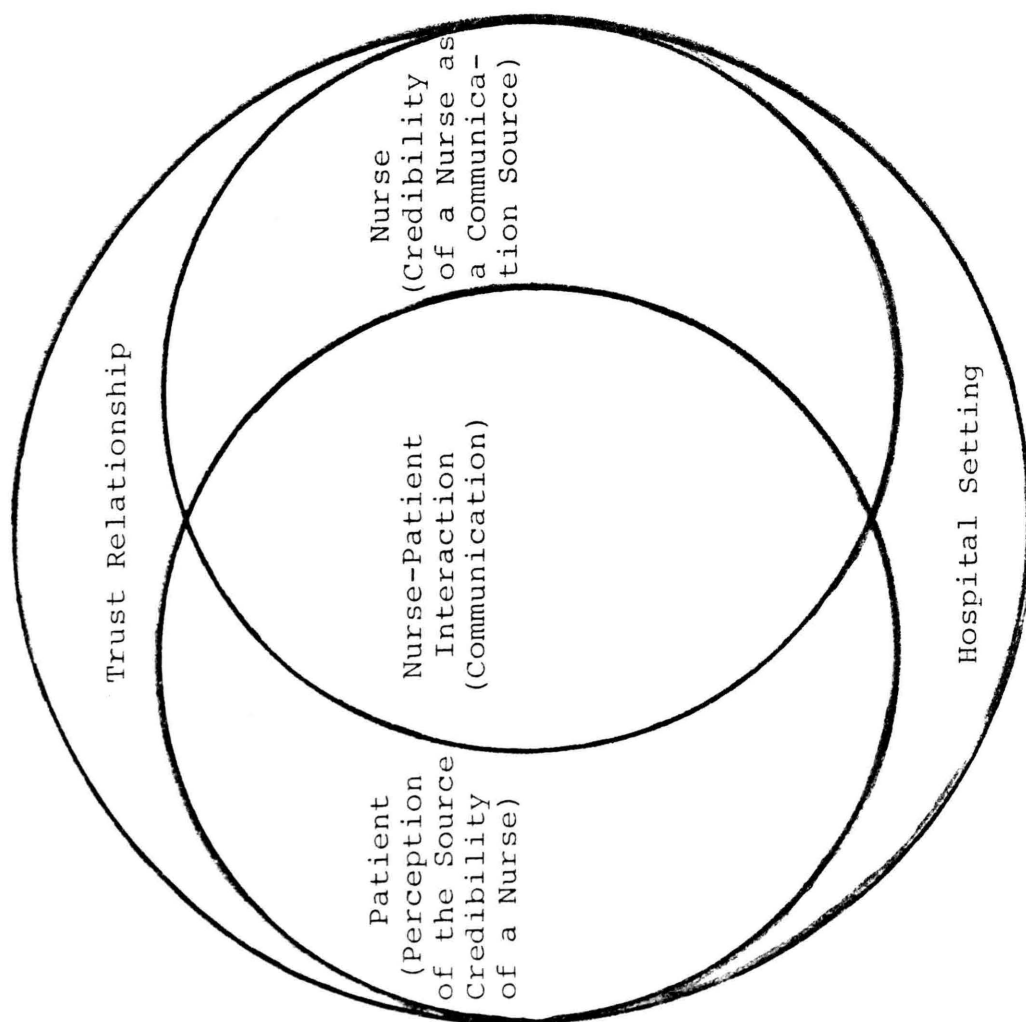


Figure 1. Conceptual model source credibility of a nurse as perceived by a hospitalized patient.

In the hospital setting, a nurse and a patient interact, and as is indicated in the Figure 1, communication (both verbal and nonverbal) takes place in this interaction. Effective, therapeutic communication takes place between a nurse and a patient, when the communication is directed toward accomplishing the goal of the highest level of health for a patient. Effective communication between a nurse and patient is highly influenced by the level of trust that exists between them (Giffin, 1967). The perceived credibility of a nurse as a source influences the trust relationship that exists between a nurse and a patient in the communication process.

Another essential aspect of the conceptual model is the patient's perception of the source credibility of a nurse. A person's perception is conceptualized as the process by which an individual constructs an impression of the actions, qualities, or attitudes of another person through interpreting aspects of the other's appearance and behavior (Delia, 1976). A patient's perception of a nurse is constantly changing, and the structure of this perception is based in cognitive functions of the patient but is influenced by the ongoing events around him (Allport, 1955).



A patient does perceive certain aspects of a nurse in determining his/her credibility as a source. Sattler (1947) identified that ethos (source credibility) was subjective and objective. The subjective ethos refers to the character and personality of a source, and objective ethos is the portrayal of the character traits of others by means of description of possible impersonation (Sattler, 1947). Thus, source credibility as perceived by a hospitalized patient involves the evaluation of both the inferred and the observable characteristics of ethos that a nurse exhibits as a source in the communication process. In conceptualizing the source credibility of a nurse, a patient perceives the following factors:

1. The observable characteristics of a nurse or the objective ethos.
2. The inferred attributes of a nurse or the subjective ethos.
3. The functions a nurse (source) performs for a patient (receiver) in the hospital setting (objective ethos).
4. The criteria by which a patient judges or perceives a nurse's credibility in performing quality nursing care in a hospital setting.

5. The changes in thinking and behavior of a patient with respect to concepts other than a nurse.

The observable characteristics of a nurse deal with physical features of sex, race, size and shape, voice, gestures, and the functions that a nurse performs for a patient in a hospital setting, and all of these characteristics are described as objective ethos. The objective ethos (credibility) of a nurse would be perceived with greater similarity among patients than the subjective ethos (credibility) of a nurse (Sattler, 1947).

The subjective ethos (inferred source attributes) is the inferences made by a patient about a nurse's educational level, knowledge base, experience, caring, trustworthiness, expertise, honesty, professionalism, etc. The exact process that is involved in a patient perceiving these attributes of a nurse is not well understood. Nor is the criteria by which a patient judges or perceives a nurse's credibility in performing quality nursing care in a hospital setting well understood. Delia (1976) wrote that:

each individual anticipates the actions of others through employing a system of constructs which functions as a perceptual frame. Constructs,

then, are dimensions--bipolar continua--within which events and persons are alternatively construed, interpreted, and given meaning. Interpersonal constructs, hence, constitute the psychological counterparts of the qualities the perceiver attributes to others. (p. 368)

Thus, a patient has a complex construct system that is used to judge the credibility of a nurse.

There are also changes in thinking and behavior of a patient with respect to concepts other than a nurse. Within a hospital setting a patient interacts with physicians, admission personnel, dieticians, social workers, nursing aides, ministers, x-ray technicians, etc. These individuals influence a patient's perception and behavior.

The conceptual framework outlines the complexity of measuring the source credibility of a nurse as perceived by a hospitalized patient. A semantic differential instrument was developed to measure a patient's perception of a nurse's credibility. Factor analysis was done to determine the dimensions that make up the concept source credibility. In a hospital setting, a nurse and patient interact, and the perception by a patient that a nurse is a credible source is an aspect that promotes a trust relationship and effective communication between a nurse and a patient.

Assumptions

The following assumptions were made for this descriptive study:

1. A nurse and a patient interact in a hospital setting.
2. A nurse is a source and a patient is a receiver in the communication process.
3. Communication between a nurse and a patient is verbal and nonverbal.
4. A patient perceives the source credibility of a nurse providing care in a hospital setting.
5. The source credibility of a nurse is measurable.
6. Source credibility of a nurse can be evaluated in terms of a patient's perception.
7. Source credibility is a concept that is measurable by a semantic differential instrument (Osgood et al., 1965).
8. Source credibility is a complex, multidimensional concept (Schweitzer & Ginsburg, 1966).
9. The dimensions of the source credibility of a nurse can be determined with factor analysis (Nunnally, 1978).

10. Both the orthogonal and oblique factoring rotations can be used on credibility data obtained by administering a semantic differential instrument to hospitalized patients (Cattell, 1966).

### Research Questions

Two research questions were identified in this descriptive study:

1. What are the dimensions of the concept source credibility of a nurse as perceived by a hospitalized patient?

2. Which factoring rotation, orthogonal or oblique, provided the more accurate, informative interpretation of the credibility data obtained by administering a semantic differential instrument to hospitalized patients?

### Definition of Terms

The concepts of patient, nurse, trust, communication, perception, and source credibility are defined below. The dimensions of the concept source credibility were identified from the communication literature and defined as possible dimensions of the source credibility of a nurse. The data were factor analyzed using both

orthogonal and oblique rotations, and these terms were defined.

1. Patients--individuals, both male and female, who were hospitalized for a minimum of 2 days on a medical-surgical unit in 1 of 2 major North Dallas hospitals.

2. Nurses--licensed vocational nurses (LVNs) or registered nurses (RNs) currently engaged in the practice of nursing on any shift of a medical-surgical unit in 1 of 2 major North Dallas hospitals.

3. Trust--patient's reliance upon the behavior of a nurse in order to achieve the highest level of health in a hospital setting.

4. Communication--both verbal and nonverbal and involved the exchange of a wide variety of meaningful symbols between a nurse and a patient; and these symbols are composed of sounds, visual signs, touch, taste, and smell (Sierra-Franco, 1978). Therapeutic communication was defined as a planned, effective interaction that is consciously used to influence the patient in the direction of his highest level of health (Hein, 1980).

5. Perception--the process by which a patient constructs an impression of the actions, qualities, or attributes of a nurse through interpreting aspects of the nurse's appearance and behavior (Delia, 1976).

6. Source credibility--the evaluation of a nurse (source) by a patient (receiver) as to the perceived believability and acceptability of a nurse as a source.

7. Dimensions of Source Credibility--

(a) Expertness relevant to nursing practice deals with a nurse's perceived quality of pertinent information, degree of ability or skill, or validity of judgment.

(b) Reliability of a nurse may be perceived as dependability, predictability, or consistency.

(c) Intentions toward the listener (patient) are perceived as favorable or unfavorable.

(d) Dynamism of the nurse as perceived by the patient is the communication behavior that appears more active than passive or more aggressive than meek.

(e) Trustworthiness (character) of a nurse could be defined in terms of the patient's perception of a nurse as right or wrong, honest or dishonest, trustworthy or untrustworthy, just or unjust, friendly or unfriendly, and pleasant or unpleasant.

(f) Authoritativeness (competence) of the nurse is perceived by the patient in terms of the nurse's training, skills, information level, qualifications, and intelligence.

(g) Objectivity of the nurse is perceived by the patient as to whether the nurse is open-minded or close-minded.

8. Factor Analysis--a statistical technique that rearranges and reduces data to the underlying pattern of relationships observed in the data, to identify the interdependencies among a set of variables, and to determine the factor structure of an identified concept (Nunnally, 1978).

9. Orthogonal Rotation--requires that factor axes be at right angles to each other, and, therefore, the factors are uncorrelated and the solution is called an "orthogonal" solution (Comrey, 1973). Varimax is one type of orthogonal rotation where the gamma value is 1. The varimax rotation was used in this study.

10. Oblique Rotation--exists when the angles between the factor axes depart from  $90^\circ$ , and the factors are no longer uncorrelated with each other. This solution is referred to as an "oblique" solution (Comrey,



1973). The direct oblimin is a type of oblique rotation with a gamma value of 0 that was used in this study.

### Limitations

There were two limitations identified in this study. The first limitation dealt with the sample size which consisted of 150 subjects. Nunnally (1978) stated that 5-10 subjects should be used for every research variable. This study utilized a semantic differential instrument with 55 scales (variables). Since there were 55 variables in this study the recommended sample size was 275-550 subjects. As will be discussed in the review of literature, the majority of the communication researchers did not meet Nunnally's (1978) requirements for sample size, and by comparison to these studies, the sample of 150 subjects was not unusual.

The second limitation dealt with the responses patients (subjects) made on the semantic differential instrument. In making these responses, possibly patients were making the most socially accepted response rather than the response that most accurately depicted their perceptions of the source credibility of a nurse.

Summary

The problem of this descriptive study was two-fold: (a) the identification of the dimensions of the concept source credibility of a nurse as perceived by a hospitalized patient, and (b) the comparison of the orthogonal and oblique factoring rotations in analyzing the data obtained from a semantic differential instrument administered to hospitalized patients. The conceptual framework for this research problem demonstrated the relationship between the concepts trust communication, perception, and source credibility. The perceived source credibility of a nurse by a patient does influence the trust relationship and communication between a nurse and a patient. There were no known previous source credibility studies done in nursing, and the identification of the dimensions of a credible nurse as perceived by a hospitalized patient provided valuable information for nursing practice and education. The comparison of the orthogonal and oblique solutions determined the rotation that most effectively identified the dimensions of the source credibility of a nurse. This study was an initial step toward empirically determining the criteria used by a hospitalized

patient to evaluate the credibility of a nurse as a source of communication.

## CHAPTER 2

### REVIEW OF THE LITERATURE

The review of the literature includes a discussion of the concepts of the conceptual framework: source credibility, trust, communication, and perception. Significant information regarding these concepts was included to provide a knowledge base for the research problem.

Following the discussion of the preceding concepts is a summary of the recent studies conducted in the field of communication to determine the dimensions of the concept source credibility. The summary of each study includes a discussion of the research instrument, subjects, setting, factor rotation identified, dimensions (factors) of source credibility, and the total variance explained by the source credibility factors.

This chapter also includes a discussion of factor analysis. The factor analysis information includes a discussion of the orthogonal and oblique rotations, and the concerns encountered in using factor analysis in source credibility research. Also, the generalizability of the results obtained with factor analysis in source

credibility research is discussed. The chapter concludes with a discussion of the semantic differential instrument.

### Source Credibility

For over 2,000 years students of communication have attempted to identify the underlying dimensions or factors of a receiver's evaluation of a source's credibility (Applbaum & Anatol, 1972). Source credibility continues to be an abstract concept that requires additional investigation. The concept source credibility and ethos have been used interchangeably in the literature, so a review of relevant literature includes both concepts.

The concept ethos has been given theoretical consideration since Aristotle (cited in Cooper, 1932) identified that the ethos of a source was essential to effective communication. Thus, Aristotle suggested that ethos, evaluation of a source by a receiver, is based upon a receiver's perception of three characteristics of a source: (a) intelligence (correctness of opinions); (b) character (reliability, honesty); and (c) goodwill (favorable intentions toward the receiver) (Cooper, 1932). Sattler (1947) analyzed Aristotle's

work and further defined these three characteristics. Intelligence and character were composed of the virtues of liberality, justice, courage, temperance, magnanimity, magnificence, prudence, gentleness, and wisdom. The characteristic goodwill was concerned with the genuine interest in the welfare of listeners, and it is also an inclusive term for all respected qualities discerned in a speaker (Sattler, 1947). These three characteristics (a) intelligence, (b) character, and (c) goodwill, are important dimensions that a patient needs to perceive in a nurse as a communication source.

Andersen and Clevenger (1963) summarized the experimental research in ethos, and in their summary, they defined ethos as the image held of a communicator at a given time by a receiver--either one person or a group. Andersen and Clevenger (1963) concluded their summary of ethos research with:

Despite the great number of experimental studies relevant to ethos, the scope of this concept is such that findings are not yet sufficiently numerous and sophisticated to permit definitive conclusions.

The finding is almost universal that the ethos of the source is related in some way to the impact of the message on the receiver.  
(p. 77)

Numerous techniques have been used to measure ethos: among these are the semantic differential, linear rating scales, Thurstone scales, prestige indexes, ranking, and sociograms (Andersen & Clevenger, 1963). Each of these instruments has been effective in measuring some aspect of ethos (source credibility), but no instrument has been accepted as a standard measure of the concept ethos. Also, additional research is required to determine the dimensions of ethos, and to assess how the perceived ethos of a source by a receiver influences the communication process. Ethos is a complex concept that influences the communication process.

Hovland et al. (1953) theorized that source credibility is (a) the extent to which a communicator is perceived to be a source of valid assertions (expertness) and (b) the degree of confidence in a communicator's intent to communicate the assertions he/she considers most valid (trustworthiness). A variety of characteristics of a communicator may evoke attitudes related to expertness. Hovland et al. (1953) suggested that research on the factors of the communicator's age, leadership in a group, and similarity of social

background with the receiver may involve the expertness factor to some extent. This study indicated that additional research might identify different dimensions of the concept source credibility besides expertness and trustworthiness. With respect to the trustworthy dimension of source credibility, there has been extensive speculation about the characteristics of communicators which evoke attitudes of trust or distrust. One general hypothesis is that when a person is perceived as having a definite intention to persuade others, the likelihood is increased that this person will be perceived as having something to gain and, hence, is less worthy of trust. This hypothesis has received support in the research by Hovland et al. (1953). The perceived credibility of a source by a receiver does appear to influence the trust relationship between a source and a receiver.

Also, Hovland et al. (1953) in their studies of the influence of source credibility in communication identified that communication is more persuasive when the source is perceived as credible by the listener. Thus, the perceived source credibility of a nurse by a patient would influence the nurse-patient trust



relationship and the persuasiveness of a nurse's communication with a patient.

### Trust

Giffin (1967) developed a trust paradigm in the communication process and noted that there were degrees of interpersonal trust (trust of others) and intrapersonal trust (trust of oneself). Giffin's (1967) trust paradigm in the communication process included:

1. Trust of a speaker by a listener, called "ethos" by Aristotle and "source credibility" by Hovland, Janis, and Kelly (1953).
2. Trust of a listener by a speaker, called "sense of psychological safety" and "acceptance" by Rogers (1951) and "perceived supportive climate" by Gibb (1961).
3. Trust one has of himself as a speaker--confidence that one has in himself to communicate in a way one desires or expects of himself, possibly related to speech fright or stage fright.
4. Trust one has of himself as a listener--confidence in one's ability to hear and to understand. (p. 106)

This study deals with the first aspect of Giffin's (1967) trust paradigm. Giffin (1967) theorized that trust of a speaker by a listener (source credibility) includes a listener's perception of the following characteristics of a source: expertness, reliability, intentions, dynamism, and personal attraction. Giffin (1967) defines these characteristics as indicated:

(a) expertness deals with the source's perceived quantity of pertinent information, degree of skill, or validity of judgment; (b) reliability is the source's perceived dependability, predictability, or consistency; (c) intentions of a source as perceived by a receiver are favorable or unfavorable; (d) dynamism of a source as perceived by receiver deals with a source's behavior being more active than passive; and (e) personal attraction deals with a receiver's perception of a source as physically attractive.

In summary, source credibility does appear to be an important aspect of trust in the communication process. A model of trust (Figure 2) was designed and included in this study to show the relationship between the concepts trust, communication, perception, and source credibility. The trust model is build on the definition: trust is the reliance upon the behavior of another person in order to achieve a desired outcome in a risky situation (Giffin, 1967). In applying the trust model to a nurse-patient relationship, the patient is in a risky situation because of an altered level of health that requires hospitalization, and the patient relies upon the nurse to help him regain his highest level of

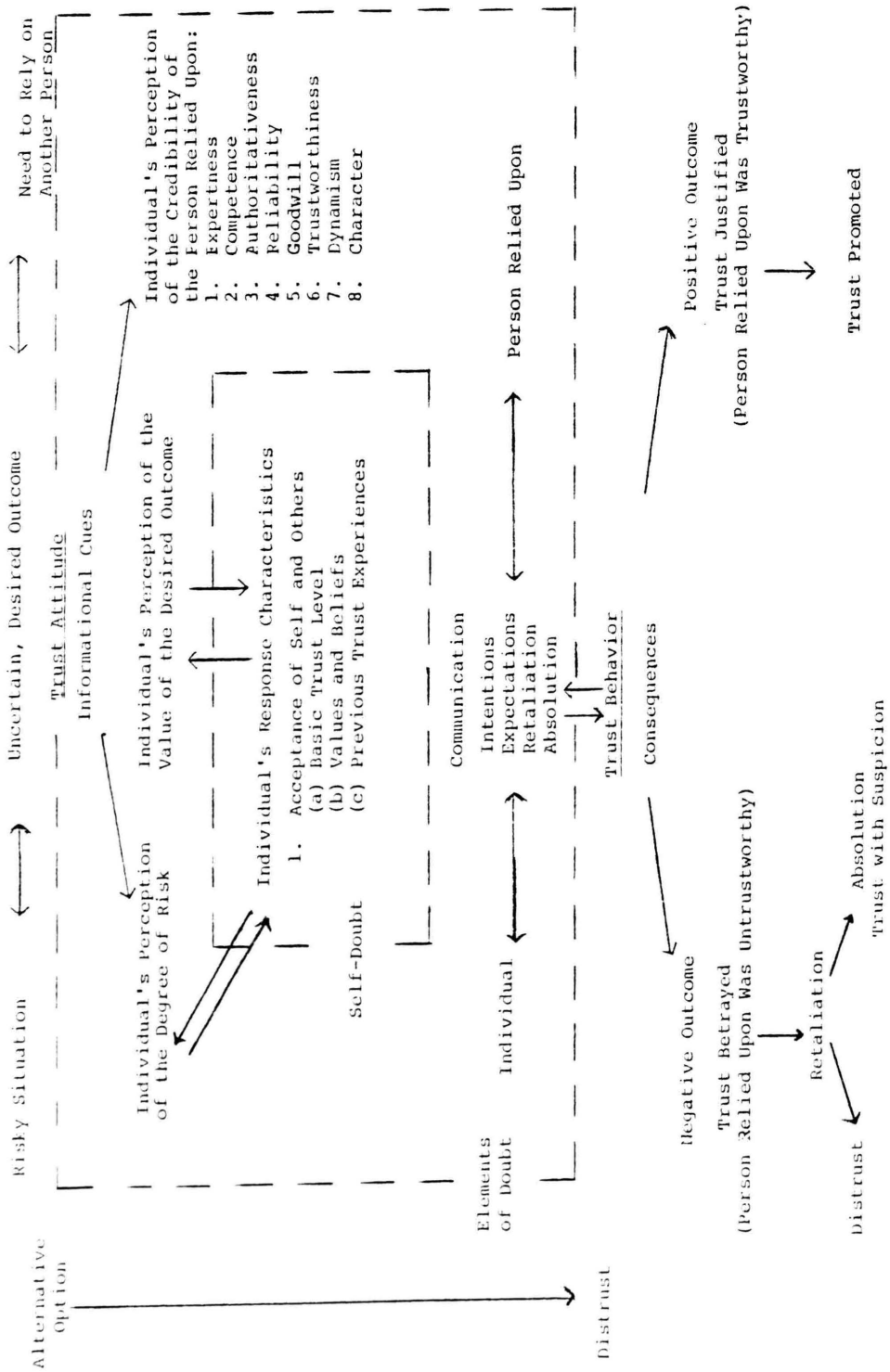


Figure 2. Model of the concept trust.

health. The patient has a trust attitude that always contains elements of doubt, and this attitude is influenced by the patient's: (a) perception of the severity of his illness; (b) perception of the value of regaining his health; (c) perception of the credibility of the nurse he relied upon; and (d) basic trust level, values, beliefs, and past trust experiences with a nurse in a hospital setting. The patient's trust attitude is promoted if the nurse and patient communicate their intentions, expectations, and methods of retaliation and absolution (Loomis, 1959). The patient can exhibit trusting behaviors toward the nurse and the consequences can be twofold: a positive outcome, where the patient's trust was justified by relying on the nurse, and the patient's trust is promoted; or a negative outcome, where the patient's trust was betrayed in relying on the nurse, and the patient retaliated with distrust or trust with suspicion. The patient has an option of risking a trust relationship with a nurse as described previously, or the alternative option of distrusting the nurse.

