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Nursing Care Priorities of Patients: A Comparison of Methodological Approaches

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NURSING CARE PRIORITIES OF PATIENTS: A COMPARISON OF METHODOLOGICAL APPROACHES

by

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VITA

The author, Carol A. Patsdaughter, was born August 16, 1957, in East Chicago, Indiana.

Her secondary education was obtained at Homewood-Flossmoor High School in Flossmoor, Illinois, where she graduated in 1975.

In September, 1975, she entered Northern Illinois University in DeKalb, Illinois. She received the degree of Bachelor of Science with a major in nursing and a minor in psychology in December, 1978, and was graduated Magna Cum Laude. While at Northern Illinois University, she was elected a member of Sigma Theta Tau National Honor Society of Nursing in 1977, and became a member of Phi Kappa Phi Honor Society in 1978.

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The author has served as a research assistant in several clinical studies and has coordinated a completed unpublished investigation, "Nursing Care Priorities of Registered Nurses and Low Socioeconomic Class Patients".

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CHAPTER I

INTRODUCTION

Nursing is an emerging profession. The future of nursing depends largely on the contributions of empirical investigations toward expansion and refinement of nursing's scientific body of knowledge. Nurse researchers are faced not only with the task of defining nursing practice variables and testing nursing theories, but also with the task of developing the tools and methods essential to the progress of nursing science. As a systematic means towards nursing's scientific endeavors, Noble (1979) has proposed the use of the strategy of "successive research". She writes:

> By this I mean replication and expansion of a primary study in order to establish the reliability, validity, and generalizability of the initial findings. This is often accomplished by branching out in graduated phases to study different aspects of the same issue or related ones. Implied in this type of research is that it is ongoing, linking one or more related issues within a broad framework. (p. 600)

It is asserted that the successive research strategy can help alleviate the problems of fragmentation of ideas, isolation of findings, and unresolved issues that have been prevalent in nursing research efforts and which, thus far, have impeded the advancement of nursing science.

This investigation represents an example of successive research, having grown out of a research study entitled "Nursing Care Priorities of Registered Nurses and Low Socioeconomic Class Patients" (Patsdaughter,

Nissen, O'Connell, & Pitkin, 1981). The specific research question of the Patsdaughter et al. study was: "Are there differences in priorities assigned to nursing care activities between medical-surgical registered nurses and hospitalized adult patients that are related to differences in social class levels?" Findings of the study revealed incongruencies between priorities for nursing care activities of nurses and patients, regardless of the socioeconomic class levels of patients. Hence, a recommendation for future study that was proposed by the investigators concerned the need for further investigation and description of patients' priorities for nursing care activities using larger patient samples. This was one of the problems addressed by this research investigation.

Methodology also posed a problem in the planning phase of the 1981 study. Existing methodologies seemed inadequate for the study's research problem (i.e., the identification of group priorities), setting (i.e., an acute-care hospital), and subject populations (i.e., patients, often confined to bed, with varying attention spans and diverse intellectual levels). A novel data collection method, the Delphi-sort, was developed and employed in the study. The method was successful with regard to collection of the desired data and received favorable evaluations from both researchers and subjects. Recommendations for future study posed by the investigators included further testing of the Delphi-sort method through comparison with other methodologic approaches in terms of results obtained, researchers' and subjects' evaluations, and time/cost factors. These issues, then, comprised the second problem addressed by the current investigation.

In summary, this present investigation was directed towards both clinically and methodologically oriented problems: 1) the identification of hospitalized adult patients' priorities for nursing care activities, and 2) the comparison of four methodological data collection techniques. Thus, this investigation was designed and conducted to permit an application of the remedies to fragmentation in nursing research and nursing knowledge described by Batey (1977), the search for "commonalities of findings through diverse methods, contrasting findings through common methods, and their collective implications for both the discipline and the profession of nursing" (p. vi).