Trust is an extremely complex concept that is very difficult to measure (Deutsch, 1973), but it is also an

essential aspect of the nurse-patient relationship. Determining the dimensions of the concept source credibility is an initial step in describing and measuring the concept trust. The trust model identified expertness, competence, authoritativeness, reliability, goodwill, trustworthiness, dynamism, and character as essential dimensions of a source's perceived credibility. Extensive research on the concept source credibility of a nurse as perceived by a hospitalized patient could be very beneficial in promoting a trusting, therapeutic nurse-patient relationship.

#### Communication

A receiver's perception of a source's credibility is a function of the communication process. Berlo (1960) developed a communication model that clearly identified the elements of the communication process. Since this study deals with the nurse's credibility as a source in the communication process, it is necessary to define the elements of the communication process. There are six terms that are essential to the communication model, and the following discussion includes the definitions of these terms for this study. A source is a person (nurse) or group of persons (nurses) with

ideas, needs, intentions, information, and a purpose for engaging in communication with a receiver (hospitalized patient). The purpose of a source is expressed in the form of a message. In human communication, a message is behavior that is available in physical form and is translated into a code or a systematic set of symbols. A nurse uses verbal and nonverbal communication to provide messages to a patient. The encoder takes the idea of the source and puts it in a code, performed by the vocal mechanisms (which produce the oral words, cries, musical notes, etc.); by the muscles in the hands (which produces the written word, pictures, nursing actions, etc.); and by the muscle systems elsewhere in the body (which produce gestures of the face or arms, postures, etc.). The fourth term is channel, which is the medium or a carrier of messages. The person or persons at the other end of a channel can be called the communication receiver (patient) or the target of communication. The final term is a decoder; the decoder is needed by a receiver to retranslate the message into a form that a receiver can use (Berlo, 1960).

Of special interest in this study will be a patient's (receiver's) perception of the credibility of a nurse (source) in the communication process. Berlo (1960) in his theory of communication identified the importance of source credibility in effective communication. Berlo outlined the need to identify the dimensions of a source that make him/her credible to a receiver. Some sources appear to have certain characteristics that add to the persuasive impact of their messages.

There are levels at which a receiver reacts to a source and message in the communication process. Miller (1974) describes six levels at which a receiver (person) in the communication process reacts. The first level involves what a person sees and hears, the auditory and visual stimuli of the communication source; and the person responds to the stimuli--not the message itself. At the second level, the person knows the verbal and nonverbal language and can match it as a phonemic pattern. The distinction between the first and second levels of communication can be made in the following manner; the first level is an affective or emotional response, where the person

responds independently of the cognitive meaning of the stimuli. The second level deals with perception, where the person interprets the stimuli in light of his previous experience.

The third level is acceptance of the communication or the grammatical evaluation of the message. The fourth level is interpretation, which is the semantic interpretation that a person gives a communication source and message. The fifth level deals with the person understanding the information communicated, and the sixth level deals with whether the person believes the information and the source. This study is an attempt to evaluate an aspect of the sixth level of communication, which is concerned with the perceived credibility or believability of a communication source by a receiver. The dimensions of the source credibility of a nurse as perceived by a hospitalized patient were researched and identified for a specific sample and setting.

### Perception

This study was concerned with a patient's perception of a nurse as a credible source. The concept perception was described in terms of the work of four theorists:



(a) Allport (1955), (b) Delia (1976), (c) Kelly (1955a, 1955b), and (d) Tagiuri (1969). These four theorists conceptualized perception in a similar manner, and a combination of their theoretical ideas produced a more comprehensive view of the concept perception.

Tagiuri (1969) defined a person's perception as a process by which an individual comes to know and to think about other persons, their characteristics, qualities, and inner states. The process of knowing others can be explained with an inference theory. This theory states that we infer the state or characteristics of another person because circumstances, behavior, or sequence of events are similar to those we have met in previous situations, and with which we ourselves have had personal experience (Tagiuri, 1969). Thus, the perception a patient has of a nurse is highly influenced by the similarity of events and behavior that a patient can associate.

Allport (1955) described the perceptual act as a dynamically operating structure, that presents the picture of a self-delimited and self-contained structure of ongoings and events. A patient's perception of a nurse is constantly changing, and the structure of

this perception is limited to the cognitive functions of a patient but is influenced by the ongoing and events around him.

Kelly (1955a) also described each individual as having a structure of perception or a unique cognitive method of viewing the world that he called constructive alternativism. Kelly (1955a) described man's perception in the following way:

Life is characterized, not merely by its abstractability along a time line, but, more particularly, by the capacity of the living thing to represent its environment. Especially is this true of man, who builds construction systems through which to view the real world. The construction systems are also real, though they may be biased in their representation.  
(p. 43)

Kelly (1955a) further stated:

The constructs which are hierarchically organized into systems are variously subject to test in terms of their usefulness in helping the person anticipate the course of events which make up the universe. The results of the testing of constructs determine the desirability of their temporary retention, their revision, or their immediate replacement. (pp. 43-44)

Based on Kelly's (1955b) theory, each patient has a system of constructs, which is constantly being revised, that determines a patient's perception of a nurse as a credible source.

Delia (1976) expanded on an aspect of Kelly's (1955a) theory and developed a constructivist theory of interpersonal perception. Delia noted that a constructivist perspective implies that an individual's understanding of other people is always in terms of images or impressions and is never a reflected reality. Delia (1976) wrote:

We can never directly apprehend another's intentions, inner qualities, or attitudes. Rather, in interpersonal perception the individual constructs an impression of the actions, qualities, or attitudes of the other through interpreting aspects of the other's appearance and behavior within particular cognitive dimensions. (p. 367)

Delia (1976) noted that understanding (defining) the concept credibility can serve as a basis for research into credibility as a distinct aspect of the general constructive process of interpersonal perception. In understanding credibility, the rhetorical situations and credibility attributions must be outlined. Delia (1976) stated that credibility refers to attributions concerning a communicator, which are the basis for acceptance or rejection of his assertions; and credibility is only defined in conjunction with a rhetorical situation. Rhetorical situations include all situations in everyday life that require an individual to

make judgments of what to believe from whom (Delia, 1976).

This study determined the dimensions of the source credibility of a nurse as perceived by a hospitalized patient. A patient's perception of a nurse's credibility involves a cognitive act, where a patient, with an individual system of constructs, judges a nurse's credibility during hospitalization, which includes many rhetorical situations. The patient's construction system is subject to change over time, so a patient's perception of a nurse is subject to change over time. Measuring a patient's perception of a nurse is an initial step in determining the dimensions of a credible nurse. The semantic differential is an instrument developed to measure the meaning of a concept in terms of a subject's perception, and the semantic differential involves a subject judging a concept on a series of selected scales (Osgood et al., 1965).

#### Summary of Source Credibility Studies

In the last 25 years, a number of communication researchers have emphasized the importance of the concept source credibility in the communication process and have

attempted to identify the dimensions of the concept. The following section of the review of the literature includes a summary of the significant source credibility studies. The summary of each study will include: (a) the type of instrument used and how the instrument was developed, (b) the number and type of subjects used in the identified settings, (c) the factor rotation(s) and (d) the dimensions (factors) of source credibility identified, and (e) the amount of total variance explained by the factors. The studies are presented in the order of their significance in the communication field, with the most significant study being presented first.

Berlo et al. (1969) conducted one of the most highly quoted of the source credibility studies in the field of communication. The instrument utilized was composed of semantic differential scales (bipolar adjectives) to measure the dimensions of source credibility. Some of the adjective pairs were selected from a review of the literature, but most of the scales were obtained from interviews with residents of the city of Lansing, Michigan. There were two studies conducted.

The subjects for the first study were 91 Michigan State students and student wives, who were asked to

evaluate 18 communication sources using 83 semantic differential scales. The varimax (orthogonal) rotation was performed on the data, and 4 factors (dimensions) were identified as being the most descriptive of the concept source credibility. These 4 factors accounted for 62% of the total variance of the 83 scales: (a) where the safety factor accounted for 27.8% of the variance, (b) qualification accounted for 24.01% of the variance, (c) dynamism accounted for 7.78% of the total variance, and (d) sociability accounted for only 2.02% of the total variance. The last factor was questionable since it only explained 2% of the variance, and only two bipolar adjectives had their highest loadings on it. A factor should explain at least 3% of the total variance in order to be retained as part of the factor structure (Rummel, 1970).

In their second study, Berlo et al. (1969) used a reduced instrument of 35 semantic differential scales. The subjects were 117 randomly selected adults from the Lansing, Michigan population, who were asked to evaluate 12 communication sources. Factor analysis, with a varimax rotation was used to analyze the data. Three factors accounted for 60% of the total variance: (a) safety

accounted for 33.80%; (b) qualification for 15.62%, and (c) dynamism for 10.51%.

In conclusion, Berlo et al. (1969) emphasized the multidimensionality of the concept source credibility, and they also supported the idea that this concept should be defined in terms of the perceptions of a receiver rather than objective characteristics of a source. Additional testing of the stability and generalizability of the concept credibility needs to be done across sources, contexts, respondents, and cultures (Berlo et al., 1969).

McCroskey (1966) employed two instruments, Likert scales and semantic differential scales, to measure the dimensions of the concept ethos. These 44 scales were developed from terms obtained from a survey of speech and psychology literature using the reference terms ethos, credibility, and prestige. The subjects in the experiment were 143 students enrolled in Speech 200 at Pennsylvania State University.

Factor analysis using the orthogonal rotation was performed on the data. Two significant factors were identified: (a) the authoritativeness factor, which accounted for 47% of the total variance; and (b) the character factor, which accounted for 29% of the total variance. In the McCroskey study, 76% of the total

variance was explained by these 2 factors. McCroskey (1966) concluded that the scales he used were capable of reliably measuring either initial or terminal ethos on the two dimensions of authoritativeness and character.

Tucker (1971a) responded to McCroskey's (1966) study with the following comment:

the six semantic differential scales extracted by McCroskey would qualify as "markers." Since McCroskey's original investigation was comprehensive, there is strong reason to believe that his scales will continue to load highly on the factor under scrutiny--i.e., either authoritativeness or character. (McCroskey, cited in Tucker, 1971a, p. 129)

Marker variables (scales) are salient, or highly loaded, variables which are carried from one factor study to another as a basis for identifying recurrent factors (Coan, 1966).

Cattell (1966) stated that the use of marker variables gave a recognizable factor background as a researcher spreads into new areas. On the use of marker variables, Cattell (1966) wrote:

the factor analyst who plans skillfully will always carefully choose a minimum of two good marker variables for each common factor relevant to his research. They will be variables that previous research has shown to load highly on the factor being considered though sufficiently different in other respects, and lacking much loading (at least jointly) on any other factor. (p. 231)



Thus, the following scales developed by McCroskey (1966) could be used as marker variables in a credibility study. For the authoritativeness factor the scales were reliable--unreliable, informed--uninformed, qualified--unqualified, intelligent--unintelligent, valuable--worthless, and expert--inexpert. For the character factor the scales were honest--dishonest, friendly--unfriendly, pleasant--unpleasant, unselfish--selfish, nice--awful, and virtuous--sinful. In addition to the marker scales, the researcher also needs to include specific scales relevant to the factor study being conducted, to determine a new, emerging factor structure (Tucker, 1971a).

Marker variables were included in this study in order to tie the results of this study to existing scientific knowledge. The marker variables (scales) provided a factor background for determining the dimensions of the source credibility of a nurse as perceived by a hospitalized patient.

Whitehead (1968) utilized an instrument of 65 semantic differential scales, selected from previous studies, to measure the dimensions of ethos (source credibility). The subjects, 152 students enrolled in an

introductory speaking course, were asked to rate two speakers solely on the basis of two taped introductions. One source was introduced as highly credible, and another source was introduced as low in credibility. The data obtained from the semantic differential instrument were separated into high and low credibility treatments, and a factor analysis employing an orthogonal rotation was performed on each set of data.

Sixteen factors accounted for 69.82% of the common variance in the high and 71.34% in the low credibility situations. The percentage of total variance accounted for was not included. In the high credibility situation only the first 4 factors were named, because the 12 remaining factors each accounted for less than 3% of the common variance. The 4 factors were named: (a) trustworthiness, which explained 30.3% of the common variance; (b) professionalism (competence), which explained 7.1% of the common variance; (c) dynamism, which explained 3.8% of the common variance; and (d) objectivity, which explained 3.2% of the common variance.

In the low credibility situation, the first 4 factors were named, and the remaining 12 factors each explained less than 3% of the common variance. The 4

factors were identified with the proportion of the common variance they explained: (a) trustworthiness, 28.7% of the common variance; (b) dynamism, 9.4% of the common variance; (c) professionalism (competence), 4.5% of the common variance; and (d) objectivity, 3.1% of the common variance.

Whitehead (1968) stated that scales used to measure the dimensions of credibility should load high on factors they are measuring and have negligible loadings on all other factors. This refers to the "purity" of a scale and the "purity" criteria is frequently a .30 loading (Cattell, 1966). If this purity criteria is met, a scale will load high on one factor but will load less than .30 on all other factors. This "purity" criteria is essential in the orthogonal rotation, where independent, uncorrelated factors are identified.

Whitehead (1968) also noted that the scales with high loadings should appear in both high and low credibility factor structures if they are to distinguish between communicators of high and low credibility. The following are scales that met these qualifications for the measurement of each of the 4 factors accounting for more than 3% of the variance.

The trustworthiness factor is best measured by right--wrong, honest--dishonest, trustworthy--untrustworthy, and just--unjust. The professionalism (competence) factor is indexed by the experienced--inexperienced and has professional manner--lacks professional manner scales. The best scales for measuring the dynamism factor are aggressive--meek and active--passive. The objectivity factor can be best measured by the scales open-minded--closed-minded and objective--subjective. (Whitehead, 1968, p. 63)

The use of these scales in developing an instrument would increase the likelihood of distinguishing between high and low credibility sources.

Whitehead (1968) concluded that source credibility or ethos can no longer be regarded as simply a three-factor structure composed of expertness, trustworthiness, and dynamism; thus, there is a need to extend the credibility model that is presently used. Whitehead also indicated the need for further research with new scales and subjects, while recognizing that a particular population determines the final factor analysis; and the scales are most appropriately applied to populations for which they were selected. This study reinforced the need to develop an instrument of specially selected scales in order to measure the dimensions of the source credibility of a nurse as perceived by a hospitalized patient.

Schweitzer and Ginsburg (1966) developed a two-phase study to determine the factors of communicator

credibility. In Phase I of their study, 24 subject, students from an upper division class in Educational Psychology, were asked to list relevant characteristics of several highly credible people with whom they had had personal contact. An instrument of semantic differential rating scales was constructed from the lists generated in Phase I. In Phase II, the students were asked to make judgments of the credibility of both highly credible speakers and speakers of low credibility by using the bipolar adjectives. A factor analysis of the data using a normalized varimax rotation, revealed 6 factors as most descriptive of the concept of source credibility. The 6 factors were trustworthiness, inspiration and stimulation, professionalism, straightforwardness, open-mindedness, and adeptness at the use of the English language; and these factors explained 74.2% of the total variance.

Schweitzer and Ginsburg (1966) concluded that source credibility was a much more complex concept than was indicated by previous research, and that the perceived characteristics that underlie low credibility are not necessarily the opposite of the characteristics which underlie high credibility. The results from this study

also strongly suggested that the particular cue, or perceived characteristics, which influence an individual receiver's judgment of credibility will vary across communication contexts and across populations. Thus, the perceived characteristics of a credible nurse will differ from the perceived characteristics of a credible public speaker.

Applbaum and Anatol (1972) did a study to determine if the factor structure of source credibility was a function of the speaking situation. The instrument used consisted of 31 semantic differential scales selected from the studies of McCroskey (1966), Berlo et al. (1969), and Whitehead (1968). Four speaking situations were selected: (a) a lecture delivered in a classroom; (b) a speech delivered in a classroom; (c) a speech delivered to a social organization; and (d) a sermon delivered in a church. The subjects, 91 students enrolled in basic group discussion courses, were asked to rate "ideal speakers" in the four communication situations.

A computer program of factor analysis with an orthogonal rotation was used to analyze the data. In the lecture in a classroom (Situation A), 8 factors accounted for 73.9% of the total variance. In the speech in a

classroom (Situation B), 7 factors accounted for 63.2% of the total variance. In the speech to a social organization (Situation C), 6 factors explained 64.9% of the total variance. In the sermon in a church (Situation D), 7 factors explained 74.1% of the total variance.

In conclusion, Applbaum and Anatol (1972) reported that the difference in factor structures of source credibility for the four situations indicates that there are differences between the receiver's perceptions of what qualities a speaker should possess in different situations. These differences are reflected in the specific factors that arise and the amount of variance explained by these factors in the various situations. The dimensions of the source credibility of a nurse as perceived by a hospitalized patient might be expected to vary from one situation to another.

Applbaum and Anatol (1973) administered an instrument of 31 bipolar semantic differential scales, that were selected from previous studies. The subjects were 50 students enrolled in basic group discussion courses. The subjects were asked on two separate occasions to rate a high credibility source-topic relationship-- Billy Graham speaking on religion, and a low credibility

source-topic relationship--Sam Yorty speaking on civil rights. A factor analysis with an orthogonal rotation was performed on the data.

The intent of this study was to determine if the factor structure of source credibility would vary over situation and time. For the high credibility source on the first administration of the semantic differential instrument, 7 factors explained 76.9% of the total variance. On the second administration of the instrument, which was 1 week later, 5 factors explained 70.4% of the total variance. For the low credibility source on the first administration of the instrument, 5 factors explained 67.4% of the total variance. On the second administration, 4 factors accounted for 68.6% of the total variance.

In conclusion, Applbaum and Anatol (1973) noted that scales representing the factors of source credibility did change over situations. Also, the factor structure, including the number of significant factors and the amount of variance accounted for by these factors, changed over time.

The studies of Applbaum and Anatol (1972, 1973) supported Tucker's (1971a) statement that factors



identified by factor analysis cannot provide an underlying factor structure that will remain unchanged over subjects, time, cultures, or experiments. The dimensions of source credibility of a nurse as perceived by a hospitalized patient might be expected to vary over subjects, time, cultures, and/or experiments.

Baudhuin and Davis (1972) developed an instrument of 25 semantic differential scales that were selected from previous research studies. The instrument was utilized by 281 subjects, college students, to evaluate a low credibility and a high credibility source. The data obtained were subjected to factor analysis using the principle factors technique followed by an orthogonal rotation, and the analysis showed evidence of noncomparability in individual scale meanings and the factor structures. One explanation for this is concept-scale interaction.

Osgood et al. (1965) wrote the following on concept-scale interactions.

One general principle governing this concept-scale interaction seems to be that the more evaluative (emotionally loaded?) the concept being judged, the more the meaning of all scales shifts toward the evaluative connotation. This may be phrased as a more general hypothesis: In the process of human judgment, all scales tend to shift in meaning toward parallelism with the dominant (characteristic) attribute of the concept being judged. (p. 187)

Thus, in analyzing source credibility studies, concept-scale interaction is noteworthy.

Four factors were identified in the Baudhuin and Davis (1972) study: (a) character, (b) authoritative-ness, (c) interpersonal attractiveness, and (d) dynamism. The common variance explained by these 4 factors was outlined for the high and low credibility sources, but the total variance explained by the factors was not found.

The researchers concluded that the random selection of semantic differential scales from previous studies for the measurement of source credibility was not valid. Careful selection of scales must be done for each situation, and factor analysis procedures must be instigated to determine the reliability of the scales before experimental manipulation is planned. The Baudhuin and David (1972) study stressed the importance of developing a semantic differential instrument that will apply to the area being studied, and that this instrument be tested for reliability before being applied to experimental situations. In determining the dimensions of the source credibility of a nurse as perceived by a hospitalized patient, special attention was given to

the development of the semantic differential instrument; the reliability of the instrument was determined; and the concept-scale interaction was discussed.

The next three studies: Tuppen (1974), McCroskey, Holdridge, and Toomb (1974), and Liska (1976) contain unique aspects. Tuppen (1974) utilized the oblique rotation rather than the orthogonal. McCroskey et al. (1974) measured the source credibility of a classroom teacher rather than a public speaker. Liska (1976) did a comparison of orthogonal and oblique rotations to determine which rotation method would more effectively and accurately analyze the data.

Tuppen (1974) developed an instrument of 28 bipolar-adjective scales (semantic differential scales) and 36 Likert scales. The majority of these scales was selected from previous studies. The subjects were 101 students in a college behavioral science course, who utilized Tuppen's scales to rate 10 communication sources. The data were factor analyzed utilizing an oblique rotation rather than an orthogonal rotation, to determine if the oblique rotation fit the data better and offered a more accurate interpretation of the dimensions of the concept source credibility.

Cattell (1978) and Rummel (1970) suggested that an oblique rotation, which yields information about relationships among factors, is more empirically realistic and may be more useful in theory building. Also, there is no empirical evidence that the factors that compose the concept source credibility are uncorrelated, yet the majority of the researchers forced the factors to be uncorrelated by the use of an orthogonal rotation. A comparison of the factor structures from the orthogonal rotation and the oblique rotation would determine which rotation would yield the most significant information.

Tuppen (1974) identified 5 dimensions of the concept source credibility: (a) trustworthiness, (b) expertise, (c) dynamism, (d) coorientation, and (e) charisma. The total variance explained by the factors was 63%. Tuppen concluded that the oblique rotation represented a more comprehensive and accurate interpretation of the dimensions of the concept source credibility.

McCroskey et al. (1974) developed an instrument of 46 semantic differential scales by surveying previous research studies. These semantic differential scales were used by 642 subjects (students), who were divided into 37 sections with 37 instructors, to rate their

instructor. The students were also asked if they would like that instructor again, as a way of building predictive validity into the instrument. The results showed only marginal support for the predictive validity of the instrument. The factor analysis utilizing an orthogonal rotation yielded 5 dimensions of the concept source credibility that explained 62% of the total variance: (a) character, (b) sociability, (c) composure, (d) extroversion, and (e) competence. These were the results from the first sample, and two additional samples were drawn with similar result.

In conclusion, this article suggested a means of determining the predictive validity of a research instrument, although the data in this particular experiment were not supportive of the predictive validity. This study utilized semantic differential scales to identify the dimensions of source credibility of teachers, and all the other studies cited dealt with identifying the dimensions of source credibility of public speakers.

Liska (1976) identified that credibility criteria will differ from one topic-situation to another. Liska administered 51 semantic differential scales to subjects in 4 topic-situations, and the analysis of data revealed

that the factor structures were different for the 4 topic-situations. The instrument, 51 semantic differential scales, was compiled based on interviews with subjects from a population of communication students at the University of Colorado. Nine of the 51 scales were marker scales representing factors identified by Whitehead (1968), McCroskey (1966), and Berlo et al. (1969). Cattell (1966) indicated that marker variables, scales representative of previous researchers' source credibility factors, give a recognizable factor background as individuals expand into new areas of research. The marker scales included in this study were: active--passive, fast--slow, emotional--calm, kind--cruel, honest--dishonest, open-minded--closed-minded--competent--incompetent, important--unimportant, and experienced--inexperienced. The subjects were 212 college students enrolled in rhetoric classes at the University of California.

Liska (1976) compared the oblique rotation with the orthogonal rotation, and found the factors to be nearly uncorrelated; thus, the factor structures of the oblique rotation were almost identical to those of the orthogonal rotation. But only a comparison of the two rotations

determined that information. The factor structures, which include the number of factors identified and the total variance explained by the factors, were determined for each topic-situation for the orthogonal and oblique rotations. As previously stated, the factor structures were almost the same for the two rotations, because the factors were uncorrelated.

In topic-situation 1, 10 factors explained 62.6% of the total variance. In topic-situation 2, 10 factors accounted for 64.7% of the total variance. In topic-situation 3, 11 factors explained 66.7% of the total variance. In topic-situation 4, 10 factors accounted for 65.3% of the total variance.

In conclusion, Liska's (1976) topic-situation data clearly indicated that the semantic differential scales used to measure the dimensions of the source credibility of a nurse as perceived by a hospitalized patient cannot be developed by pulling bipolar adjectives from the studies of previous researchers. The bipolar adjectives must be obtained through interviews with hospitalized patients and from a review of the relevant literature. A limitation of Liska's (1976) study was that the scales were developed from student interviews at the University

of Colorado, and the instrument was utilized by students at the University of California; this limitation was identified by the researcher. Liska (1976) also stressed the need to compare orthogonal and oblique rotations to determine the rotation that would most effectively analyze the data for a given study.

In summary, the research findings of the cited studies indicate that there are a number of dimensions, ranging from 2 factors to 16 factors, that have been identified to compose the concept source credibility. The dimensions of expertness, trustworthiness, and dynamism were identified most frequently by researchers. Other dimensions of qualification, sociability, safety, objectivity, authoritativeness, character, professionalism (competence), open-mindedness, straight-forwardness, interpersonal attractiveness, charisma, composure, extroversion, inspiration and stimulation, coorientation, and adeptness at the use of the English language were identified by at least one researcher. The exact dimensions of the concept source credibility have not been clearly identified, and additional research is indicated.

Seven major points were identified in summarizing the source credibility studies: (a) marker variables



(scales) need to be included in the development of a semantic differential instrument (Cattell, 1966); (b) source credibility (ethos) is a complex, multidimensional concept (Berlo et al., 1969; Schweitzer & Ginsburg, 1966; Whitehead, 1968); (c) a factor needs to account for more than 3% of the total variance to be considered significant (Cattell, 1966); (d) factor structure can change over time (Applbaum & Anatol, 1973); (e) factor structures can change from one topic-situation to another (Applbaum & Anatol, 1972, 1973; Liksa, 1976); (f) concept-scale interaction exists and needs noting in the analysis of data (Baudhuin & Davis, 1972; Osgood et al., 1965); and (g) a comparison of the orthogonal and oblique rotations is helpful in determining the best rotation solution for a given set of data (Liska, 1976). These points were of significance to this researcher in determining the dimensions of the source credibility of a nurse as perceived by a hospitalized patient.

A limitation was noted that the majority of the studies used college students as subjects; thus, limited information was found on the perceptions of other adults regarding the dimensions of source credibility. The data obtained from college students in university

settings could definitely be different than the data obtained from hospitalized patients in hospital settings. Therefore, it might be anticipated that there would be an identification of different dimensions for the concept source credibility of a nurse as perceived by a hospitalized patient.

The majority of the studies cited did use an orthogonal rotation when factor analyzing the data. Tuppen (1974) and Liska (1976) pointed out the potential for an oblique rotation solution to source credibility studies.

The amount of total variance explained by the factors identified to compose the concept source credibility was outlined by the majority of the studies cited. The amount of total variance explained by the factors ranged from 60% (Berlo et al., 1969) to 76% (McCroskey, 1966).

#### The Use of Factor Analysis in Source Credibility Research

This section of the review of the literature includes a definition of factor analysis, a discussion of the orthogonal and oblique rotations, and some of the concerns encountered in using factor analysis in source

credibility research. This section concludes with a discussion of the generalizability of the results obtained with factor analysis.

Factor analysis is a statistical technique that reduces data to the underlying pattern of relationships observed in the data. In addition, factor analysis identifies the interdependencies among a set of data and determines the factor structure of an identified concept (Nunnally, 1978).

Factor analysis provides construct validity for the construct (concept) being measured. Kerlinger (1973) wrote:

constructs could be defined in two ways: by operational definitions and by constitutive definitions. Constitutive definitions are definitions that define constructs with other constructs. Essentially this is what factor analysis does. It may be called a constitutive meaning method, since it enables the researcher to study the constitutive meanings of constructs-- and thus their construct validity. (p. 686)

The dimensions (factors) identified with factor analysis are the construct validity for the source credibility of a nurse as perceived by a hospitalized patient for this study.

In factor analysis, there are two rotation solutions that can be applied to the data. The majority of the credibility researchers has used the orthogonal rotation.

In an orthogonal rotation, factors are uncorrelated and in an oblique rotation, factors are correlated.

Rummel (1970) described the two rotations:

Orthogonal rotation is a subset of oblique rotations. If the clusters of variables are uncorrelated, then oblique rotation will result in orthogonal factors. The difference between the two modes of rotation, therefore, is not in defining uncorrelated or correlated factors, since the factors of oblique rotation can also be uncorrelated, but in whether this lack of correlation is empirical or imposed on the data by the model. (p. 386)

Rummel (1970) also identified the characteristics of the orthogonal and oblique rotations. The characteristics of an orthogonal rotation include: (a) the inner product of the factor loadings is zero for the rotation of principal axes factors; (b) the resulting factor scores are linearly independent and uncorrelated; (c) the communality of a variable is invariant through an orthogonal rotation; and (d) the ordering of the rotated factors may be completely different from the unrotated solutions.

The major characteristics of the oblique rotation are that: (a) the factor scores will have intercorrelations given by the matrix of factor correlations; (b) a clear distinction is made between factor structure and factor pattern matrices; (c) the factor loadings can be

interpreted as correlations between variable and factor only in the factor structure matrix; (d) in the case of orthogonal factors of a correlation matrix, the loadings can range between +1.00 and -1.00, in the oblique rotation some of the loadings may increase above an absolute value of 1.00; (e) the communality of a variable cannot be computed directly from the oblique loadings as in the orthogonal case; and (f) the percentage of variance accounted for by the factors cannot be computed from the column sum of squared loadings as in the orthogonal case. These characteristics guide a researcher in interpreting the orthogonal and oblique rotations.

There is some controversy over whether orthogonal or oblique rotation is the better approach. Orthogonal rotation is mathematically simpler to handle, and the information obtained from the rotation is easier to interpret (Nie et al., 1975). Oblique rotation generates additional information from the analysis; better defines the clusters of variables; and reduces the possibility of confusion as to which variables are involved in a cluster (Rummel, 1970).

Cattell (1966) and Rummel (1970) argued that the oblique rotation is empirically more realistic, because

the world is more accurately described by correlated factors than independent, uncorrelated factors. In using the orthogonal rotation to determine the perceived dimensions of source credibility, the researcher is stating that a listener's perception of a source's credibility is composed of independent, uncorrelated factors. Thus, the listener's perception is fragmented and uncorrelated in perceiving a source's credibility.

In conclusion, the purpose of this descriptive study was not to advocate the use of one rotation against another. The purpose was to compare these two rotations to determine which rotation most accurately and effectively analyzed the data obtained by a semantic differential instrument administered to hospitalized patients.

The use of factor analysis in source credibility research has led to some concerns. Cronkhite and Liska (1976) identified 5 concerns: (a) scale selection, (b) factor naming, (c) over-reliance on the semantic differential, (d) factor rotation selection, and (d) sample size.

The problem of scale selection deals with the borrowing of scales from other research studies without

theoretical justification (Baudhuin & Davis, 1972; Liska, 1976). Berlo et al. (1969) and McCroskey (1966) have been identified as having developed the best measures of credibility, and many researchers have borrowed scales from these studies to conduct their research. There is no certainty that the scales developed for one research study will identify all the dimensions of source credibility in another situation, for the inclusion and exclusion of certain scales might yield different dimensions (Liska, 1976).

This problem can be easily dealt with by asking a pre-sample of subjects to identify the credibility characteristics of a particular source and using this information to develop a credibility instrument (Berlo et al., 1969; Cronkhite & Liska, 1976). Another pre-sample of subjects would be asked to rate the relevance or irrelevance of the scales selected for measuring the source credibility of a specified communicator. Any scale marked as irrelevant by 30% or more of the subjects would be deleted. The final semantic differential instrument would include the scales found to be relevant by more than 70% of the subjects (Berlo et al., 1969; Liska, 1976).

Another concern is factor naming, where similar names are given to factors that are not the same and are comprised of different scales. It is important to note that factor names can be misleading, and that it is inadequate to compare factors of different studies on the basis of names alone (Liska, 1976). Factor naming is a way of summarizing the type of scales that make up a factor and is very subjective. Before naming a factor, the researcher needs to be familiar with the names of factors identified by previous source credibility studies, and the scales that make up each factor (Comrey, 1973).

The third concern is the over-reliance on the semantic differential in credibility studies (Tucker, 1971b). Tucker (1971b) identified two reasons for the extensive use of the semantic differential:

the speed with which these instruments can be administered, responded to, scored, and statistically analyzed; and the strong intuitive factor, i.e., the apparent ease with which relevant scales can be chosen for a particular concept. (p. 186)

Tucker (1971b) suggested that the use of additional scales might provide more information to determine the dimensions of the concept source credibility. Tucker made two main points regarding the use of the semantic



differential: (a) the researcher needs to identify how the scales were selected; and (b) the scales must be factor analyzed to determine the reliability of the scales.

Cronkhite and Liska (1976) encouraged the use of other scales, such as the Likert scales to measure the dimensions of a credible source. Only McCroskey (1966) and Tuppen (1974) utilized Likert scales and reported them as part of a credibility factor analysis.

The fourth concern deals with the extensive use of the orthogonal rotation without regard for the oblique solution (Liska, 1976). Tuppen (1974) demonstrated the use of an oblique solution in his research. Liska (1976) suggested a comparison of the orthogonal rotation with the oblique rotation to determine the effectiveness of these factor analytic solutions. Orthogonal and oblique rotations have been discussed at great length earlier in Chapter 1 and earlier in the review of the literature.

The last concern deals with sample size. Nunnally (1978) suggested that in a factor analysis study, the sample should include 10 subjects for every variable. Hensley (1974) recognized a consistent weakness in source

credibility research, questionable sample size. Table 1 contains some of the most significant source credibility studies with the number of scales (variables) they used and the size of their samples.

Using Nunnally's (1978) criteria for sample size, these researchers do have questionable sample size. Nunnally (1978) does indicate that a sample of 5 subjects for every variable would be acceptable, still the researchers cited in Table 1 have small sized samples. As identified in Chapter 1, a limitation of this descriptive study was the sample size. A 55-scaled semantic differential instrument was administered to 150 subjects. Using Nunnally's (1978) criteria, the sample size suggested would have been 275-550 subjects. The sample for this study was small, but not unusual compared to other credibility studies.

Researchers have expended extensive time, effort, and money in searching for generalizable credibility factors and scales. In truth, very little is known about the dimensions that make up the perceived credibility of a source. The role of credibility in the communication process is still subject to extensive speculation. Little is known about how objective and

Table 1

Source Credibility Research--  
Number of Scales and  
Size of Sample

Researchers	Number of Scales	Sample Size	
		Actual	Suggested
1. Berlo et al. (1969)			
Experiment 1	83	91	830
Experiment 2	35	117	350
2. McCroskey (1966)			
Pilot	30	50	300
Experiment 1	44	143	440
3. Whitehead (1968)	65	152	650
4. Applbaum & Anatol (1972)	31	91	310
5. Applbaum & Anatol (1973)	31	50	310

subjective characteristics of a source affect a listener's perception of that source. Miller (1969) summarized the credibility research in the following manner:

Granted, there is voluminous literature dealing with the credibility problem; however, the number of useful scientific generalizations that can be culled from that literature is exceedingly limited. Acquaintance with the research suggests only two generalizations about credibility which one can make with much confidence: first, if a communicator has a lot of it, he is somewhat better off than if he has a little of it; second, given the operational procedures typically used in factor analytic research, credibility appears to be a multi-dimensional construct. In spite of all the hustle and bustle of research activity, these generalizations reflect little knowledge about credibility. (p. 57)

While research has identified a general description of what characteristics sources may possess (trustworthiness, expertness, dynamism, etc.); these characteristics are questionable depending on the perception of the listener, the source, and the situation in which they interact. This study was designed to measure the dimension of the source credibility of a nurse as perceived by a hospitalized patient. This study was an initial step in assessing the source credibility of a nurse. In summary, this section of the review of the literature discussed factor analysis, rotation methods, concerns

in using factor analysis, and generalizability of the results obtained with factor analysis.

### Semantic Differential

The last section of the review of literature discusses the semantic differential; its origin, description, construction, reliability, and validity. The semantic differential was developed by Osgood (1952) as a method of measuring meaning, and it is a technique utilized to quantify the psychological meaning of any given concept.

The semantic differential is a measure of meaning, and the problem for any meaning theorist is to differentiate the conditions under which a pattern of stimulation is a sign of something else from those conditions where it is not (Osgood et al., 1965). A semantic differential is a very general way of getting at a certain type of information; a highly generalizable technique of measurement, which must be adapted to the requirements of each research problem to which it is applied. The theory of the semantic differential is based on the existence of a semantic space, which has an unknown number of dimensions. A pair of bipolar adjectives represent a semantic scale, functioning as a straight line that passes through

the origin of the semantic space. The process of the semantic differential involves the subject judging a concept against a series of scales, and each judgment represents a selection among a set of given alternatives and serves to localize the concept as a point in the semantic space (Osgood et al., 1965).

Factor analyses of data collected with numerous semantic differential scales have consistently resulted in the identification of three major dimensions or factors: evaluation, potency, and activity. Evaluation is the most significant factor, accounting for the largest proportion of the total variance. Potency is the second strongest factor, followed by activity (Osgood et al., 1965).

In constructing a semantic differential, scales should be selected to represent the factors which the investigator wants to explore. Scales highly relevant to the concept should be selected to prevent neutral judgments (Osgood et al., 1965).

The reliability of the semantic differential was developed by the test-retest method and reported to be .85 (Osgood et al., 1965). In determining validity, Osgood et al. (1965) stated that no other independent

criterion of meaning was found to correlate with the semantic differential. Consequently, face validity was relied upon to support the semantic differential.

The concept measured in this study was the source credibility of a nurse as perceived by a hospitalized patient. The scales of the semantic differential were selected through patient interviews and a review of the relevant literature.

#### Summary

The review of the literature has presented the concepts of the conceptual framework (source credibility, trust, communication, and perception) indepth to demonstrate the relationships of these concepts. Source credibility is an aspect of trust that influences the communication process, and source credibility is measured in terms of the perceptions of a listener. The review of the literature also outlined the significance of these concepts to the problem that was studied.

A review of the significant source credibility studies provided essential information in designing a study to determine the dimensions of the source credibility of a nurse as perceived by a hospitalized patient. Factor analysis is an effective method for determining

the underlying factors (dimensions) of the concept source credibility. Only a comparison of the orthogonal and oblique rotations could determine which solution most accurately analyzed the data collected by administering a semantic differential instrument to hospitalized patients.

This chapter concluded with a discussion of the semantic differential. This instrument was identified as an effective means of measuring the meaning of a concept. A semantic differential instrument of 55 scales was developed and utilized to determine the dimensions of the source credibility of a nurse as perceived by a hospitalized patient.



## CHAPTER 3

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This chapter initially presents the research classification and design with a description of the incorporated variables of this credibility study. The research design is followed by a discussion of the setting, sample, protection of human subjects, instrument development, data collection, and treatment of data.

This was a descriptive study and the design involved the use of factor analysis as a method of determining the number and nature of the factors (constructs) that underlie the selected 55 semantic differential scales. An instrument composed of these semantic differential scales was developed in a pilot study. The 55 semantic differential scales were selected to measure the source credibility of a nurse as perceived by a hospitalized patient. The design also included a comparison of orthogonal and oblique rotations to determine which rotation would most accurately identify the factors underlying the variables (55 semantic differential scales).

The variables incorporated in this study were demographic and rating variables. A description of these variables is presented as follows.

The demographic variables in this study were the:

1. Age of the patient, with an age range of 18-75 years.
2. Sex of the patient, male or female.
3. Race of the patient.
4. Length of hospitalization for the patient, with a minimum length of 2 days hospitalization.
5. Number of hospitalizations for the patient.
6. Patient diagnosis, medical and/or surgical illness.
7. Medical-surgical units in the two large North Dallas hospitals.
8. Nurses providing care to the hospitalized patients in two North Dallas hospitals.
9. Educational level of the nurses, either a licensed vocational nurse (LVN) or a registered nurse (RN).

The rating variables for this study were:

1. Fifty-five semantic differential scales identified to measure the source credibility of a nurse as

perceived by a hospitalized patient. A list of these 55 variables (semantic differential scales) is presented in Appendix A.

2. Orthogonal and oblique rotations, a comparison of factor solutions.

### Setting

The setting was the medical-surgical units in two large hospitals in the North Dallas metropolitan area. These units were staffed with registered nurses, licensed vocational nurses, and nursing assistants; and the concept of team nursing was used in both hospitals. The individuals staffing these medical-surgical units provided nursing care to adult patients who had been hospitalized for medical and/or surgical problems.

### Population and Sample

The population was all patients on the medical-surgical units of two large North Dallas hospitals from June 1, 1980 to September 20, 1980. Every bed in the medical-surgical units of these two hospitals was numbered, and a random numbers table was used to identify the patient beds for this study. If the bed was unoccupied, it was omitted. If the bed was occupied,

the patient in that bed had to meet the following criteria to become a subject. The patient had to have been hospitalized a minimum of 2 days and had to fall in the age range of 18-75 years. The patient also had to be alert, oriented, and capable of completing a research instrument.

The subjects were randomly selected as described, until 75 subjects were obtained from each hospital. The sample was 150 subjects selected from the medical-surgical units of two large North Dallas hospitals.