Statement of Clinical Problem and Significance

The social context of nursing is clearly emphasized in the following excerpt from the American Nurses' Association's Nursing -- A Social Policy Statement (1980):

> Nursing, like other professions, is an essential part of the society out of which it grew and with which is has been evolving. Nursing can be said to be owned by society, in the sense that nursing's professional interest must be and must be perceived as serving the interests of the larger whole of which it is a part. (p. 3)

Hence, the continued existence of the nursing profession in society is dependent on the profession's ability to provide essential and valued services and meet the perceived needs of the great diversity of individuals who comprise the larger society. The continued recognition of the relevance of the nursing profession is also dependent on the responsiveness of the profession to changing societal conditions and public expectations. This is especially true during the present age of consumer-

ism which is reflected by an increase in the public's health awareness and health care clients' more overt expression of their rights and demands. Donovan (1963) addressed such issues earlier by writing:

> With the public saying in many ways that nursing is not meeting the public's needs, the only way to meet this criticism is to re-examine nursing care and improve it systematically . . . One method of this coming to grips is in determining priorities of nursing care, which brings us face to face with all its facets. (p. 44)

She continued by elaborating on the nursing profession's commitment and responsibility to nursing care consumers and society:

> Determining priorities is not an end in itself; the goal is. And our goal in nursing is to give the best possible care within the setting in which we nurse. (p. 45)

Thus, this investigation of the nursing care priorities of patients represented an initial step in the direction towards responsibility and accountability of nursing as a profession in service to society.

On the more microscopic practice level, patient perceptions, expectations, values, and priorities are important variables in each nurse-patient relationship. Such variables may affect communication, cooperation, satisfaction, and other aspects of nurse-patient interactions and may, therefore, play an influential role in determining nursing care outcomes. Knowledge and understanding of patients' priorities for nursing care activities, then, may help promote high quality and effective nursing care services.

This study was based upon the above cited premises and the conceptual framework of nursing theorist, I. M. King. In her early work, King (1971) identifies four types of variables that have some influence

on effectiveness of care provided by nurses. Specifically, Type II Variables: Dependent Factors, include the following patient variables: perceptions, goals, values, needs, expectations, and abilities (pp. 34-35). The investigation reported here was an attempt to gather descriptive data to delineate and categorize such patient variables (i.e., priorities for nursing care activities).

In her theory of goal attainment presented in her later publication, King (1981) writes:

> Nursing is a process of human interactions between nurse and client whereby each perceives the other and the situations; and through communication, they set goals, explore means, and agree on means to achieve goals. (p. 144)

King specifically defines nursing as "a process of action, reaction, interaction, and transaction" based on the individual perceptions and judgments of the nurse and the patient (p. 145). Some of the hypotheses that King derives from her theory are:

> Perceptual accuracy in nurse-patient interactions increases mutual goal setting.
>
> Satisfactions in nurses and patients increase goal attainment.
>
> Role conflict experienced by patients, nurses, or both, decreases transactions in nurse-patient interactions.
>
> Congruence in role expectations and role performance increases transactions in nurse-patient interactions. (p. 156)

This investigation did not test King's hypotheses per se. Rather, it was a beginning attempt to describe and analyze patients' perceptions and expectations relevant to their nursing care needs (i.e., patients' priorities for nursing care activities), conceptualized to have an influential role in the nursing process and goal attainment in nursing

practice situations. Such description and analysis have been neglected areas in both nursing practice and research.

Statement of Methodological Purpose and Significance

Kuhn (1962) provides an historical account of obstacles and progress in science and various disciplines. He emphasizes that the nature of observations made and research conducted within a scientific discipline are restricted by the methods available to and paradigms accepted by members of that discipline. He argues that development by accumulation is limited in time and scope and that further advancement can only occur through methodological and paradigmatic revolutions. He documents repeated examples of how progress is accomplished when a problem or discovery arises which cannot be adequately investigated by existing techniques or accounted for by traditional paradigms, leading to a search for novel methods and ultimately resulting in theoretical changes. Hence, there is an intimately dependent relationship between the tools and knowledge possessed by a scientific discipline.