#### Protection of Human Subjects

The human subjects of this credibility study were protected in the following way. Permission was received from the Human Research Review Committee at Texas Woman's University to conduct this study (Appendix B). Permission was received from the graduate office to conduct this study (Appendix C). Permission was received from the two participating agencies to conduct this study (Appendix D).

Each subject was provided with an oral presentation of the study (Appendix E), and each subject signed a consent form to participate in the study (Appendix F). A copy of the signed consent form was offered to each

subject, retained by the researcher, and provided to the graduate office.

### Instrument

The instrument used in this credibility study was a 55-scaled semantic differential that was developed in a pilot study (Appendix A).

### Pilot Study

Instrument Development. This pilot involved the development of an instrument composed of semantic differential scales for measuring the source credibility of a nurse as perceived by a hospitalized patient. The design of this pilot was based on the studies of Berlo et al. (1969) and Liska (1976); both involved the development of a semantic differential instrument to measure the source credibility of public speakers. The design was two part: (a) the first part was the selection of semantic differential scales from interviews with hospitalized patients and a review of the relevant credibility literature, and (b) the second part was the judgment of the relevance or irrelevance of the selected semantic differential scales by hospitalized patients and nurses.

Setting. The medical-surgical units of four major hospitals in the Dallas metroplex and one small hospital in the Hurst-Euless-Bedford area were used in both Part A and Part B of this pilot. A variety of hospitals was used to gain the perceptions and judgments from a wide variety of hospitalized patients.

Population and Sample. The population for Part A included all patients on the medical-surgical units in the five selected hospitals from November 1, 1979 to December 30, 1979. All beds in the medical-surgical areas of these five hospitals were numbered, and a random numbers table was used to select 31 subjects. The subjects were within the age range of 18-75 years; hospitalized a minimum of 2 days; and alert, oriented, and capable of responding to interview questions. The sample was 31 subjects who were hospitalized patients in the five selected hospitals.

The population for Part B included all patients on the medical-surgical units and all registered nurses (RNs) and licensed vocational nurses (LVNs) in the five selected hospitals from January 1, 1980 through January 31, 1980. The patient beds in the five hospitals and the nursing personnel of the five hospitals were

numbered, and a random numbers table was used to select subjects. Seventeen patient subjects selected were within the age range of 18-75 years; hospitalized a minimum of 2 days; and alert, oriented, and capable of responding to a research questionnaire. The 17 nurse subjects were RN's or LVNs, who had worked on a medical-surgical unit in one of the five selected hospitals for a period of 6 months. The sample was 34 subjects (17 patients and 17 nurses) randomly selected from five hospitals.

Protection of Human Subjects. The human subjects in Part A and Part B of this pilot were protected in the following manner. Permission was received from the Human Research Review Committee at Texas Woman's University for this pilot (Appendix G). Permission was received from the five agencies to conduct this pilot (Appendix H).

In Part A of this pilot, all subjects received an oral presentation of the study and signed a written consent form (Appendix I). A copy of the signed consent form was offered to each subject, and a copy was retained by the researcher.

In Part B of this pilot, all subjects received an oral presentation and signed a written consent form

(Appendix J). A copy of the signed consent form was offered to each subject, and a copy was retained by the researcher.

Data Collection. In Part A, 31 subjects (patients) randomly selected from five hospitals, were asked to describe the characteristics that make a nurse a credible (believable) or a not credible (unbelievable) source of communication. A list of 65 semantic differential scales was derived from these interviews (Appendix K).

In Part B, 34 subjects (17 patients and 17 nurses) were asked to judge the 65 semantic differential scales for their relevance or irrelevance in measuring the source credibility of a nurse (Appendix L). The 65 semantic differential scales were developed in Part A of this pilot.

Treatment and Analysis of Data. In Part A of this pilot, the subjects were 20 females and 11 males, with an age range of 36-75 years, and a mean age of 59.4 years. The length of hospitalization ranged from 2-47 days, with a mean of 7.8 days. A list of 65 scales was developed from the patient interviews, and many of these scales had been used in previous credibility studies (Appendix K).



Eleven marker variables obtained from the studies of Berlo et al. (1969), McCrosky (1966), and Whitehead (1968) were included in the 65 scales. The marker variables were qualified--unqualified, honest--dishonest, competent--incompetent, trustworthy--untrustworthy, professional--unprofessional, expert--inexpert, reliable--unreliable, friendly--unfriendly, intelligent--unintelligent, pleasant--unpleasant, and open-minded--close-minded.

In Part B of this pilot, the subjects were 16 RNs, 1 LVN, and 17 hospitalized patients. The 17 patient subjects were 7 females and 10 males, with an age range of 25-69 years, and a mean age of 45.6 years. The range of the length of hospitalization was 2-12 days with a mean of 3.7 days.

A criteria was set for the elimination of a scale. If a scale was judged irrelevant by 30% or more of the sample (34 subjects), then the scale was dropped (Berlo et al., 1969). The 17 patient subjects judged 12 of the scales as irrelevant for measuring the source credibility of a nurse using the 30% criteria level. The 12 scales were nice--awful, gracious--abrupt, involved--uninvolved, serious--joking, fast--slow, accepting--unaccepting,

authoritative--unauthoritative, friendly--unfriendly, valuable--worthless, energetic--tired, emphatic--hesitant, and decisive--indecisive (Appendix M).

The 17 nurse subjects rated 11 of the scales as irrelevant for measuring the source credibility of the nurse using the 30% criteria level. The 11 scales were nice--awful, gracious--abrupt, involved--uninvolved, serious--joking, fast--slow, accepting--unaccepting, expert--inexpert, authoritative--unauthoritative, valuable--worthless, energetic--tired, and emphatic--hesitant (Appendix M).

The scales of friendly--unfriendly and decisive--indecisive were identified as irrelevant by the patient but as relevant by the nurse. The nurse identified expert--inexpert as irrelevant, but the patient identified it as relevant. The combined data of the patient and nurse subjects indicated 10 of the scales were irrelevant using the 30% criteria level. Those 10 scales were nice--awful, gracious--abrupt, involved--uninvolved, serious--joking, fast--slow, accepting--unaccepting, authoritative--unauthoritative, valuable--worthless, energetic--tired, and emphatic--hesitant (Appendix M). The 11 marker variables were retained.

In conclusion, a 55-scaled semantic differential was developed to measure the source credibility of a nurse as perceived by a hospitalized patient (Appendix A). This newly developed semantic differential required testing for reliability and validity. A factor analysis of the data obtained with this 55-scaled semantic differential identified the alpha reliability coefficient and the construct validity of this instrument (Kerlinger, 1973; Nunnally, 1978).

#### Data Collection

Seventy-five subjects (hospitalized patients) were randomly selected from each of the two large North Dallas hospitals. Data on each subject including age, sex, race, and length of hospitalization, were obtained from the chart. Each subject was asked to report the number of time(s) he/she had been hospitalized before, including this hospitalization. These data were gathered to describe the sample (Appendix N).

After receiving an oral presentation of the study and signing a written consent form, the subjects were asked to complete the research instrument. Each subject was asked to rate the nurses caring for him/her during this hospitalization, using 55 semantic differential

scales (Appendix A). One hundred thirty-seven of the subjects were able to mark the 55 scales unassisted. Thirteen subjects, who had limited mobility of their arms, required some assistance. The instrument was taped to cardboard for the convenience of the subject, the subject pointed to where he/she wanted the scales marked, and the researcher marked the scales as directed. All subjects completed the semantic differential instrument under the supervision of this researcher.

#### Treatment of Data

Demographic data were obtained on each subject regarding age, sex, race, length of hospitalization, and number of hospitalizations. Also, data were obtained from each subject using a 55-scaled semantic differential instrument.

The demographic data on all subjects were frequency analyzed, and the absolute frequency, relative frequency (%), and cumulative frequency (%) were obtained. A t-test was performed on the age data from hospitals 1 and 2 to determine a significance difference. A z-test was performed on the sex data from hospitals 1 and 2 for determination of significance difference.

The data on length of hospitalization and number of hospitalizations were subjected to median tests to determine significance differences between hospitals 1 and 2. The race data were not subjected to any additional testing.

A reliability analysis was conducted on the data obtained with the semantic differential instrument. The semantic differential data were also factor analyzed with the orthogonal and oblique rotations for comparison of information obtained from two different factoring solutions.

The factor analysis utilizing the oblique rotation yielded the factor structure for this set of data. The factors identified in the factor structure were the dimensions of the concept source credibility of a nurse as perceived by a hospitalized patient.

## CHAPTER 4

### ANALYSIS OF DATA

This chapter contains the analysis of the data obtained from 150 subjects (hospitalized patients) who responded to 55 scales of a semantic differential instrument. The analysis of data was four part: (a) an analysis of the demographic data (age, sex, race, length of hospitalization, and number of hospitalizations); (b) a reliability analysis of the semantic differential instrument; (c) a comparison of the orthogonal (varimax) rotation and oblique (oblimin) rotation; and (d) identification of the factor structure obtained from a factor analysis utilizing an oblique rotation.

#### Description of Sample

The sample was 150 hospitalized patients that were randomly selected from two major North Dallas hospitals. Seventy-five subjects were selected from the medical-surgical areas of each of these two hospitals. Demographic data of age, sex, race, length of hospitalization, and number of hospitalizations were collected on each subject. Each subject was asked to complete the 55

scales of a semantic differential instrument after a minimum of two days hospitalization. Tables 2-7 summarize the demographic data.

Table 2 presents an age distribution of the 150 subjects, which ranged from 18-75 years. For clarity and simplification the age range was divided into 13 age intervals of 5 years each. For each age interval, the absolute frequency, relative frequency (%), and cumulative frequency (%) were included. Table 2 indicates that 60.7% of the subjects were in the age range of 50 years to 75 years. The frequency distribution of age was negatively skewed, with the majority of the sample being middle-aged and elderly.

Table 3 is a comparison of the age distribution of hospitals 1 and 2. The mean age for hospital 1 was 51.013 years and for hospital 2 it was 51.183 years, indicating a similarity in the age distributions of these two hospitals. A two-tailed  $t$ -test, performed on the age data, indicated that there was no significant difference between the age distributions of these two hospitals, with an alpha ( $\alpha$ ) of .05 and 148 degrees of freedom.

Table 2  
Age Distribution of Sample  
(n = 150)

Age Interval	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
15-19	1	0.7	0.7
20-24	5	3.3	4.0
25-29	7	4.7	8.7
30-34	15	10.0	18.7
35-39	7	4.7	23.3
40-44	11	7.2	30.7
45-49	13	8.6	39.3
50-54	18	12.0	51.3
55-59	26	17.3	68.7
60-64	14	9.3	78.0
65-69	19	12.7	90.7
70-74	12	8.0	98.7
75-79	<u>2</u>	<u>1.3</u>	<u>100.0</u>
Totals	150	100.0	



Table 3  
t-Test for Difference in Age Distributions of Hospitals

Setting	<u>n</u>	Mean Age	Standard Deviation
Hospitals 1 and 2	150	51.413	14.286
Hospital 1	75	51.013	14.672
Hospital 2	75	51.183	13.769

t = -.276 (nonsignificant).

.95<sup>t</sup>-148 = +1.645 (two tailed t-test,  $\alpha = .05$ )

Table 4 presents the sex (male and female) distributions in hospitals 1 and 2. There was a higher percentage of female subjects in both hospitals; the sample was 62.7% female and 37.3% male. A  $z$ -test was performed on the sex data to determine if there was a significant difference in the sex distributions of these two hospitals. The  $z$ -test, with an alpha ( $\alpha$ ) of .05, was not significant. The calculated values,  $z = 1.355$  did not exceed the critical values of  $.025z = -1.96$  and  $.975z = 1.96$ .

Table 5 is a comparison of the race distributions in hospitals 1 and 2. There was a large percentage of Caucasian subjects in both hospitals; the sample was 93.3% Caucasian and 6.7% Black. The sample was predominantly Caucasian, and there was not a sufficient number of Black subjects to test for a difference in race distributions of the two hospitals (Glass & Stanley, 1970).

At the beginning of Table 6 is a presentation of the absolute frequency, relative frequency (%), and cumulative frequency (%) on the number of days (length) the subjects had been hospitalized before they were asked to respond to the semantic differential instrument.

Table 4

z-Test for Difference in Sex Distributions of Hospitals

Sex	Absolute Frequency	Relative Frequency (%)
<u>Hospitals 1 and 2 (n = 150)</u>		
Male	56	37.3
Female	94	62.7
<u>Hospital 1 (n = 75)</u>		
Male	32	42.7
Female	43	57.3
<u>Hospital 2 (n = 75)</u>		
Male	24	32.0
Female	51	68.0

 $z = 1.355$  (nonsignificant). $.025z = -1.96$  and  $.975z = 1.96$  ( $\alpha = .05$ )

Table 5

## Race Distributions of Hospitals

Setting	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Hospitals 1 and 2 ( $\underline{n} = 150$ )			
Caucasian	140	93.3	93.3
Black	10	6.7	100.0
Hospital 1 ( $\underline{n} = 75$ )			
Caucasian	68	90.7	90.7
Black	7	9.3	100.0
Hospital 2 ( $\underline{n} = 75$ )			
Caucasian	72	96.0	96.0
Black	3	4.0	100.0

Table 6 indicates that 48% of the sample had been hospitalized 5 days or less, and 74% had been hospitalized 10 days or less. The frequency distribution on the length of hospitalization ranged from 2-52 days and was positively skewed because the majority of the sample had been hospitalized less than 10 days.

At the end of Table 6 are the results from a median test. A median test, performed on the length of hospitalization data, determined that there was no significant difference in the distributions of the length of hospitalization in these two hospitals. The calculated  $\chi^2$  ( $\chi^2 = 3.840$ ) did not exceed the critical value of  $\chi^2$  (.05,1) = 3.841. A median test was selected, because the mean length of hospitalization in hospital 1 (10.080 days) was affected by two prolonged stays, one of 31 days, and another of 52 days.

At the beginning of Table 7 is the absolute frequency, relative frequency (%), and cumulative frequency (%) on the number of hospitalizations each subject had experienced, including this present hospitalization. Table 7 shows that 49.3% of the subjects had been hospitalized 5 or less times, and 86% had been hospitalized 10 or less times. The frequency distribution on the

Table 6

Median Test for Difference in Length of Hospitalization  
Distributions of Hospitals  
( $n = 150$ )

Length of Hospitalization	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Day 2	18	12.0	12.0
3	26	17.3	29.3
4	21	14.0	43.3
5	7	4.7	48.0
6	11	7.3	55.3
7	9	6.0	61.3
8	8	5.3	66.7
9	3	2.0	68.7
10	8	5.3	74.0
11	8	5.3	79.3
12	2	1.3	80.7
13	1	0.7	81.3

Table 6 (Continued)

Length of Hospitalization	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Day 14	2	1.3	82.7
15	2	1.3	84.0
16	1	0.7	84.7
17	3	2.0	86.7
18	3	2.0	88.7
19	1	0.7	89.3
21	3	2.0	91.3
22	3	2.0	93.3
24	2	1.3	94.7
25	3	2.0	96.7
26	3	2.0	98.7
31	1	0.7	99.3
52	<u>1</u>	<u>0.7</u>	100.0
Totals	150	100.0	

Table 6 (Continued)

<u>Length of Hospitalization</u>	<u>Hospitals 1 and 2</u> ( <u>n</u> = 150)		<u>Hospital 1</u> ( <u>n</u> = 75)	<u>Hospital 2</u> ( <u>n</u> = 75)
Mean	8.460		10.080	6.840
Mode	3.000		4.000	3.000
Median	5.273		6.700	3.864

$\chi^2 = 3.840$  (nonsignificant).

$\chi^2_{.05,1} = 3.841$  ( $\alpha = .05$ ).



Table 7  
Median Test for Difference in Distributions of the Number of  
Hospitalizations of Hospitals  
( $n = 150$ )

Number of Hospitalizations	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
1	5	3.3	3.3
2	12	8.0	11.3
3	19	12.7	24.0
4	13	8.7	32.7
5	25	16.7	49.3
6	16	10.7	60.0
7	12	8.0	68.0
8	9	6.0	74.0
9	8	5.3	79.3
10	10	6.7	86.0
11	1	0.7	86.7
12	4	2.7	89.7

Table 7 (Continued)

Number of Hospitalizations	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
13	1	0.7	90.0
14	2	1.3	91.3
15	3	2.0	93.3
16	1	0.7	94.0
17	2	1.3	95.3
18	2	1.3	96.7
19	1	0.7	97.3
20	1	0.7	98.0
30	1	0.7	98.7
50	2	1.3	100.0
Totals	150	100.0	

Table 7 (Continued)

Number of Hospitalizations		Hospitals 1 and 2 ( $\underline{n} = 150$ )	Hospital 1 ( $\underline{n} = 75$ )	Hospital 2 ( $\underline{n} = 75$ )
Mean		7.247	7.533	6.960
Mode		5.000	5.000	5.000
Median		5.063	4.654	5.500

$\chi^2_{\underline{1}} = 1.707$  (nonsignificant).

$\chi^2_{\underline{1}} (.05, 1) = 3.841$  (  $\alpha = .05$  ).

number of hospitalizations ranged from 1-50 and was positively skewed, because the majority of the sample had been hospitalized 10 times or less.

The last portion of Table 7 includes the results of a median test that was performed to determine if there was a significant difference in the distributions of the number of hospitalizations of these two hospitals. The median test was nonsignificant, indicating that there was no significant difference in the distributions of the number of hospitalizations in the two hospitals. The median test seemed most appropriate, because of two extreme cases of numerous hospitalizations existing in hospital 1.

In summary, the majority of the subjects was 50 years of age or older; sex was predominantly female; race was predominantly Caucasian; the length of hospitalization for the majority was under 7 days; and the number of hospitalizations for the majority was under 7 times. The statistical tests applied to the demographic data indicated no significant difference between hospitals 1 and 2 in terms of age, sex, race, length of hospitalization, and number of hospitalizations. The remaining statistical tests (reliability analysis and

factor analyses utilizing the orthogonal and oblique rotations) were conducted on the sample of 150 subjects.

### Findings

This section of Chapter 4 includes the findings from (a) the reliability analysis conducted on the semantic differential instrument, (b) a comparison of the orthogonal and oblique factor rotations, and (c) an oblique solution to determine factor structure. There are discussion and table presentations of the findings.

The findings of the reliability analysis are presented in Table 8. The analysis was performed on the data obtained from 150 subjects, who completed the 55-scaled semantic differential instrument. Seven cases of missing data were identified. Table 8 includes the 55 variables (scales), and for each variable, the following values are recorded: (a) scale mean, (b) corrected variable-total correlation, and (c) alpha if the variable was deleted. The alpha reliability coefficient for the instrument in this study was .99123, which is an extremely high reliability. This indicated the high stability, accuracy, and precision of this semantic differential instrument for this study (Kerlinger, 1973).

Table 8

Reliability Analysis--Instrument Reliability  
( $\bar{n} = 150$ )

Scale (Variable)	Mean	Corrected Variable-- Total Correlation	Alpha if Variable Deleted
1. Sincere--insincere	1.80420	.75125	.99114
2. Dependable--undependable	1.89510	.75379	.99114
3. Reasonable--unreasonable	1.85315	.79702	.99109
4. Cautious--incautious	1.81818	.73085	.99118
5. Consistent--inconsistent	2.08392	.69818	.99124
6. Concerned--unconcerned	1.82517	.85815	.99101
7. Warm--cold	1.82517	.73565	.99118
8. Prompt--not prompt	2.49650	.72003	.99132
9. Efficient--inefficient	1.81818	.83179	.99105
10. Qualified--unqualified	1.72028	.80625	.99108
11. Safe--dangerous	1.60140	.81169	.99108
12. Capable--incapable	1.65035	.84466	.99104
13. Skilled--unskilled	1.70629	.88600	.99099

Table 8 (Continued)

Scale (Variable)	Mean	Corrected Variable-- Total Correlation	Alpha if Variable Deleted
14. Honest--dishonest	1.47552	.76012	.99113
15. Competent--incompetent	1.72028	.89690	.99097
16. Trustworthy--untrustworthy	1.52448	.76159	.99113
17. Respectful--disrespectful	1.68531	.80567	.99108
18. Available--unavailable	2.20979	.80016	.99114
19. Professional--unprofessional	1.67832	.88060	.99099
20. Cooperative--uncooperative	1.69930	.87092	.99100
21. Calm--anxious	1.45455	.75897	.99115
22. Considerate--inconsiderate	1.67133	.82623	.99105
23. Neat--untidy	1.49650	.70031	.99120
24. Kind--cruel	1.55245	.81136	.99108
25. Organized--disorganized	1.91608	.70911	.99120
26. Communicative--uncommunicative	2.03497	.81343	.99109
27. Sympathetic--unsympathetic	1.81119	.84860	.99102

Table 8 (Continued)

Scale (Variable)	Mean	Corrected Variable-- Total Correlation	Alpha if Variable Deleted
28. Attentive--inattentive	1.85315	.87582	.99099
29. Expert--inexpert	1.95804	.82272	.99106
30. Purposeful--aimless	1.86014	.89095	.99097
31. Assertive--unassertive	1.96503	.80304	.99109
32. Reliable--unreliable	1.81119	.86146	.99101
33. Thorough--not thorough	1.93706	.85910	.99101
34. Helpful--harmful	1.65035	.86307	.99102
35. Receptive--unreceptive	1.80420	.91986	.99094
36. Polite--impolite	1.53846	.87878	.99102
37. Friendly--unfriendly	1.55944	.78993	.99111
38. Remembers--forgets	2.28671	.75253	.99122
39. Caring--uncaring	1.79021	.88443	.99098
40. Accurate--inaccurate	1.86014	.88056	.99098
41. Informed--uninformed	1.93706	.85817	.99102



Table 8 (Continued)

Scale (Variable)	Mean	Corrected Variable-- Total Correlation	Alpha if Variable Deleted
42. Intelligent--unintelligent	1.76224	.86705	.99101
43. Pleasant--unpleasant	1.51748	.83501	.99107
44. Careful--careless	1.62238	.84113	.99104
45. Confident--unsure	1.66434	.83086	.99106
46. Cheerful--gloomy	1.60839	.80389	.99109
47. Open-minded--close-minded	1.86014	.86042	.99101
48. Experienced--inexperienced	1.71329	.88134	.99099
49. Believable--unbelievable	1.69930	.84934	.99103
50. Patient--impatient	1.70629	.82464	.99106
51. Sensible--not sensible	1.69231	.87180	.99101
52. Responsible--irresponsible	1.71329	.89522	.99098
53. Supportive--unsupportive	1.69930	.90651	.99097
54. Conscientious--unconscientious	1.70629	.86671	.99101

Table 8 (Continued)

Scale (Variable)	Mean	Corrected Variable-- Total Correlation	Alpha if Variable Deleted
55. Decisive--indecisive	1.88811	.84521	.99103

Note. Alpha reliability coefficient = .99123.

The semantic scales used in this study had a 7-point range and were assigned the numerical values from 1 to 7. The numerical value of 1 was the most positive (highest) score, and the numerical value of 7 was the most negative (lowest) score. The means (Table 8) for the 55 scales in this study ranged from a high of 1.45455 to a low of 2.49650; indicating that the means were all above the midpoint 4, and the nurses received a positive rating on this instrument.

The five lowest ranking scales and their means were: (a) prompt--not prompt, 2.49650; (b) remembers--forgets, 2.28671; (c) available--unavailable, 2.20979; (d) consistent--inconsistent, 2.08392; and (e) communicative--uncommunicative, 2.03497. The five highest ranking scales and their means were: (a) calm--anxious, 1.45455; (b) honest--dishonest, 1.47552; (c) neat--untidy, 1.49650; (d) pleasant--unpleasant, 1.51748; and (e) trustworthy--untrustworthy, 1.52448.

The instrument demonstrated very high intervariable correlations, with the lowest variable--total correlation (.69818) on the scale consistent--inconsistent, and the highest variable--total correlation (.91986) on the scale receptive--unreceptive. The high interscale correlations

indicated that the scales were measuring close to the same information, causing the high reliability of .99123. A very high alpha reliability coefficient would still exist even if selected variables were deleted (final column, Table 8).

Preceding the comparison of the orthogonal and oblique rotations on the data obtained from the sample of 150 subjects, separate factor analyses were run on the data obtained just from hospital 1, and from hospital 2. Table 9 includes the squared multiple correlations (SMC) obtained on each scale in 3 separate factor analyses. The squared multiple correlations are the square of the values obtained when each variable is correlated with all other variables. The squared multiple correlations (SMC) are communality estimates, and the communality of a variable is an initial estimate of the common variance of that variable (Comrey, 1973). The SMC from hospital 1 and hospital 2 were compared for similarity, so the data from the 150 subjects could be factor analyzed together. This study has 55 variables, and a sample of 150 would provide more accurate factor analysis information than a sample of 75 (Nunnally, 1978).

Table 9

Squared Multiple Correlations (SMC) of Each  
Variable with All Other Variables

Variable	Hospitals 1 and 2 (n = 150)		Hospital 1 (n = 75)		Hospital 2 (n = 75)	
	Scale	SMC	SMC	SMC	SMC	SMC
1. Sincere--insincere		.81909	.99090		.99611	
2. Dependable--undependable		.87280	.99722		.99709	
3. Reasonable--unreasonable		.87377	.97811		.99940	
4. Cautious--incautious		.82185	.99485		.99584	
5. Consistent--inconsistent		.81219	.93399		.99970	
6. Concerned--unconcerned		.91157	.99847		.99502	
7. Warm--cold		.85087	.96219		.98800	
8. Prompt--not prompt		.86970	.98561		.96797	
9. Efficient--inefficient		.90165	.99865		.99915	
10. Qualified--unqualified		.90376	.98186		.99455	
11. Safe--dangerous		.90342	.99653		.99802	
12. Capable--incapable		.91631	.99882		.99954	
13. Skilled--unskilled		.92705	.99870		.99830	
14. Honest--dishonest		.90246	.99872		.99516	
15. Competent--incompetent		.93959	.99865		.99914	
16. Trustworthy--untrustworthy		.85916	.98914		.99619	

Table 9 (Continued)

Variable	Hospitals 1 and 2 ( $\bar{n} = 150$ )		Hospital 1 ( $\bar{n} = 75$ )		Hospital 2 ( $\bar{n} = 75$ )	
	Scale	SMC	SMC		SMC	
17. Respectful--disrespectful		.88805	.99911		.99850	
18. Available--unavailable		.91037	.98733		.99786	
19. Professional--unprofessional		.92236	.99595		.99972	
20. Cooperative--uncooperative		.92758	.99314		.99922	
21. Calm--anxious		.85468	.99913		.99923	
22. Considerate--inconsiderate		.87631	.99465		.99493	
23. Neat--untidy		.82413	.99852		.99165	
24. Kind--cruel		.87322	.99848		.99912	
25. Organized--disorganized		.80698	.99312		.99661	
26. Communicative--uncommunicative		.86928	.99920		.97789	
27. Sympathetic--unsympathetic		.91077	.99716		.99960	
28. Attentive--inattentive		.90990	.99834		.99863	
29. Expert--inexpert		.88323	.99442		.99834	
30. Purposeful--aimless		.91123	.98937		.99937	
31. Assertive--unassertive		.85178	.99561		.98918	
32. Reliable--unreliable		.94293	.99957		.99792	
33. Thorough--not thorough		.91666	.99710		.99939	

Table 9 (Continued)

Variable	Hospitals 1 and 2 ( $\bar{n} = 150$ )		Hospital 1 ( $\bar{n} = 75$ )		Hospital 2 ( $\bar{n} = 75$ )	
	Scale	SMC	SMC		SMC	
34. Helpful--harmful		.95322	.99974		.99660	
35. Receptive--unreceptive		.94982	.99937		.99912	
36. Polite--impolite		.95954	.99963		.99795	
37. Friendly--unfriendly		.84630	.98725		.99914	
38. Remembers--forgets		.85895	.99200		.99213	
39. Caring--uncaring		.91137	.99637		.99861	
40. Accurate--inaccurate		.91938	.99596		.99520	
41. Informed--uninformed		.89713	.98095		.99976	
42. Intelligent--unintelligent		.93390	.99828		.99727	
43. Pleasant--unpleasant		.92859	.99885		.99908	
44. Careful--careless		.90035	.99699		.99898	
45. Confident--unsure		.88732	.99377		.99987	
46. Cheerful--gloomy		.91981	.99737		.99913	
47. Open-minded--close-minded		.91725	.99925		.99987	
48. Experienced--inexperienced		.94677	.99919		.99854	
49. Believable--unbelievable		.93427	.99852		.99653	
50. Patient--impatient		.92804	.99943		.99983	

Table 9 (Continued)

Variable	Hospitals 1 and 2 ( $\bar{n} = 150$ )		Hospital 1 ( $\bar{n} = 75$ )		Hospital 2 ( $\bar{n} = 75$ )	
	Scale	SMC	SMC	SMC	SMC	SMC
51. Sensible--not sensible		.94125		.99973		.99972
52. Responsible--irresponsible		.92868		.99882		.99912
53. Supportive--unsupportive		.93595		.99972		.99944
54. Conscientious--unconscientious		.93894		.99979		.99953
55. Decisive--indecisive		.90389		.99762		.99940



The data obtained with the semantic differential was analyzed by the Biomedical Computer Programs P-series on factor analysis (BMDP4M). The BMDP4M was used to determine the orthogonal (varimax) and oblique factoring solutions. Table 10 contains a comparison of the rotated factor loadings (pattern loadings) of the varimax and oblique rotations on three factors. All pattern loadings .250 or less were changed to .000.

The results presented in Table 10 clearly indicated that different information was obtained from these two rotations. If the pattern loadings were very similar, then the factors would be considered uncorrelated, and the orthogonal rotation would be the correct factor solution. Since the pattern loadings were quite different, this indicated that the factors were correlated, and an oblique solution would be more accurate. The orthogonal rotation is a subset of the oblique rotation (Rummell, 1970).

The oblique rotation yielded factor loadings that were more extreme, either high or low, therefore, clearly identifying which scales were most responsible for the variance explained by the factor. The pattern loadings on the scales for the 3 factors were very similar in the varimax rotation, usually .3, .4, .5,

Table 10

Comparison of Varimax and Oblique Rotations--Pattern Loadings  
( $n = 150$ )

Variable Scale	Varimax Rotation			Oblique Rotation		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
1. Sincere--insincere	.334	.500	.484	.252	.466	.000
2. Dependable--undependable	.252	.452	.644	.000	.782	.000
3. Reasonable--unreasonable	.316	.538	.554	.000	.586	.000
4. Cautious--incautious	.374	.367	.556	.000	.556	.000
5. Consistent--inconsistent	.000	.390	.624	.000	.766	.000
6. Concerned--unconcerned	.312	.670	.526	.000	.538	.339
7. Warm--cold	.272	.680	.331	.311	.264	.411
8. Prompt--not prompt	.312	.254	.736	.000	.891	.000
9. Efficient--inefficient	.492	.447	.513	.472	.392	.000
10. Qualified--unqualified	.587	.432	.367	.739	.000	.000
11. Safe--dangerous	.532	.472	.402	.631	.000	.000
12. Capable--incapable	.562	.578	.308	.775	.000	.000
13. Skilled--unskilled	.645	.500	.376	.840	.000	.000
14. Honest--dishonest	.387	.660	.266	.544	.000	.344
15. Competent--incompetent	.668	.485	.388	.864	.000	.000

Table 10 (Continued)

Variable Scale	Varimax Rotation			Oblique Rotation		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
16. Trustworthy--untrustworthy	.421	.621	.270	.588	.000	.287
17. Respectful--disrespectful	.336	.650	.420	.337	.354	.329
18. Available--unavailable	.428	.299	.699	.000	.741	.000
19. Professional--unprofessional	.568	.549	.406	.702	.000	.000
20. Cooperative--uncooperative	.529	.606	.367	.681	.000	.000
21. Calm--anxious	.454	.586	.267	.636	.000	.000
22. Considerate--inconsiderate	.394	.669	.373	.473	.000	.325
23. Neat--untidy	.523	.456	.000	.760	.000	.000
24. Kind--cruel	.479	.635	.277	.677	.000	.268
25. Organized--disorganized	.643	.000	.344	.807	.000	.000
26. Communicative--uncommunicative	.621	.372	.407	.749	.000	.000
27. Sympathetic--unsympathetic	.498	.583	.387	.611	.000	.000
28. Attentive--inattentive	.537	.430	.562	.504	.433	.000
29. Expert--inexpert	.680	.348	.385	.858	.000	.000
30. Purposeful--aimless	.676	.400	.461	.801	.000	.000
31. Assertive--unassertive	.542	.368	.489	.557	.319	.000
32. Reliable--unreliable	.557	.359	.598	.492	.480	.000

Table 10 (continued)

Variable Scale	Varimax Rotation			Oblique Rotation		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
33. Thorough--not thorough	.609	.373	.514	.645	.308	.000
34. Helpful--harmful	.393	.517	.617	.000	.626	.000
35. Receptive--unreceptive	.528	.602	.466	.599	.281	.000
36. Polite--impolite	.382	.769	.377	.469	.000	.424
37. Friendly--unfriendly	.442	.690	.000	.675	.000	.350
38. Remembers--forgets	.480	.000	.670	.277	.662	.000
39. Caring--uncaring	.547	.552	.430	.649	.000	.000
40. Accurate--inaccurate	.701	.398	.417	.877	.000	.000
41. Informed--uninformed	.718	.395	.356	.952	.000	.000
42. Intelligent--unintelligent	.722	.464	.294	1.022	.000	.000
43. Pleasant--unpleasant	.423	.697	.324	.563	.000	.346
44. Careful--careless	.613	.479	.356	.799	.000	.000
45. Confident--unsure	.703	.376	.345	.932	.000	.000
46. Cheerful--gloomy	.322	.692	.392	.346	.319	.381
47. Open-minded--close-minded	.635	.483	.359	.833	.000	.000
48. Experienced--inexperienced	.737	.449	.319	1.023	.000	.000
49. Believable--unbelievable	.723	.466	.258	1.052	.000	.000
50. Patient--impatient	.467	.607	.351	.595	.000	.000

Table 10 (continued)

Variable Scale	Varimax Rotation			Oblique Rotation		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
51. Sensible--not sensible	.586	.589	.321	.807	.000	.000
52. Responsible--irresponsible	.640	.494	.411	.802	.000	.000
53. Supportive--unsupportive	.519	.582	.476	.573	.305	.000
54. Conscientious--unconscientious	.567	.456	.484	.618	.288	.000
55. Decisive--indecisive	.597	.373	.501	.637	.296	.000
Eigenvalues	15.477	14.434	10.663	22.986	6.419	2.010
Proportion of Common Variance Explained	.381	.356	.263	.732	.204	.064
Proportion of Total Variance Explained	.281	.262	.194	.418	.117	.037

Note. Loadings less than .250 have been replaced by .000.

or .6; and the scales responsible for the variance explained by the factor are not as clearly indicated. This comparison of rotations determined the most accurate, informative interpretation of the data.

The eigenvalue, proportion of common variance, and proportion of total variance explained by each factor were reported for the varimax and oblique rotations at the end of Table 10. In the oblique solution, the largest proportion of the total variance (.418) was explained by factor 1. With the varimax rotation, factors 1 and 2 accounted for similar proportions of the total variance, and factor 3 accounted for somewhat less. The total variance explained by all three factors in the oblique rotation was 57.2%, which was somewhat less than that of the varimax, 73.7%.

Table 11 identifies the factor correlations for rotated factors utilizing the oblique solution. As Table 11 indicates, there is a .819 correlation between factors 1 and 2, which is an extremely high correlation. This indicates a great deal of overlap between factor 1 and factor 2. A .412 correlation existed between factors 1 and 3, and a .328 correlation between factors 2 and 3. Table 11 clearly indicates that an

Table 11

Factor Correlations for Rotated Factors--Oblique Rotation

	Factor 1	Factor 2	Factor 3
Factor 1	1.000		
Factor 2	.819	1.000	
Factor 3	.412	.328	1.000

oblique rotation is indicated for this data, because the three factors were correlated.

Utilizing a varimax rotation, where the factors are forced to be uncorrelated (independent), would lead to inaccurate interpretations for this study. The oblique rotation will provide the best factoring solution, where the factors have proven to be correlated.

The final section of the findings contains a presentation of factor analysis information obtained from an oblique rotation, utilizing the BMDP4M computer program. There were 7 cases of missing data that were replaced by the number 0. The discussion of the factor analysis included the following information: (a) factor extraction method, and the criteria used to stop the factoring; (b) communality estimates; (c) iterations done for initial factors; (d) communalities obtained from 3 factors after 5 iterations; (e) unrotated factor loadings (pattern); (f) number of iterations for the best rotation; (g) pattern factor matrix, containing pattern loadings; (h) factor correlations for rotated factors; (i) structure factor matrix, containing the structure loadings; (j) pattern and structure loadings on marker variables; and (k) the scales with high pattern and structure loadings on the three factors.



The method of initial factor extraction was the principle factor analysis (PFA). The PFA allows for the specification of the maximum number of iterations to be done, and for the analysis in this study, 99 iterations were specified. The number of iterations specified was the criteria used to determine when the factoring stopped.

The communality estimates are the SMC of each variable with all other variables. Table 9 (hospitals 1 and 2 column) includes the SMC for this analysis. The SMC were high with a range of .80698-.95954, indicating a low error value of no greater than .19302 and no less than .04046.

Five iterations were done for initial factors, and Table 12 identifies the iterations and the maximum change in communality that occurred with each iteration. After each iteration there is a residual communality that is used to estimate the communality for each succeeding factor (maximum change in communality, Table 12). The iterations are to promote the communalities to stability. Therefore when the maximum change in communality drops below .001; the iterations cease (Comrey, 1973).

Table 12

Iteration for Initial Factors  
( $\bar{n} = 150$ )

Iteration	Maximum Change in Communality
1	.27561
2	.08805
3	.01187
4	.00196
5	.00038

The communalities obtained from 3 factors after 5 iterations are presented in Table 13. These communalities are the sum of squares of the loadings for 55 variables over 3 factors. The higher the communalities, the greater the overlap between the variables and these 3 factors. If the communality for a variable was as high as 1.000, it would indicate that the variable overlapped totally with these 3 factors, and a variable communality of .000 indicates no overlap with the 3 factors (Comrey, 1973). These 55 communalities are the actual common variance (eigenvalue) for each of the 55 variables. These communalities ranged from .5285 (on the scale neat--untidy) to .8791 (on the scale polite--impolite), indicating a definite overlap of variables with the 3 factors. An extensive amount of variance in these variables was accounted for by scores for subjects (hospitalized patients) representing their positions on the 3 factors.

Prior to rotation, the unrotated factor loadings (pattern) were developed. The unrotated factor loadings are not used for scientific description, because the largest amount of variance is extracted with the first factor. Also, the following factors may contain complex

Table 13

Communalities Obtained from Three Factors after Five Iterations  
( $n = 150$ )

Variable (Scale)	Communality
1. Sincere--insincere	.5956
2. Dependable--undependable	.6831
3. Reasonable--unreasonable	.6958
4. Cautious--incautious	.5836
5. Consistent--inconsistent	.5986
6. Concerned--unconcerned	.8234
7. Warm--cold	.6462
8. Prompt--not prompt	.7036
9. Efficient--inefficient	.7050
10. Qualified--unqualified	.6653
11. Safe--dangerous	.6675
12. Capable--incapable	.7450
13. Skilled--unskilled	.8077
14. Honest--dishonest	.6560

Table 13 (Continued)

Variable (Scale)	Communality
15. Competent--incompetent	.8318
16. Trustworthy--untrustworthy	.6353
17. Respectful--disrespectful	.7115
18. Available--unavailable	.7619
19. Professional--unprofessional	.7882
20. Cooperative--uncooperative	.7807
21. Calm-anxious	.6207
22. Considerate--inconsiderate	.7415
23. Neat--untidy	.5285
24. Kind--cruel	.7092
25. Organized--disorganized	.5843
26. Communicative--uncommunicative	.6891
27. Sympathetic--unsympathetic	.7368
28. Attentive-inattentive	.7896
29. Expert--inexpert	.7317

Table 13 (Continued)

Variable (Scale)	Communality
30. Purposeful--aimless	.8295
31. Assertive--unassertive	.6680
32. Reliable--unreliable	.7970
33. Thorough--not thorough	.7744
34. Helpful--harmful	.8018
35. Receptive--unreceptive	.8581
36. Polite--impolite	.8797
37. Friendly--unfriendly	.7198
38. Remembers--forgets	.7157
39. Caring--uncaring	.7881
40. Accurate--inaccurate	.8242
41. Informed--uninformed	.7982
42. Intelligent--unintelligent	.8230
43. Pleasant--unpleasant	.7689
44. Careful--careless	.7318

Table 13 (Continued)

Variable (Scale)	Communality
45. Confident--unsure	.7538
46. Cheerful--gloomy	.7358
47. Open-minded--close-minded	.7653
48. Experienced--inexperienced	.8465
49. Believable--unbelievable	.8062
50. Patient--impatient	.7094
51. Sensible--not sensible	.7932
52. Responsible--irresponsible	.8226
53. Supportive--unsupportive	.8352
54. Conscientious--unconscientious	.7641
55. Decisive--indecisive	.7469

overlapping that is difficult to interpret and use for scientific description (Comrey, 1973). The eigenvalues for the unrotated factor loadings were: (a) factor 1, 38.023; (b) factor 2, 1.329; and (c) factor 3, 1.223, where the majority of the variance is explained by factor 1.

The oblique rotation (direct oblimin) had a gamma value of 0 ( $\Gamma = 0.000$ ). For the direct oblimin rotation, increasing the value of gamma causes factors to be more highly correlated (more oblique); but the positive values for gamma may result in convergence problems (Dixon & Brown, 1979). Forty-eight iterations were done to achieve the best oblique rotation.

Table 10 (last 3 columns) contains the rotated factor loadings (pattern loadings) for the 3 factors using an oblique rotation. All loadings less than .250 were replaced by .000, because a loading of less than .300 is nonsignificant (Nunnally, 1978).

Table 14 is a summary of the variance explained by the 3 factors using an oblique rotation. Factor 1 had the largest eigenvalue (22.986) and explained the largest proportion of the common variance (.732) and the total variance (.418). Each of the factors explained more than 3% of the total variance; therefore, they would



Table 14

Variance Explained by Three Factors--Oblique Rotation  
( $\underline{n} = 150$ )

Factor	Eigenvalue	Proportion of Common Variance	Proportion of Total Variance	Cumulative Proportion of Total Variance
1	22.986	.732	.418	.418
2	6.419	.204	.117	.535
3	2.010	.064	.037	.572

be considered significant factors. The total variance explained by the 3 factors was 57.2%.

Table 11, which has been discussed previously, contains the factor correlations for the rotated factors using the oblique rotation. Factor 1 was found to have an extremely high correlation with factor 2 (.819), and correlations existed between all 3 factors. These correlations should always be considered in interpreting the structure factor matrix.