Heller (1969), a psychologist, has exemplified some of the assertions made by Kuhn, as he writes:

> The behavioral sciences are working on problems that are becoming more complex every year, and this imposes a great strain on the relatively small number of research methods which are available to investigate them. (p. 108)

He also notes that "at times, conflict between methodologies seems to lead to polarization and an uneasy state of isolation for a whole school of thought," but adds that "the antagonism between the methods has not led to any very intensive search for alternatives" (p. 108). Heller

further identifies some of the key problems in the methodological controversies within the behavioral sciences:

> One is the division between those who insist on precisely stated hypotheses, and a minority who openly defend an opportunist empiricism. Second, there is the problem of the choice of a particular technique which may be "hard" or "soft". Third, one notices a reluctance to embrace eclecticism, as if it were immoral like polygamy. (p. 109)

Heller, who has conceptualized an eclectical approach, urges a push towards methodological experimentation, but cautions that "ideally, any variation of existing methods should be tested against the alternative from which it was developed" (p. 109).

Similarly, several nurse researchers have specifically addressed the need for increased systematic attention to methodology in nursing research and the need for methodological research in nursing (Abdellah & Levine, 1979; Brophy, 1981; Gortner, 1979; Hardesty, 1977; Krueger, Nelson, & Wolanin, 1978; O'Connell & Duffey, 1978; Polit & Hungler, 1978; Treece & Treece, 1977). Throughout the short history of nursing research (primarily as a result of the Nurse-Scientist Training Programs of the 1950's and 1960's which enabled a large number of nurses to earn doctorates in scientific fields related to nursing), nurse researchers have typically "borrowed" methodologies from other related disciplines (i.e., psychology, sociology, education, the physical and biological sciences). This has frequently been done without consideration for how such existing methodologies "fit" nursing problems, clinical settings, and the unique subjects of nursing research (often patients). Furthermore, it is postulated that the dearth of appropriate methodologies for and designs in nursing research have served to limit

the problems addressed by nurse researchers, the number and scope of studies conducted, and the quality of empirical findings that have been obtained (Gortner, 1979; O'Connell & Duffey, 1978; Treece & Treece, 1977).

Hence, methodology must be an important consideration in any area of research investigation, but, as Polit and Hungler (1978) note, "especially so when a field is relatively new and deals with highly complex intangible phenomena such as human behavior or welfare, as is the case in nursing research" (p. 238). Methodology must be appropriate to the problem, setting, and subjects of a study. The influence of the methodology on the responses of the subjects and the nature of data obtained must be considered. Feasibility and practicality issues with regard to methodology must be addressed. As Krueger et al. (1978) caution, "the method should fit the study rather than squeezing a given study into an inappropriate method" (p. 201). The need exists for nurse researchers to systematically address the above methodological issues, as well as to begin implementation of Heller's suggestions cited earlier regarding the development and testing of alternative methods for applicability within research situations unique to the discipline of nursing.

The present study included an investigation and comparison of four methodological approaches that have been used in previously conducted investigations of patients' expectations and priorities regarding nursing care activities. In summary, this research addressed both a clinical problem and a methodological problem.

CHAPTER II

REVIEW OF RELATED LITERATURE

Since this investigation was actually a two-fold study, literature was reviewed in the following areas: 1) studies of perceptions, expectations, values, and priorities regarding nurses and nursing care, and 2) theoretical and empirical works regarding research methodologies for the study of attitudes (i.e., perceptions, expectations, values, and priorities), in particular, checklists and rating scales, the Q-sort technique, the Delphi method, and the Delphi-sort method. Altough a degree of overlap is inherent in these areas, the material is separated into the two categories for the purpose of clarity and cohesion. Relevance of the works to the investigation reported here is also discussed.

Perceptions, Expectations, Values, and Priorities Regarding Nurses and Nursing Care

Whiting completed a methodological study followed by a series of clinical investigations of the attitudes and expectations regarding functions held by nurses, patients, and various other groups which come into contact with nurses. In 1955, he reported that the Q technique was relevant and applicable to nursing research evaluating perceptions of interpersonal relationships. Whiting, Murray, Whiting, Sachs, and Hull (1958) published a detailed report of their methodological developments and research findings made over a two and one-half year period. Specif-

ically, their development of the Nurse-Patient Relationship Q-sort was described. Once developed, the instrument was administered to 125 patients and 152 nursing personnel in one hospital setting. Findings of this study can be summarized as follows:

1. A great deal of variation in emphasis on particular behaviors (nursing care activities) was found between patients and nurses.