Table 15 presents the structure factor matrix; the marker variables are identified with an asterisk. The structure factor matrix is composed of the structure loadings of each variable on the 3 factors. The structure loadings are the product moment correlations of the 55 variables with the three oblique factors. If a variable loads high (.500 or greater) on more than 1 factor, that indicates a correlation between factors. The variables frequently loaded high on factors 1 and 2, indicating a significant correlation (.819) between these two factors. The variable loadings on factor 3 were somewhat lower, but correlations also existed between factor 3 and the other 2 factors (Table 11).

Table 15  
Structure Factor Matrix--Structure Loadings  
( $n = 150$ )

Variable	Factor 1	Factor 2	Factor 3
Scale			
1. Sincere--insincere	.707	.730	.435
2. Dependable--undependable	.683	.816	.393
3. Reasonable--unreasonable	.741	.798	.472
4. Cautious--incautious	.694	.751	.295
5. Consistent--inconsistent	.632	.768	.335
6. Concerned--unconcerned	.798	.827	.605
7. Warm--cold	.696	.653	.626
8. Prompt--not prompt	.659	.834	.187
9. Efficient--inefficient	.808	.791	.359
*10. Qualified--unqualified	.814	.697	.335
11. Safe--dangerous	.808	.723	.381
12. Capable--incapable	.850	.698	.486
13. Skilled--unskilled	.898	.753	.394

Table 15 (Continued)

Variable Scale		Factor 1	Factor 2	Factor 3
*14.	Honest--dishonest	.746	.632	.592
*15.	Competent--incompetent	.911	.765	.376
*16.	Trustworthy--untrustworthy	.752	.632	.548
17.	Respectful--disrespectful	.763	.739	.584
18.	Available--unavailable	.755	.864	.216
*19.	Professional--unprofessional	.877	.770	.452
20.	Cooperative--uncooperative	.863	.746	.515
21.	Calm--anxious	.757	.627	.509
22.	Considerate--inconsiderate	.798	.728	.596
23.	Neat--untidy	.720	.558	.372
24.	Kind--cruel	.806	.665	.554
25.	Organized--disorganized	.739	.615	.126
26.	Communicative--uncommunicative	.823	.718	.270
27.	Sympathetic--unsympathetic	.836	.742	.496

Table 15 (Continued)

Variable		Factor 1	Factor 2	Factor 3
Scale				
28.	Attentive--inattentive	.853	.841	.335
*29.	Expert--inexpert	.846	.712	.238
30.	Purposeful--aimless	.901	.795	.289
31.	Assertive--unassertive	.794	.756	.275
*32.	Reliable--unreliable	.844	.850	.260
33.	Thorough--not thorough	.857	.804	.270
34.	Helpful--harmful	.812	.870	.439
35.	Receptive--unreceptive	.899	.828	.509
36.	Polite--impolite	.844	.768	.697
*37.	Friendly--unfriendly	.786	.626	.615
38.	Remembers--forgets	.724	.813	.101
39.	Caring--uncaring	.873	.784	.458
40.	Accurate--inaccurate	.902	.766	.285
41.	Informed--uninformed	.888	.720	.281

Table 15 (Continued)

Variable Scale	Factor 1	Factor 2	Factor 3
*42. Intelligent--unintelligent	.904	.698	.351
*43. Pleasant--unpleasant	.815	.709	.622
44. Careful--careless	.854	.716	.379
45. Confident--unsure	.862	.698	.264
46. Cheerful--gloomy	.764	.727	.628
*47. Open-minded--close-minded	.874	.729	.379
48. Experienced--inexperienced	.917	.718	.333
49. Believable--unbelievable	.891	.669	.353
50. Patient--impatient	.811	.711	.526
51. Sensible--not sensible	.879	.722	.492
52. Responsible--irresponsible	.904	.778	.389
53. Supportive--unsupportive	.887	.825	.490
54. Conscientious--unconscientious	.858	.798	.359
55. Decisive--indecisive	.843	.789	.271

\* Marker variables.

Table 16 includes the variables (scales) that had the highest pattern loadings on the three factors. The proportion of the variance of each variable that was contributed by the particular factors are identified. The variables believable--unbelievable, experienced--inexperienced, and intelligent--unintelligent have all their variance explained by factor 1. If the proportion of the variance of a variable explained by a factor is .50 or above, this is excellent; .40-.49, very good; .30-.39, good; .20-.29, fair; and .19 or less, poor (Comrey, 1973).

In interpreting an oblique rotation, the pattern factor matrix and structure factor matrix must both be considered. As discussed, the pattern matrix is best for determining the clusters of variables defined by the oblique factors. The structure matrix's main value is the measurement of the variance (structure loading squared) of each variable jointly accounted for by a particular factor and the interaction effects of that factor with the others. Table 17 includes the variables with high structure loadings on the 3 factors. (See Table 15 for the structure loadings of all 55 variables on the 3 factors).

Table 16

Sorted Pattern Loadings of Selected Variables on  
the Three Factors  
(n = 150)

Variable	Pattern Loading	Proportion of Variance
<u>Factor 1</u>		
49. Believable--unbelievable	1.052	1.107
48. Experienced--inexperienced	1.023	1.047
*42. Intelligent--unintelligent	1.022	1.044
41. Informed--uninformed	.952	.906
45. Confident--unsure	.932	.869
40. Accurate--inaccurate	.877	.769
*15. Competent--incompetent	.864	.746
*29. Expert--inexpert	.858	.736
13. Skilled--unskilled	.840	.706
*47. Open-minded--close-minded	.833	.694
25. Organized--disorganized	.807	.651
51. Sensible--not sensible	.807	.651
52. Responsible--irresponsible	.802	.643



Table 16 (Continued)

Variable	Pattern Loading	Proportion of Variance
30. Purposeful--aimless	.801	.642
44. Careful--careless	.799	.638
12. Capable--incapable	.775	.601
23. Neat--untidy	.760	.578
26. Communicative--uncommunicative	.749	.561
*10. Qualified--unqualified	.739	.546
*19. Professional--unprofessional	.702	.493
<u>Factor 2</u>		
8. Prompt--not prompt	.891	.794
2. Dependable--undependable	.782	.612
5. Consistent--inconsistent	.766	.587
18. Available--unavailable	.741	.549
38. Remembers--forgets	.662	.438
34. Helpful--harmful	.626	.392

Table 16 (Continued)

Variable	Pattern Loading	Proportion of Variance
<u>Factor 3</u>		
36. Polite--impolite	.424	.180
7. Warm--cold	.411	.169
46. Cheerful--gloomy	.381	.145
*37. Friendly--unfriendly	.350	.123
*43. Pleasant--unpleasant	.346	.120
*14. Honest--dishonest	.344	.118

148

\* Marker variables.

Table 17

Sorted Structure Loadings of Selected Variables  
on the Three Factors  
( $n = 150$ )

Variable	Structure Loading	Squared Structure Loading
<u>Factor 1</u>		
48. Experienced--inexperienced	.917	.841
*15. Competent--incompetent	.911	.830
*42. Intelligent--unintelligent	.904	.817
52. Responsible--irresponsible	.904	.817
40. Accurate--inaccurate	.902	.814
30. Purposeful--aimless	.901	.812
35. Receptive--unreceptive	.899	.808
13. Skilled--unskilled	.898	.806
49. Believable--unbelievable	.891	.794
41. Informed--uninformed	.888	.789
53. Supportive--unsupportive	.887	.787
51. Sensible--not sensible	.879	.773

Table 17 (Continued)

Variable	Structure Loading	Squared Structure Loading
*19. Professional--unprofessional	.877	.769
*47. Open-minded--close-minded	.874	.764
39. Caring--uncaring	.873	.762
20. Cooperative--uncooperative	.863	.745
45. Confident--unsure	.862	.743
54. Conscientious--unconscientious	.858	.736
33. Thorough--not thorough	.857	.734
44. Careful--careless	.854	.729
28. Attentive--inattentive	.853	.728
12. Capable--incapable	.850	.723
<u>Factor 2</u>		
34. Helpful--harmful	.870	.757
18. Available--unavailable	.864	.746
*32. Reliable-unreliable	.850	.723

Table 17 (Continued)

Variable	Structure Loading	Squared Structure Loading
28. Attentive--inattentive	.841	.707
8. Prompt--not prompt	.834	.696
<u>Factor 3</u>		
36. Polite--impolite	.697	.486
46. Cheerful--gloomy	.628	.394
7. Warm--cold	.626	.392
*43. Pleasant--unpleasant	.622	.389
*37. Friendly--unfriendly	.615	.378
6. Concerned--unconcerned	.605	.366

\* Marker variables.

In Tables 16 and 17, the marker variables (scales) are indicated with an asterisk. Ten of the 11 marker variables had significant loadings on 1 of the 3 factors.

### Summary

The sample was described in terms of age, sex, race, length of hospitalization, and number of hospitalizations. Hospitals 1 and 2 were found to be not significantly different regarding the demographic aspects previously listed.

The findings regarding the reliability of the 55-scaled semantic differential was found to be .99123. A comparison of the varimax (orthogonal) and oblique rotations, identified that the three factors were correlated, and that the oblique solution was the most accurate for this study.

The findings concluded with an indepth presentation of the factor analysis of the semantic differential data utilizing an oblique rotation. The oblique solution identified 3 factors with a significant correlation between factors 1 and 2. The scales most representative of these 3 factors were identified, and 10 of the marker variables were found to have extremely high loadings on at least 1 of the 3 factors.

## CHAPTER 5

### SUMMARY OF THE STUDY

The problem of this descriptive study was two-fold: (a) the identification of the dimensions of the concept source credibility of a nurse as perceived by a hospitalized patient; and (b) the comparison of the orthogonal and oblique factoring rotations, in analyzing the data obtained from a semantic differential instrument administered to hospitalized patients.

This chapter is a discussion of: (a) how this problem was studied, (b) the interpretations made from the findings, (c) the conclusions and implications based on the findings, and (d) the recommendations made for further research.

This discussion will answer the two research questions:

1. What are the dimensions of the concept source credibility of a nurse as perceived by a hospitalized patient?

2. Which factoring rotation, orthogonal or oblique, provided the most accurate, informative interpretation of the credibility data obtained by administering a

semantic differential instrument to hospitalized patients?

### Summary

The literature was reviewed for relevant information on the concepts of the conceptual framework (source credibility, trust, communication, and perception). The semantic differential was selected as the method for measuring the meaning of the concept source credibility of a nurse in terms of the perceptions of a hospitalized patient. The semantic differential instrument was developed from patient interviews and a review of the relevant literature. Sixty-five bipolar adjectives (scales), which included the 11 marker variables, were selected and judged for relevance by a sample of patients and nurses. The final instrument contained 55 scales, 11 of which were the marker variables.

The 55-scaled semantic differential was completed by 150 subjects, that were randomly selected from two North Dallas hospitals. A demographic data sheet was also obtained on each subject.

Reliability and factor analyses were performed on the semantic differential data. The reliability for the instrument in this study was .99123 (extremely high).



A comparison of the orthogonal and oblique rotations indicated that the oblique solution was most accurate and informative for this group of data. The oblique solution identified 3 factors (dimensions) of the source credibility of a nurse as perceived by this particular sample of hospitalized patients.

### Discussion of Findings

The discussion of the findings consists of four parts: (a) demographic data results; (b) reliability analysis; (c) the interpretation of the comparison of the factor rotations, orthogonal and oblique; and (d) the results from the oblique factoring solution. These findings were compared with the source credibility studies that were done in the field of communication by Applbaum and Anatol (1972, 1973), Baudhuin and Davis (1972), Berlo et al. (1969), Hovland et al. (1953), Liska (1976), McCroskey (1966), and Whitehead (1968).

The demographic data included age, sex, race, length of hospitalization, and number of hospitalizations. There was no significant difference found between hospitals 1 and 2 regarding the demographic data that were collected from the subjects in these 2 facilities. A frequency analysis of the demographic data from the 150

subjects indicated the following information about the patient population of these two hospitals. In the two hospital populations: (a) there appeared to be a majority of the patients that were over 55 years of age, (b) majority of the patients were female, (c) the patients were predominantly Caucasian, and (d) the number of hospitalizations was 6 times or less, for the majority of patients. The majority of the subjects had been hospitalized 6 days or less before completing the research questionnaire. There were no previous studies found that measured the source credibility of a nurse with a sample of hospitalized patients. The semantic differential data collected from hospitalized patients would be unique and nongeneralizable to a college student sample (Tucker, 1971b). The demographic data did provide relevant information about the patient populations of these two hospitals.

The reliability of the 55-scaled semantic differential used in this study was .99123, an extreme high reliability. Tucker (1971b) spoke to the need for researchers to demonstrate the reliability of their instruments before subjecting them to experimental manipulation. The majority of the studies quoted on

source credibility failed to identify the reliability of their instruments. McCroskey (1966) recorded the split-halves reliability estimate for his authoritative-ness scale was .978, and for the character scale was .966. McCroskey (1974) used an instrument with reliability estimates of .82-.86. Tuppen's (1974) study had alpha reliabilities that ranged from .851-.965. By comparison, the 55-scaled semantic differential instrument used in this study had a high reliability.

The means of the scales, determined from the responses of 150 subjects, was part of the reliability analysis (see Table 8). The 5 highest and 5 lowest scale means were note-worthy in this study. The 5 lowest scale means dealt with 3 aspects of the patient's perception of a nurse: (a) the accessibility of a nurse, in terms of the scales prompt--not prompt and available--unavailable; (b) the nurse's memory, remembers--forgets and consistent--inconsistent; and (c) the informative nature of the nurse, communicative--uncommunicative. The 5 highest scale means were attributes of character, in terms of the scales, honest--dishonest, trustworthy--untrustworthy, polite--impolite, calm--anxious, and neat--untidy. All of the scale means were extremely high, ranking far above the average of 4.

The comparison of the orthogonal and oblique rotations was presented by Liska (1976), and in her study the factors proved to be uncorrelated. Thus, the orthogonal solution provided an effective analysis of the data. By doing this comparison of rotations, the researcher has the basis for making an informed, accurate selection of rotation solutions. In this study (source credibility of a nurse), the oblique solution proved to be the most accurate method of analyzing the data. The majority of the source credibility studies has utilized the orthogonal rotation. A question that remains unanswered in these studies is: Were the factors identified truly uncorrelated (independent) or were the factors forced to be uncorrelated by the researcher's selection of the orthogonal rotation.

Tuppen (1974) utilized the oblique solution, and stated that more factors could be derived in this manner. In this study, the dimensions of the source credibility of a nurse were 3 in number for the varimax and oblique rotations.

The oblique solution has been used very infrequently by communication researchers to determine the dimensions of the concept source credibility. Tuppen (1974)

identified 5 factors: (a) Factor 1, trustworthiness; (b) factor 2, expertness; (c) factor 3, dynamism; (d) factor 4, coorientation; and (e) factor 5, charisma. These factors accounted for 63% of the total variance and had the following correlations: (a) the highest correlation (.82) existed between factors 1 and 5, and (b) the lowest correlation (.07) existed between factors 3 and 4.

In the present study to determine the dimensions of the source credibility of a nurse as perceived by a hospitalized patient, 3 factors were identified. These factors accounted for 57.2% of the total variance, which is similar but slightly lower than the total variance of other studies cited in the review of the literature. Berlo et al. (1969) recorded a total variance of 60%. There does appear to be some concept-scale interaction with the majority of the total variance (.418) being explained by factor 1 (Berlo et al., 1969).

There were high correlations between factors that Tuppen (1974) identified and also between the factors of the present study. The highest correlation (.819) existed between factors 1 and 2, and the lowest correlation (.328) existed between factors 2 and 3.

The scales having the highest pattern loadings (see Table 16) on the 3 factors were compared with previous source credibility studies. The scales loading high on factor 1 in the present study were very similar to the scales that Berlo et al. (1969) identified as making up the qualification factor, with some overlap into the safety factor. There was also definite similarity between factor 1 in the study and McCroskey's (1966) authoritativeness factor and Applbaum and Anatol's (1972, 1973) expertness factor.

Factor 2 of the present study had scales of high loadings that had only slight similarity to the scales making up the safety factor of the Berlo et al. (1969) study. The majority of the scales making up factor 2 (prompt--not prompt, available--unavailable, helpful--harmful, and remembers--forgets) were identified only with patient interviews and not in the review of the literature. The scales seem to be more associated with the source credibility of a nurse than a public speaker.

Factor 3 of this study is very similar to the character factor of McCroskey's (1966) study. This factor also contained 2 scales that had been identified

only through patient interviews (warm--cold and polite--impolite). The loadings of the scales on factor 3 were not as high as factors 1 and 2, but they all were greater than .340, which is considered a significant loading (Nunnally, 1978). In summary, the pattern matrix defined the simple structure configuration and was used to interpret the oblique factors. Ten of the 11 marker variables appeared significant in measuring the source credibility of a nurse.

The structure matrix demonstrated that the structure loadings of the variables were high on both factors 1 and 2. These high loadings were a measure of each variable's direct relationship with each of the two factors and the interaction between the two factors. This interaction was expressed in the correlation between factors 1 and 2, which was .819.

#### Conclusion and Implications

This 55-scaled semantic differential was extremely reliable (.99123) for this study. The reliability analysis also revealed extremely high means on the 55 scales, possibly indicating that the subjects' (patients') responses were more of the socially accepted nature, or that they expected nurses to be highly

credible sources. The final aspect of the reliability analysis, the alpha reliability coefficient if a variable was deleted (final column of Table 8), indicated that the reliability of the instrument would be maintained even if some of the variables (scales) were deleted. An instrument of fewer scales with high pattern loadings on the 3 factors would provide reliable source credibility information (Tucker, 1971b) and reduce the patient's efforts in completing the instrument.

The comparison of the orthogonal and oblique factoring rotations was an effective means of determining the most accurate factor solution for this study. This comparison should be included in the design of studies by other researchers, who utilized the factor analysis technique.

Three factors were identified with an oblique factor solution. The naming of the factors is very subjective (Cattell, 1966) and open to the interpretations of the researcher. In this study factors 1 and 2 were highly correlated (.819); therefore, 1 factor name was applied, competence. The competency of a nurse has been identified as significant to the nurse-patient interaction (Simmons, 1976). Factor 3 was named



character, due to the similarity with McCroskey's (1966) character factor. The construct validity for this instrument in this study includes the concepts competence and character. Initial research has identified two dimensions of the source credibility of a nurse as perceived by a hospitalized patient. With additional research, the dimensions of the source credibility of a nurse could be clearly identified and promoted in nursing education and practice. A nurse who is perceived as credible would be more influential in a therapeutic nurse-patient interaction (Simmons, 1976), therefore, improving the quality of nursing care to patients.

A new semantic differential instrument composed of 30 scales (10 of the scales were marker variables used in the 55-scaled instrument) was developed (Appendix O). The scales of this instrument had high pattern loadings on the 2 factors, competence and character. This instrument provides direction for future source credibility research.

#### Recommendations for Further Study

The 30-scaled semantic differential instrument developed requires testing for reliability and validity.

The dimensions of source credibility determined by factor analysis are not easily generalized across situation, time, subjects, or experiment (Applbaum & Anatol, 1972, 1973; McCroskey, 1966; Tucker, 1971a). Therefore, the dimensions of the source credibility of a nurse require additional research in a variety of settings, at different times, and with a variety of subjects.

A controlled measure of the dimensions of the concept source credibility of a nurse could be conducted in the classroom, where students would view a high credibility nurse source on tape and a low credibility nurse source. The students (subjects) would be asked to rate the high and low credibility sources on the 30-scaled semantic differential. This would determine the dimensions of the concept source credibility, and would also determine if the instrument used to measure credibility was effective in detecting high and low credibility sources. The concept of the source credibility of a nurse is essentially an unresearched area and holds extensive opportunity for the interested researcher. For interested readers, the raw data with an interpretation can be found in Appendix P, and the factor correlation matrix is in Appendix Q.

## APPENDIX A

Please rate the nurses caring for you in this hospital on the following 7-point scale.

NURSE

1. Sincere \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Insincere
2. Dependable \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Undependable
3. Reasonable \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unreasonable
4. Cautious \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Incautious
5. Consistent \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Inconsistent
6. Concerned \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unconcerned
7. Warm \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Cold
8. Prompt \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Not prompt
9. Efficient \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Inefficient
10. Qualified \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unqualified
11. Safe \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Dangerous
12. Capable \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Incapable
13. Skilled \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unskilled
14. Honest \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Dishonest
15. Competent \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Incompetent
16. Trustworthy \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Untrustworthy
17. Respectful \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Disrespectful
18. Available \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unavailable
19. Professional \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unprofessional
20. Cooperative \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Uncooperative
21. Calm \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Anxious

22. Considerate \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Inconsiderate
23. Neat \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Untidy
24. Kind \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Cruel
25. Organized \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Disorganized
26. Communicative \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Uncommunicative
27. Sympathetic \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unsympathetic
28. Attentive \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Inattentive
29. Expert \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Inexpert
30. Purposeful \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Aimless
31. Assertive \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unassertive
32. Reliable \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unreliable
33. Thorough \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Not Thorough
34. Helpful \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Harmful
35. Receptive \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unreceptive
36. Polite \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Impolite
37. Friendly \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unfriendly
38. Remembers \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Forgets
39. Caring \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Uncaring
40. Accurate \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Inaccurate
41. Informed \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Uninformed
42. Intelligent \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unintelligent
43. Pleasant \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unpleasant
44. Careful \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Careless
45. Confident \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unsure

46. Cheerful \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Gloomy
47. Open-minded \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Close-minded
48. Experienced \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Inexperienced
49. Believable \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Unbelievable
50. Patient \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Impatient
51. Sensible \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Not Sensible
52. Responsible \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Irresponsible
53. Supportive \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Unsupportive
54. Conscientious \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Unconscientious
55. Decisive \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_ Indecisive

## APPENDIX B

TEXAS WOMAN'S UNIVERSITY  
Box 23717 TWU Station  
Denton, Texas 76204

## HUMAN SUBJECTS REVIEW COMMITTEE

Name of Investigator: Susan Grove Center: Denton  
Address: 6017 Birchbrook Apt. 1028 Date: May 2, 1980  
Dallas, TX 75206

Dear Susan Grove

Your study entitled Instrument Development: Measurement of the  
Source Credibility of a Nurse as Perceived by the Hospitalized Patient

has been reviewed by a committee of the Human Subjects Review Committee and it appears to meet our requirements in regard to protection of the individual's rights.