2. Both groups demonstrated a greater composite value for items derived from the "physical care" content category than for items from the other three categories ("supportive emotional care," "patient education," and "liaison").

3. Patients placed the highest value on nursing activities which most directly influence their immediate physical and emotional experiences.

At the conclusion of the report, the authors specifically made the following recommendations: 1) the use of different samples and settings for the study of perceptions of elements of the nurse-patient relationship, and 2) the use of different methods in the study of perceptions of elements of the nurse-patient relationship. Whiting (1959) reported progress toward the first recommendation.

Review of the literature following the initial investigations of Whiting et al. (1958) revealed: 1) an overall paucity of studies examining patients' perceptions, expectations, values, and priorities regarding nursing care, and 2) a lack of studies of the systematic nature, scope, and intensity of Whiting's early works.

In a study comparing 48 nurses' and 77 hospitalized patients' rankings of 15 traits characteristic of an "ideal nurse," Holliday (1961) reported that nurses and all the patients in her study ranked

the trait "well-trained" as most important. However, major differences were found in the ranking of other traits by male and female patient subjects.

In contrast, upon conducting an open-ended interview based on the question -- "What do you ideally expect from a nurse?" -- with a sample of hospitalized patients, Tagliacozzo (1965) found that 81 percent of the respondents stressed the importance of personalized care, 81 percent emphasized personality attributes, 45 percent expected prompt and efficient services, and only 29 percent specified knowledge and skillful nursing care.

In a study reported by Legan (1965) using 62 chronically-ill ambulatory patient subjects and a questionnaire instrument, all patients expected the nurse to follow physicians' orders in administering their care, and most patients believed that meeting physical needs was a primary role of the nurse. Also highly valued by the patients were the nurse's ability to detect and report important changes in a patient's condition and the nurse's knowledge of medications and treatments.

Yatts (1967) conducted an investigation to identify the expectations held by hospitalized, low socioeconomic-class, Negro patients regarding nursing care activities. Highly valued activities included: care of the immediate environment, relief from pain and discomfort, activities pertaining to elimination, backrubs, and administering medications (chiefly physically-oriented activities). Nursing activities rated lower in importance were: providing information about condition and care, planning nursing care, and identification of pain (chiefly cognitive

activities).

Risser (1975) used a Likert questionnaire to study 138 patients in an outpatient care setting. She found that the patients' responses indicated a greater satisfaction with nurses and nursing behavior in the professional-technical area than in the area labeled trusting relationship. Most of the expressions of dissatisfaction from the subject group were in response to items in the educational relationship dimension. Interpretation of results suggested that the subjects valued the educational role of the nurse and wanted more information from nurses.

Both similarities and contradictions to the above findings were reported by Hinshaw and Oakes (1977) who examined patients', nurses', and physicians' expectations for quality nursing care. The findings indicated that patients perceived cooperation with others as the most important aspect of the role of the nurse. Nurses' competency in technical skills and their ability to give personalized care were the two next highest patient expectations. Nurses as an information source and their professional demeanor were two aspects of the nursing role hypothesized to be valued by patients but not supported by the data. Professional knowledge was identified as an aspect of the nurse's role negatively valued by patients.

A 1978 study by Williamson was complicated by so many methodological problems that the findings regarding patients' ratings of their nursing care needs were reported to be unreliable. This study was significant, however, in that many important methodological issues and dilemmas were addressed (i.e., instrument reliability and validity, dissimilarity of comparison groups, small sample size problems and differen-

tial effects of data collectors on responses), and valuable suggestions for future study in terms of the methodological problems were offered.