Please be reminded that both the University and the Department of Health, Education, and Welfare regulations typically require that signatures indicating informed consent be obtained from all human subjects in your studies. These are to be filed with the Human Subjects Review Committee. Any exception to this requirement is noted below. Furthermore, according to DHEW regulations, another review by the Committee is required if your project changes.

Any special provisions pertaining to your study are noted below:

       Add to informed consent form: No medical service or compensation is provided to subjects by the University as a result of injury from participation in research.

       Add to informed consent form: I UNDERSTAND THAT THE RETURN OF MY QUESTIONNAIRE CONSTITUTES MY INFORMED CONSENT TO ACT AS A SUBJECT IN THIS RESEARCH.

       The filing of signatures of subjects with the Human Subjects Review Committee is not required.

       Other:

  x   No special provisions apply.

cc: Graduate School  
Project Director  
Director of School or  
Chairman of Department

Sincerely,

*Marilyn Hinson*

Chairman, Human Subjects  
Review Committee

at Denton



## APPENDIX C

TEXAS WOMAN'S UNIVERSITY

DENTON, TEXAS 76204

THE GRADUATE SCHOOL

December 18, 1980

Ms. Susan Grove  
6017 Birchbrook, #1028  
Dallas, Texas 75206

Dear Ms. Grove:

I have received and approved the Prospectus for your research project. Best wishes to you in the research and writing of your project.

Sincerely yours,

Robert S. Pawlowski  
Provost

RP:dl

cc Dr. Margie N. Johnson  
Dr. Anne Gudmundsen  
Graduate Office

## APPENDIX D

TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE Baylor University Medical Center

GRANTS TO Susan Grove

a student enrolled in a program of nursing leading to a Doctorate ~~Master's~~ Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem.

The Source Credibility of a Nurse as Perceived by the Hospitalized Patient.

The conditions mutually agreed upon are as follows:

1. The agency ~~(may)~~ (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency ~~(may)~~ (may not) be identified in the final report.
3. The agency (wants) ~~(does not want)~~ a conference with the student when the report is completed.
4. The agency is ~~(willing)~~ (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other \_\_\_\_\_

Date: Dec. 4, 1980

Susan Grove  
Signature of Student

[Signature]  
Signature of Agency Personnel

Marion N. Johnson  
Signature of Faculty Advisor

\*Fill out & sign three copies to be distributed as follows:  
Original - Student; First copy - Agency; Second copy - TWU College of Nursing.

TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE \_\_\_\_\_

GRANTS TO Susan Grove  
a student enrolled in a program of nursing leading to a Doctorate  
~~Master's~~ Degree at Texas Woman's University, the privilege  
of its facilities in order to study the following problem.

The Source Credibility of a Nurse as Perceived by the Hospitalized Patient.

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other \_\_\_\_\_

Date: May 15, 1980

*Susan Grove*  
Signature of Student

Signature of Agency Personnel

*Margie N. Johnson*  
Signature of Faculty Advisor

\*Fill out & sign three copies to be distributed as follows:  
Original - Student; First copy - Agency; Second copy - TWU  
College of Nursing.

## APPENDIX E

Oral Presentation

I am Susan Grove, a doctoral candidate at Texas Woman's University, and I am conducting a study in this hospital on the credibility of nurses. I am asking patients in this hospital to participate in this research study to develop a method for measuring the credibility of nurses. If you consent to be a subject, I will ask you to rate the nurses who have cared for you in this hospital on the questionnaire provided. The questionnaire is a semantic differential instrument with 55 scales. Participation in this study will require 15 to 20 minutes of your time, which might cause you some fatigue. You may discontinue participation at anytime. The actual information collected will be kept confidential, and your name will not be used in the study, thus, your health care will not be effected, and you are protected from improper release of data. Just a summary of the research findings will be given to the nursing administrator of the hospital.

The potential benefits to you and/or others from this study are: (a) development of an instrument to measure the credibility of nurses; (b) identification of the qualities of a credible nurse; and (c) direction for the improvement of nurses' credibility and, thus, better patient care.

No medical service or compensation is provided by the university as a result of injury from participation in the study.

Do you have any questions regarding this study? No other alternative procedures are more advantageous in this study, and you may terminate your participation at anytime.



## APPENDIX F

Consent Form

Investigator: Susan Grove, R.N.

I hereby authorize Susan Grove to conduct the following study on the credibility of nurses. As a hospitalized patient, I am asked to participate in this research study to develop a method for measuring the credibility of nurses. As a subject, I will rate the nurses who have cared for me in this hospital using the questionnaire provided. The questionnaire is a semantic differential instrument with 55 scales. If I decide to participate, it will require 15 to 20 minutes to complete, which might cause some fatigue. I know that I can discontinue participation at anytime. The actual information collected will be kept confidential, and my name will not be used in the study, thus my health care will not be effected, and I am protected from improper release of data. Just a summary of the research findings will be given to the nursing administrator of the hospital.

I understand that the potential benefits to myself and/or others from this study are: (a) development of an instrument to measure the credibility of nurses; (b) identification of the qualities of a credible nurse; and

(c) direction for the improvement of nurses' credibility and, thus, better patient care.

I understand that no medical service or compensation is provided by the university as a result of injury from participation in the research.

An offer to answer all of my questions regarding the study has been made. If alternative procedures are more advantageous to me, they have been explained. I understand that I may terminate my participation in the study at anytime.

---

Subject's Signature

---

Date

## APPENDIX G

TEXAS WOMAN'S UNIVERSITY  
Box 22487, TWU Station  
DENTON, TEXAS 76204

HUMAN RESEARCH REVIEW COMMITTEE

Name of Investigator: Susan Grove Center: Denton  
Address: 6017 Birchbrook Date: November 12, 1979  
Dallas, Texas 75206

Dear Susan Grove

Your study entitled Development of an Instrument for Measuring Source  
Credibility of Nurses as Perceived by Hospitalized Patients

has been reviewed by a committee of the Human Research Review Committee  
and it appears to meet our requirements in regard to protection of the  
individual's rights.

Please be reminded that both the University and the Department  
of Health, Education, and Welfare regulations require that written  
consents must be obtained from all human subjects in your studies.  
These forms must be kept on file by you.

Furthermore, should your project change, another review by the  
Committee is required, according to DHEW regulations.

Please add the following statement to your Informed Consent Form:  
"No medical service or compensation is provided to subjects by the  
University as a result of injury from participation in research."

Sincerely,

*Marilyn Benson*

Chairman, Human Research  
Review Committee

at Denton

## APPENDIX H

TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING  
DENTON, TEXAS 76204

DALLAS CENTER  
1810 INWOOD ROAD  
DALLAS, TEXAS 75235

HOUSTON CENTER  
1130 M. D. ANDERSON BLVD.  
HOUSTON, TEXAS 77025

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE Baylor University Medical Center  
GRANTS TO Susan Grace R.N.  
a student enrolled in a program of nursing leading to a PhD Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

The identification of the dimensions of source credibility of a nurse as perceived by a hospitalized patient.

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other \_\_\_\_\_

Date: Nov 28, 1979

Susan Grace  
Signature of Student

Marian N. Johnson  
Signature of Agency Personnel  
Signature of Faculty Advisor

\* Fill out and sign three copies to be distributed as follows: Original-Student; First copy - agency; Second copy - TWU College of Nursing.

TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING  
DENTON, TEXAS 76204

DALLAS CENTER  
1810 INWOOD ROAD  
DALLAS, TEXAS 75235

HOUSTON CENTER  
1130 M. D. ANDERSON BLVD.  
HOUSTON, TEXAS 77025

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE Hurst - Eulless - Bedford Hospital

GRANTS TO Susan Groce  
a student enrolled in a program of nursing leading to a PhD Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

The identification of the dimensions of source credibility of  
a nurse as perceived by a hospitalized patient.

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other \_\_\_\_\_

Date: Oct. 26, 1979

Susan Groce  
Signature of Student

\_\_\_\_\_  
Signature of Agency Personnel  
Margaret N. Hinton  
Signature of Faculty Advisor

\* Fill out and sign three copies to be distributed as follows: Original-Student;  
First copy - agency; Second copy - TWU College of Nursing.



TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING  
DENTON, TEXAS 76204

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DALLAS, TEXAS 75235

HOUSTON CENTER  
1130 M. D. ANDERSON BLVD.  
HOUSTON, TEXAS 77025

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE \_\_\_\_\_  
GRANTS TO \_\_\_\_\_  
a student enrolled in a program of nursing leading to a PhD Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

The identification of the dimensions of source credibility of a nurse as perceived by a hospitalized patient.

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other \_\_\_\_\_

Date: 1/21/52

Susan G. Gove  
Signature of Student

Signature of Agency Personnel

Marque M. Johnson  
Signature of Faculty Advisor

\* Fill out and sign three copies to be distributed as follows: Original-Student;  
First copy - agency; Second copy - TWU College of Nursing.

TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING  
DENTON, TEXAS 76204

DALLAS CENTER  
1810 INWOOD ROAD  
DALLAS, TEXAS 75235

HOUSTON CENTER  
1130 M. D. ANDERSON BLVD.  
HOUSTON, TEXAS 77025

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE Research Committee of Methodist Hospitals / Dallas  
GRANTS TO Susan Grove  
a student enrolled in a program of nursing leading to a PhD Degree at Texas  
Woman's University, the privilege of its facilities in order to study the follow-  
ing problem:

The identification of the dimensions of source credibility of  
a nurse as perceived by a hospitalized patient.

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency  
(may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student  
when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report  
to be circulated through interlibrary loan.
5. Other Final report shall be presented to  
Nursing Service. Each subject's attending  
physician shall give verbal or written consent before  
interview.

Date: 11-15-79

Susan Grove  
Signature of Student

James H. Connolly  
Signature of Agency Personnel  
Margie M. Johnson  
Signature of Faculty Advisor

\* Fill out and sign three copies to be distributed as follows: Original-Student;  
First copy - agency; Second copy - TWU College of Nursing.

TEXAS WOMAN'S UNIVERSITY  
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1130 M. D. ANDERSON BLVD.  
HOUSTON, TEXAS 77025

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE \_\_\_\_\_  
GRANTS TO \_\_\_\_\_  
a student enrolled in a program of nursing leading to a PhD Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

The identification of the dimensions of source credibility of a nurse as perceived by a hospitalized patient.

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other Letter to the agency (Ph.D.) from  
the student and the agency to the student  
that the student is not to be identified in the report.

Date: Nov. 1979

Susan Grove  
Signature of Student

\_\_\_\_\_  
Signature of Agency Personnel  
Margie N. Johnson  
Signature of Faculty Advisor

\* Fill out and sign three copies to be distributed as follows: Original-Student;  
First copy - agency; Second copy - TWU College of Nursing.

## APPENDIX I

Oral Presentation

I am Susan Grove, a doctoral candidate at Texas Woman's University, and I am conducting a study in this hospital on the credibility of a nurse. I am asking the patients in this hospital to participate in this research study that will promote the development of an instrument for measuring the credibility of nurses as perceived by hospitalized patients. If you consent to be a subject, I would like you to describe the specific qualities of nurses that make them acceptable (credible) or unacceptable (noncredible) sources of information to you as a patient. If you are willing to participate, it will require about 15 minutes of your time. I will answer any questions that you might have related to this study.

This study will provide essential information for the development of an instrument to measure the credibility of nurses. The information collected with this instrument may lead to the improvement of the qualities of nurses and, thus, to better patient care.

There is a possibility that describing the nurses' qualities might be tiring, and you have the right to withdraw your participation in this study at any time.

Your decision to participate or not to participate in this study will not affect the health care you receive. As a subject your name will not be identified in the research report.

Consent Form

Investigator: Susan Grove, R.N.

I hereby authorize Susan Grove to conduct the following study on the credibility of a nurse. As a hospitalized patient, I am asked to participate in this research study that will promote the development of an instrument for measuring the credibility of a nurse as perceived by hospitalized patients. As a subject, I will describe the specific qualities of nurses that make them acceptable (credible) or unacceptable (non-credible) sources of information to me as a patient. If I decide to participate, it will require 15 minutes of my time.

I understand that potential benefits for myself and/or others from this study are: (a) to provide essential information for the development of an instrument to measure the source credibility of a nurse; and (b) to know that collection of information with this instrument may lead to improvement of the qualities of nurses and, thus, better patient care.

I understand there is a possibility that describing the nurses' qualities might be fatiguing. I have the right to discontinue my participation in this study at any time.

My decision to participate or not to participate in this study will not affect my health care. As a subject, my name will not be identified in the research report.

---

Subject's Signature

---

Date



## APPENDIX J

Oral Presentation

I am Susan Grove, a doctoral candidate at Texas Woman's University, and I am conducting a study in this hospital on the credibility of a nurse. I am asking the patients and the nurses in this hospital to participate in this research study that will promote the development of an instrument for measuring the credibility of nurses as perceived by hospitalized patients. If you consent to be a subject, I would like you to judge 65 semantic differential scales to determine if each scale is relevant or irrelevant for measuring the credibility of a nurse as a source of information to a patient. If you are willing to participate, it will require about 15 minutes of your time. I will answer any questions that you might have related to this study.

This study will provide essential information for the development of an instrument to measure the credibility of nurses. The information collected with this instrument may lead to the improvement of the qualities of nurses and, thus, to better patient care.

There is a possibility that you might be fatigued by the judging of these scales, and you have the right to withdraw your participation at any time.

Your decision to participate or not to participate in this study will not affect your employment in this hospital (nurse)/health care (patient). As a subject, your name will not be identified in the research report.

Consent Form

I hereby authorize Susan Grove to conduct the following study on the credibility of a nurse. As a nurse/hospitalized patient, I am asked to participate in this research study that will promote the development of an instrument for measuring the credibility of nurses as perceived by hospitalized patients. As a subject, I will judge 65 semantic differential scales to determine if each scale is relevant or irrelevant for measuring the credibility of a nurse as a source of information to a patient. If I decide to participate, it will require about 15 minutes of my time.

I understand that potential benefits for myself and/or others from this study are: (a) to provide essential information for the development of an instrument to measure the source credibility of a nurse and (b) to know that collection of information with this instrument may lead to improvement of the qualities of nurses and, thus, better patient care.

I understand there is a possibility that judging these scales might cause fatigue. I have the right to discontinue my participation in this study at any time.

My decision to participate or not to participate in this study will not affect my employment in this

hospital (nurse)/ health care (patient). As a subject,  
my name will not be identified in the research report.

---

Subject's Signature

---

Date

## APPENDIX K

Scales Selected from Patient Interviews and  
a Reivew of Relevant Literature

1. Sincere--insincere
2. Dependable--undependable
3. Reasonable--unreasonable
- \*4. Cautious--incautious
5. Consistent--inconsistent
6. Concerned--unconcerned
- \*7. Warm--cold
- \*8. Prompt--not prompt
9. Efficient--inefficient
- \*\*10. Qualified--unqualified
11. Safe--dangerous
12. Nice--Awful
13. Capable--incapable
14. Skilled--unskilled
- \*\*15. Honest--dishonest
- \*\*16. Competent--incompetent
- \*\*17. Trustworthy--untrustworthy
18. Respectful--disrespectful
- \*19. Available--unavailable
- \*\*20. Professional--unprofessional
21. Cooperative--uncooperative
22. Gracious--abrupt

- 23. Calm--anxious
- \*24. Involved--uninvolved
- 25. Serious--joking
- 26. Fast--slow
- \*27. Considerate--inconsiderate
- 28. Neat--untidy
- 29. Kind--cruel
- 30. Organized--disorganized
- \*31. Communicative--uncommunicative
- 32. Sympathetic--unsympathetic
- \*33. Attentive--inattentive
- \*34. Accepting--unaccepting
- \*\*35. Expert--inexpert
- 36. Purposeful--aimless
- \*37. Assertive--unassertive
- 38. Authoritative--unauthoritative
- \*\*39. Reliable--unreliable
- \*40. Thorough--not thorough
- \*41. Helpful--harmful
- \*42. Receptive--unreceptive
- \*43. Polite--impolite
- \*\*44. Friendly--unfriendly
- \*45. Remembers--forgets
- \*46. Caring--uncaring



- \*47. Accurate--inaccurate
- 48. Informed--uninformed
- \*\*49. Intelligent--unintelligent
- \*\*50. Pleasant--unpleasant
- 51. Valuable--worthless
- 52. Careful--careless
- 53. Confident--unsure
- 54. Energetic--tired
- 55. Emphatic--hesitant
- 56. Cheerful--gloomy
- \*\*57. Open-minded--close-minded
- 58. Experienced--inexperienced
- 59. Believable--unbelievable
- 60. Patient--impatient
- 61. Sensible--not sensible
- 62. Responsible--irresponsible
- \*63. Supportive--unsupportive
- \*64. Conscientious--unconscientious
- 65. Decisive--indecisive

---

No asterisk = Scales selected from patient interviews and  
review of relevant literature.

\* = Scales selected from patient interviews only.

\*\* = Marker variables.

## APPENDIX L

Judgment of Scale Relevance

Please indicate on the answer sheet provided a "Yes" if you think the scale is relevant for measuring the credibility of a nurse, and a "No" if you think the scale is irrelevant for measuring the credibility of a nurse.

1. Sincere \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Insincere
2. Dependable \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Undependable
3. Reasonable \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unreasonable
4. Cautious \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Incautious
5. Consistent \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Inconsistent
6. Concerned \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unconcerned
7. Warm \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Cold
8. Prompt \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Not prompt
9. Efficient \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Inefficient
10. Qualified \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unqualified
11. Safe \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Dangerous
12. Nice \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Awful
13. Capable \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Incapable
14. Skilled \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unskilled
15. Honest \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Dishonest
16. Competent \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Incompetent
17. Trustworthy \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Untrustworthy
18. Respectful \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Disrespectful
19. Available \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unavailable
20. Professional \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unprofessional

21. Cooperative \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Uncooperative
22. Gracious \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Abrupt
23. Calm \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Anxious
24. Involved \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Uninvolved
25. Serious \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Joking
26. Fast \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Slow
27. Considerate \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Inconsiderate
28. Neat \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Untidy
29. Kind \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Cruel
30. Organized \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Disorganized
31. Communicative \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Uncommunicative
32. Sympathetic \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unsympathetic
33. Attentive \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Inattentive
34. Accepting \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unaccepting
35. Expert \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Inexpert
36. Purposeful \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Aimless
37. Assertive \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unassertive
38. Authoritative \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unauthoritative
39. Reliable \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unreliable
40. Thorough \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Not thorough
41. Helpful \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Harmful
42. Receptive \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unreceptive
43. Polite \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Impolite
44. Friendly \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unfriendly

45. Remembers \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Forgets
46. Caring \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Uncaring
47. Accurate \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Inaccurate
48. Informed \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Uninformed
49. Intelligent \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unintelligent
50. Pleasant \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unpleasant
51. Valuable \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Worthless
52. Careful \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Careless
53. Confident \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unsure
54. Energetic \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Tired
55. Emphatic \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Hesitant
56. Cheerful \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Gloomy
57. Open-minded \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Close-minded
58. Experienced \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Inexperienced
59. Believable \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unbelievable
60. Patient \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Impatient
61. Sensible \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Not sensible
62. Responsible \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Irresponsible
63. Supportive \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unsupportive
64. Conscientious \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Unconscientious
65. Decisive \_\_:\_\_:\_\_:\_\_:\_\_:\_\_ Indecisive

## APPENDIX M

Scales Judged for Irrelevance

Scale	Relative Frequency (%) Patients' Judgments of Irrelevance (n = 17)	Relative Frequency (%) Nurses' Judgments of Irrelevance (n = 17)	Relative Frequency (%) Patients' and Nurses' Judgments of Relevance (n = 34)
1. Sincere--insincere	0.00	0.00	0.00
2. Dependable--undependable	0.00	5.88	2.94
3. Reasonable--unreasonable	5.88	0.00	2.94
4. Cautious--incautious	11.76	17.65	14.71
5. Consistent--inconsistent	23.53	11.76	17.65
6. Concerned--unconcerned	11.76	0.00	5.88
7. Warm--cold	17.65	17.65	17.65
8. Prompt--not prompt	0.00	17.65	8.82
9. Efficient--inefficient	0.00	0.00	0.00
10. Qualified--unqualified	0.00	17.65	8.82
11. Safe--dangerous	0.00	17.65	8.82
*12. Nice--awful	29.41	35.29	32.35
13. Capable--incapable	5.88	0.00	2.94
14. Skilled--unskilled	0.00	0.00	0.00
15. Honest--dishonest	17.65	5.88	11.76
16. Competent--incompetent	5.88	0.00	2.94
17. Trustworthy--untrustworthy	11.76	0.00	5.88
18. Respectful--disrespectful	17.65	17.65	17.65

Scale	Relative Frequency (%) Patients' Judgments of Irrelevance (n = 17)	Relative Frequency (%) Nurses' Judgments of Irrelevance (n = 17)	Relative Frequency (%) Patients' and Nurses' Judgments of Relevance (n = 34)
19. Available--unavailable	11.76	35.29	23.53
20. Professional--unprofessional	0.00	0.00	0.00
21. Cooperative--uncooperative	17.65	5.88	11.76
*22. Gracious--abrupt	29.41	47.06	38.24
23. Calm--anxious	23.53	11.76	17.65
*24. Involved--uninvolved	29.41	35.29	32.35
*25. Serious--joking	64.71	64.71	64.71
*26. Fast--slow	52.94	52.94	52.94
27. Considerate--inconsiderate	11.76	5.88	8.82
28. Neat--untidy	11.76	23.53	17.65
29. Kind--cruel	11.76	0.00	5.88
30. Organized--disorganized	5.88	5.88	5.88
31. Communicative--uncommunicative	23.53	11.76	17.65
32. Sympathetic--unsympathetic	23.53	5.88	14.71
33. Attentive--inattentive	11.76	0.00	5.88
*34. Accepting--unaccepting	35.29	41.18	38.24
35. Expert--inexpert	17.65	35.29	26.47
36. Purposeful--aimless	11.76	11.76	11.76



Scale	Relative Frequency (%) Patients' Judgments of Irrelevance ( <u>n</u> = 17)	Relative Frequency (%) Nurses' Judgments of Irrelevance ( <u>n</u> = 17)	Relative Frequency (%) Patients' and Nurses' Judgments of Irrelevance ( <u>n</u> = 34)
37. Assertive--unassertive	23.53	23.53	23.53
*38. Authoritative--unauthoritative	52.94	52.94	52.94
39. Reliable--unreliable	0.00	5.88	2.94
40. Thorough--not thorough	5.88	0.00	2.94
41. Helpful--harmful	0.00	5.88	2.94
42. Receptive--unreceptive	23.53	5.88	14.71
43. Polite--impolite	23.53	5.88	14.71
44. Friendly--unfriendly	35.29	11.76	23.53
45. Remembers--forgets	5.88	0.00	2.94
46. Caring--uncaring	5.88	0.00	2.94
47. Accurate--inaccurate	0.00	5.88	2.94
48. Informed--uninformed	0.00	0.00	0.00
49. Intelligent--unintelligent	5.88	5.88	5.88
50. Pleasant--unpleasant	17.65	5.88	11.76
*51. Valuable--worthless	41.18	53.82	45.95
52. Careful--careless	0.00	11.76	5.88
53. Confident--unsure	5.88	0.00	2.94
*54. Energetic--tired	35.29	35.29	35.29

Scale	Relative Frequency (%) Patients' Judgments of Irrelevance (n = 17)	Relative Frequency (%) Nurses' Judgments of Irrelevance (n = 17)	Relative Frequency (%) Patients' and Nurses' Judgments of Irrelevance (n = 34)
*55. Emphatic--hesitant	41.18	41.18	41.18
56. Cheerful--gloomy	23.53	23.53	23.53
57. Open-minded--close-minded	17.65	11.76	14.71
58. Experienced--inexperienced	17.65	17.65	17.65
59. Believable--unbelievable	0.00	11.76	5.88
60. Patient--impatient	5.88	5.88	5.88
61. Sensible--not sensible	5.88	17.65	11.76
62. Responsible--irresponsible	0.00	0.00	0.00
63. Supportive--unsupportive	11.76	0.00	5.88
64. Conscientious--unconscientious	5.88	5.88	5.88
65. Decisive--indecisive	29.41	5.88	17.65

\*Indicates the scales that were deleted using the 30% criteria level.

## APPENDIX N

Demographic Data Sheet

Subject's Initials: \_\_\_\_\_

Age: \_\_\_\_\_

Sex: \_\_\_\_\_

Race: \_\_\_\_\_

Length of Hospitalization: \_\_\_\_\_

Number of Hospitalizations: \_\_\_\_\_

## APPENDIX O

Please rate the concept nurse using the following 7-point rating scale.

NURSE

- |       |               |                             |                 |
|-------|---------------|-----------------------------|-----------------|
| *1.   | Dependable    | ___:___:___:___:___:___:___ | Undependable    |
| **2.  | Concerned     | ___:___:___:___:___:___:___ | Unconcerned     |
| **3.  | Warm          | ___:___:___:___:___:___:___ | Cold            |
| *4.   | Prompt        | ___:___:___:___:___:___:___ | Not prompt      |
| 5.    | Qualified     | ___:___:___:___:___:___:___ | Unqualified     |
| 6.    | Skilled       | ___:___:___:___:___:___:___ | Unskilled       |
| **7.  | Honest        | ___:___:___:___:___:___:___ | Dishonest       |
| 8.    | Competent     | ___:___:___:___:___:___:___ | Incompetent     |
| *9.   | Available     | ___:___:___:___:___:___:___ | Unavailable     |
| 10.   | Professional  | ___:___:___:___:___:___:___ | Unprofessional  |
| 11.   | Organized     | ___:___:___:___:___:___:___ | Disorganized    |
| 12.   | Communicative | ___:___:___:___:___:___:___ | Uncommunicative |
| 13.   | Expert        | ___:___:___:___:___:___:___ | Inexpert        |
| 14.   | Purposeful    | ___:___:___:___:___:___:___ | Aimless         |
| *15.  | Reliable      | ___:___:___:___:___:___:___ | Unreliable      |
| *16.  | Helpful       | ___:___:___:___:___:___:___ | Harmful         |
| **17. | Polite        | ___:___:___:___:___:___:___ | Impolite        |
| **18. | Friendly      | ___:___:___:___:___:___:___ | Unfriendly      |
| 19.   | Accurate      | ___:___:___:___:___:___:___ | Inaccurate      |
| 20.   | Informed      | ___:___:___:___:___:___:___ | Uninformed      |

21. Intelligent \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unintelligent
- \*\*22. Pleasant \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unpleasant
23. Careful \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Careless
24. Confident \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unsure
- \*\*25. Cheerful \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Gloomy
26. Open-minded \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Close-minded
27. Experienced \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Inexperienced
28. Believable \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Unbelievable
29. Sensible \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Not sensible
30. Responsible \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_ Irresponsible
- 

No asterisk = Scales measuring Factor 1.

\* = Scales measuring Factor 2.

\*\* = Scales measuring Factor 3.

## APPENDIX P



Interpretation of Raw Data

The first 5 columns are the identification numbers for the 150 subjects. A break exists between the identification numbers and the data on each subject. Following the break, columns 1 and 2 contain the age of the subjects. Column 3 is the sex of the subjects; 0 represents male, and 1 represents female. Columns 4 and 5 are the data on length of hospitalization, and columns 6 and 7 are the data on the number of hospitalizations. The last 55 columns contain the 150 subjects' responses on a 55-scaled semantic differential.

[illegible]



[illegible]

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00121 5410308131131143111111113221212231333223221132222122222222222
00122 3710209111111111 11111111111111111111111111111111111111111111111111
00123 3010202222322212222222222222222222222222222222222222222222222222222
00124 58007072234421212222121122111523433423221312332221221221443223
00125 461041021112111111111111111111222111121111211121111111111111112
00126 6512609111111111111111111111111111111111111111111111111111111111111111
00127 31103014331343333223333345433433553533222422242222544444223
00128 491030421112122111112111111111111111121111111111111111111111111111111
00129 581030411111111111111111111111111111111111111111111111111111111111111
00130 731100411111111111111111111111111111111111111111111111111111111111111
00131 6610306121121222111122222222221111121111222211111111211222
00132 361030411111111111111111111111111111111111111111111111111111111111111
00133 29103034443654643343324453414141535332243343533223225522742333
00134 560100523223234332323224322322343433543332242343222423233324
00135 6911408111112111111111111111111111111111111111111111111111111111111111
00136 41106061111222111111111121111211221112111212221122112111111211
00137 5210205111111111111111111111111111131111211111111111111111111111111111
00138 501040611111211111111111112111211121111211111211111111111111111111111
00139 49103102222331522222121142211112122222332211421211311122212222
00140 7410418111111111111111111111111111111111111111111111111111111111111111
00141 5710406211222323232322 1222232233233 2232322333332322 22222222
00142 4500414222111131111111131211113211211111111111111111111111111111111
00143 6910407211111111222221112111122221222111113231312322122122
00144 6211505211211121111111121112112212121122211211111112121111111111111111111
00145 690031211111111111111111111111111131111121111111111111111111111111112
00146 56002032332333333333121232322112222232322223332232332233333333333
00147 34106061221311221111111111112111111111211112111111111111111111111211
00148 22003103321321112112111111111211111211112111111211111111111111111121
00149 6201302111111111111111 11111111111311111111111111111111111111111111111111
00150 54005062323342432233333232222243233433222322333322222222222

```

## APPENDIX Q

## CORRELATION MATRIX

	11	12	13	14	15	16
1	1	1	2	3	4	5
2	1	1	2	3	4	5
3	1	1	2	3	4	5
4	1	1	2	3	4	5
5	1	1	2	3	4	5
6	1	1	2	3	4	5
7	1	1	2	3	4	5
8	1	1	2	3	4	5
9	1	1	2	3	4	5
10	1	1	2	3	4	5
11	1	1	2	3	4	5
12	1	1	2	3	4	5
13	1	1	2	3	4	5
14	1	1	2	3	4	5
15	1	1	2	3	4	5
16	1	1	2	3	4	5
17	1	1	2	3	4	5
18	1	1	2	3	4	5
19	1	1	2	3	4	5
20	1	1	2	3	4	5
21	1	1	2	3	4	5
22	1	1	2	3	4	5
23	1	1	2	3	4	5
24	1	1	2	3	4	5
25	1	1	2	3	4	5
26	1	1	2	3	4	5
27	1	1	2	3	4	5
28	1	1	2	3	4	5
29	1	1	2	3	4	5
30	1	1	2	3	4	5
31	1	1	2	3	4	5
32	1	1	2	3	4	5
33	1	1	2	3	4	5
34	1	1	2	3	4	5
35	1	1	2	3	4	5
36	1	1	2	3	4	5
37	1	1	2	3	4	5
38	1	1	2	3	4	5
39	1	1	2	3	4	5
40	1	1	2	3	4	5
41	1	1	2	3	4	5
42	1	1	2	3	4	5
43	1	1	2	3	4	5
44	1	1	2	3	4	5
45	1	1	2	3	4	5
46	1	1	2	3	4	5
47	1	1	2	3	4	5
48	1	1	2	3	4	5
49	1	1	2	3	4	5
50	1	1	2	3	4	5





	I1	1	I2	2	I3	3	I4	4	I5	5	To	6
51		0.652		0.602		0.667		0.583		0.575		0.743
52		0.650		0.645		0.675		0.682		0.602		0.722
53		0.655		0.703		0.734		0.671		0.631		0.778
54		0.617		0.658		0.735		0.635		0.539		0.701
55		0.641		0.704		0.646		0.648		0.530		0.654

	I14	14	I15	15	I16	16	I17	17	I18	18	I19	19
14		1.000		1.000		1.000		1.000		1.000		1.000
15		0.734		0.745		0.676		0.673		0.756		0.600
16		0.892		0.728		0.519		0.732		0.538		0.600
17		0.536		0.705		0.673		0.779		0.636		0.600
18		0.634		0.817		0.633		0.622		0.509		0.600
19		0.635		0.771		0.716		0.694		0.670		0.667
20		0.638		0.756		0.673		0.602		0.530		0.612
21		0.639		0.764		0.541		0.602		0.630		0.739
22		0.639		0.644		0.657		0.725		0.567		0.548
23		0.637		0.734		0.514		0.511		0.533		0.596
24		0.637		0.691		0.514		0.672		0.573		0.732
25		0.634		0.764		0.567		0.663		0.763		0.750
26		0.635		0.743		0.524		0.701		0.652		0.730
27		0.635		0.758		0.589		0.577		0.719		0.780
28		0.633		0.774		0.624		0.675		0.644		0.689
29		0.633		0.825		0.572		0.658		0.733		0.703
30		0.633		0.807		0.527		0.670		0.732		0.732
31		0.633		0.741		0.643		0.707		0.749		0.614
32		0.633		0.758		0.663		0.767		0.633		0.608
33		0.633		0.608		0.705		0.802		0.671		0.690
34		0.633		0.739		0.630		0.732		0.758		0.610
35		0.633		0.713		0.443		0.625		0.676		0.741
36		0.633		0.657		0.656		0.724		0.636		0.759
37		0.633		0.617		0.635		0.670		0.679		0.754
38		0.633		0.647		0.650		0.636		0.685		0.818
39		0.633		0.732		0.689		0.701		0.632		0.765
40		0.633		0.625		0.684		0.712		0.619		0.733
41		0.633		0.709		0.631		0.590		0.673		0.737
42		0.633		0.757		0.650		0.588		0.627		0.745
43		0.633		0.759		0.670		0.731		0.623		0.785
44		0.633		0.640		0.715		0.680				
45		0.633		0.770								
46		0.633		0.770								
47		0.633		0.770								
48		0.633		0.811		0.631		0.593		0.590		0.842
49		0.633		0.782		0.669		0.551		0.629		0.813
50		0.633		0.682		0.640		0.693		0.636		0.737
51		0.633		0.750		0.785		0.695		0.556		0.788
52		0.633		0.820		0.577		0.713		0.725		0.874
53		0.633		0.800		0.594		0.749		0.727		0.823
54		0.633		0.780		0.541		0.717		0.594		0.765
55		0.633		0.607		0.589		0.669		0.577		0.789

	I7	7	I8	8	I9	9	I10	10	I11	11	I12	12	I13	13
51	0.573		0.561		0.718		0.655		0.691		0.735		0.770	
52	0.594		0.594		0.698		0.680		0.758		0.733		0.796	
53	0.653		0.651		0.755		0.729		0.761		0.762		0.753	
54	0.615		0.595		0.689		0.650		0.630		0.661		0.748	
55	0.571		0.517		0.676		0.645		0.722		0.661		0.755	
	I20	20	I21	21	I22	22	I23	23	I24	24	I25	25	I26	26
20	1.000													
21	0.557		1.000											
22	0.730		0.724		1.000									
23	0.588		0.654		0.594		1.000							
24	0.742		0.629		0.726		0.511		1.000					
25	0.540		0.508		0.485		0.550		0.582		1.000			
26	0.723		0.516		0.646		0.650		0.584		0.695		1.000	
27	0.770		0.583		0.741		0.688		0.564		0.574		0.721	
28	0.766		0.503		0.755		0.543		0.742		0.654		0.598	
29	0.727		0.510		0.630		0.623		0.706		0.706		0.727	
30	0.785		0.685		0.723		0.651		0.736		0.700		0.772	
31	0.710		0.629		0.630		0.614		0.630		0.660		0.650	
32	0.691		0.664		0.703		0.630		0.672		0.618		0.677	
33	0.735		0.630		0.695		0.635		0.640		0.630		0.720	
34	0.734		0.712		0.793		0.595		0.647		0.538		0.627	
35	0.876		0.717		0.791		0.696		0.747		0.582		0.750	
36	0.818		0.749		0.820		0.606		0.780		0.531		0.637	
37	0.732		0.534		0.705		0.649		0.717		0.565		0.631	
38	0.626		0.513		0.585		0.439		0.574		0.520		0.656	
39	0.517		0.725		0.772		0.767		0.755		0.664		0.732	
40	0.787		0.658		0.705		0.591		0.693		0.712		0.757	
41	0.772		0.636		0.635		0.559		0.683		0.700		0.714	
42	0.737		0.611		0.684		0.693		0.707		0.602		0.731	
43	0.737		0.613		0.750		0.558		0.760		0.543		0.697	
44	0.731		0.678		0.687		0.570		0.652		0.618		0.632	
45	0.686		0.675		0.666		0.639		0.705		0.692		0.684	
46	0.730		0.567		0.726		0.478		0.568		0.450		0.605	
47	0.740		0.509		0.695		0.590		0.710		0.590		0.748	
48	0.789		0.639		0.704		0.660		0.716		0.646		0.746	
49	0.742		0.632		0.681		0.637		0.712		0.614		0.710	
50	0.720		0.501		0.745		0.607		0.733		0.466		0.577	
51	0.764		0.628		0.757		0.640		0.752		0.509		0.721	
52	0.755		0.712		0.754		0.615		0.697		0.604		0.705	
53	0.795		0.621		0.776		0.609		0.706		0.597		0.683	
54	0.802		0.593		0.721		0.623		0.652		0.582		0.704	
55	0.706		0.580		0.644		0.581		0.611		0.614		0.704	

	I27	I28	I29	I30	I31	I32
	27	28	29	30	31	32
27	1.000					
28	0.764	1.000				
29	0.731	0.713	1.000			
30	0.733	0.785	0.835	1.000		
31	0.698	0.714	0.747	0.767	1.000	
32	0.706	0.791	0.723	0.779	0.771	1.000
33	0.776	0.820	0.757	0.806	0.738	0.855
34	0.756	0.808	0.697	0.798	0.709	0.867
35	0.853	0.823	0.801	0.834	0.816	0.787
36	0.746	0.760	0.662	0.752	0.666	0.739
37	0.759	0.640	0.800	0.577	0.610	0.598
38	0.553	0.715	0.604	0.724	0.635	0.609
39	0.748	0.756	0.750	0.511	0.737	0.726
40	0.705	0.761	0.758	0.443	0.755	0.737
41	0.734	0.737	0.773	0.792	0.693	0.704
42	0.779	0.731	0.741	0.771	0.703	0.775
43	0.755	0.727	0.591	0.807	0.632	0.683
44	0.749	0.707	0.674	0.745	0.636	0.737
45	0.649	0.772	0.707	0.786	0.500	0.729
46	0.723	0.635	0.573	0.635	0.544	0.649
47	0.714	0.773	0.727	0.789	0.644	0.705
48	0.756	0.792	0.773	0.818	0.663	0.745
49	0.713	0.726	0.715	0.771	0.518	0.732
50	0.760	0.752	0.552	0.716	0.567	0.644
51	0.766	0.794	0.707	0.752	0.573	0.711
52	0.771	0.764	0.759	0.772	0.734	0.622
53	0.762	0.777	0.708	0.776	0.720	0.800
54	0.755	0.768	0.645	0.763	0.648	0.628
55	0.725	0.763	0.724	0.751	0.737	0.790

	I40	I41	I42	I43	I44	I45
	40	41	42	43	44	45
40	1.000					
41	0.829	1.000				
42	0.790	0.823	1.000			
43	0.586	0.727	0.750	1.000		
44	0.585	0.798	0.782	0.733	1.000	
45	0.760	0.787	0.798	0.733	0.778	1.000
46	0.660	0.628	0.710	0.849	0.712	0.633
47	0.742	0.510	0.813	0.698	0.697	0.728
48	0.752	0.846	0.875	0.750	0.770	0.633
49	0.757	0.513	0.854	0.762	0.782	0.755
50	0.579	0.597	0.733	0.747	0.715	0.671
51	0.755	0.719	0.827	0.786	0.755	0.757
52	0.799	0.792	0.856	0.745	0.807	0.755
53	0.781	0.769	0.791	0.837	0.782	0.755
54	0.816	0.729	0.794	0.714	0.736	0.683
55	0.759	0.714	0.800	0.552	0.692	0.697

	133	33	134	34	135	35	136	36	137	37	138	38	139	39
33	1.000													
34	0.824		1.000											
35	0.795		0.853		1.000									
36	0.725		0.832		0.866		1.000							
37	0.663		0.681		0.768		0.783		1.000					
38	0.675		0.672		0.666		0.585		0.499		1.000			
39	0.729		0.775		0.867		0.802		0.746		0.726		1.000	
40	0.797		0.754		0.808		0.752		0.677		0.704		0.817	
41	0.729		0.662		0.769		0.721		0.654		0.667		0.766	
42	0.757		0.681		0.770		0.725		0.692		0.590		0.712	
43	0.657		0.708		0.772		0.655		0.750		0.553		0.740	
44	0.707		0.765		0.751		0.743		0.627		0.644		0.725	
45	0.723		0.691		0.722		0.714		0.626		0.550		0.686	
46	0.664		0.710		0.755		0.627		0.704		0.645		0.752	
47	0.731		0.769		0.755		0.733		0.700		0.663		0.742	
48	0.771		0.710		0.780		0.741		0.720		0.598		0.743	
49	0.761		0.677		0.747		0.724		0.724		0.598		0.744	
50	0.732		0.670		0.743		0.770		0.747		0.617		0.766	
51	0.716		0.609		0.812		0.772		0.772		0.625		0.798	
52	0.787		0.771		0.817		0.767		0.673		0.667		0.774	
53	0.602		0.813		0.814		0.831		0.752		0.689		0.758	
54	0.848		0.796		0.807		0.753		0.663		0.699		0.758	
55	0.809		0.745		0.752		0.653		0.610		0.648		0.704	

	146	46	147	47	148	48	149	49	150	50	151	51	152	52
46	1.000													
47	0.711		1.000											
48	0.696		0.841		1.000									
49	0.588		0.855		0.901		1.000							
50	0.735		0.863		0.777		0.750		1.000					
51	0.800		0.825		0.810		0.786		0.863		1.000			
52	0.759		0.800		0.940		0.817		0.773		0.857		1.000	
53	0.845		0.787		0.813		0.805		0.784		0.827		0.869	
54	0.738		0.765		0.808		0.782		0.784		0.799		0.831	
55	0.639		0.773		0.773		0.761		0.689		0.772		0.843	

	153	53	154	54	155	55
53	1.000					
54	0.457		1.000			
55	0.702		0.421		1.000	

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