Using a sample of 300 hospitalized adult patients and 100 registered nurses, White (1972) investigated the relative importance of 50 selected nursing activities. The instrument (Nursing Activities Checklist) was developed by the researcher and is a written rating scale, with each item having a numerical score value from 4 (extreme importance) to 0 (no importance or does not apply). Items are divided into four major content categories: 1) physical aspects of care, 2) psychological aspects of care, 3) implementation of medical care, and 4) preparation for discharge. The items drew upon those content areas used in Whiting's (1958) 100-item Q-sort instrument. Development of the instrument was described in the report of White's study and in a publication of the U. S. Health Resource Administration (1979). White analyzed the findings of her study in terms of: 1) the four content categories built into the instrument, 2) nurse characteristics, 3) patient characteristics, and 4) extreme ratings. With regard to content categories, the findings indicated that nurses underestimated the importance of physical care activities to the patients, overestimated the importance of psychological aspects of care to the patients, and placed the same degree of importance as did the patients on the implementation of medical care (high importance) and preparation for discharge (low importance). White found no significant relationships between nurse-patient disagreements and selected patient characteristics or nurse characteristics. Examination of extreme ratings revealed that both nurses and patients rated the state-

ment "carry out the doctor's orders" as their number one priority. Both nurses and patients rated the following statements as being very low in importance: "help me make arrangements for my care at home," "help me understand how to plan the diet I will need at home," and "arrange for a public health nurse to visit me at home." Hence, some congruence can be noted between White's (1972) findings and the earlier findings of Whiting et al. (1958).

In the study by Patsdaughter et al. (1981), researchers investigated the nursing care priorities of registered nurses and hospitalized adult patients, with socioeconomic class as the primary study variable. The setting for this study was a large, midwestern, university-affiliated medical center. Subjects were selected in a non-randomized, convenience manner for three sample groups of 20 subjects each: 1) registered nurses, 2) low socioeconomic class patients, and 3) middle-class patients, who served as a comparison group. The data collection method used in the study was the Delphi-sort, a combination of a modified Delphi exercise utilizing physical features and some concepts of the Q-sort technique. The content statements of the instrument itself consisted of the 50 items contained in White's (1972) Nursing Activities Checklist. Subjects were asked to sort cards according to four levels of importance in the first three rounds and to rank cards in the fourth and final round. This procedure was intended to generate intra-group consensus in terms of priorities for nursing care activities. Findings indicated that: 1) there were greater similarities between the priorities of both patient groups than between either patient group and the registered

nurse group, and 2) a greater proportion of patients' priorities were derived from White's "physical aspects of care" and "implementation of medical care" categories than from the "psychological aspects of care" and "preparation for discharge" categories. Recommendations for future study made by the researchers included: 1) implementation of a similar study using larger patient samples, and 2) the use of different methodologies to investigate patients' nursing care priorities and to compare the results with the Delphi-sort method.

Patient perceptions, expectations, values, and priorities have been viewed as important variables in the nurse-patient relationship and have been hypothesized to influence the outcomes of clinical nursing interventions. Hence, while research studies reported some similar findings regarding patients' priorities for nursing care functions and activities, major disparities and contradictions were identified. Most of the studies used small samples; unrelated types of subjects, settings, instrumentation, and methodologies; and instrumentation/methodology that had not been subjected to stringent development and testing. With the exception of Whiting's work in this area, little systematic attention has been devoted to the issue of methodology. Most of the preceding studies utilized interviews, rank-order questionnaires or procedures, or written rating scales for data collection. Consistent with a need to attend to methodological issues, literature related to four specific methodological approaches for priority identification will be reviewed in the subsequent section.

Research Methodologies for the Study of Perceptions, Expectations, Values, and Priorities

Rating Scales

Rating scales and similar, yet cruder, matrices known as checklists have probably been the most popular and most frequently used methods of data collection for the study of attitudes, values, perceptions, and preferences in the behavioral sciences; hence, the theoretical and empirical literature related to these methods has been abundant. Since there are many variations in the nature of scales (Thurstone, Likert, and Guttman a few of the more well-known types) and purposes for their use (e.g., the description, explanation, and/or prediction of such variables as attitudes towards specific phenomena, personality traits, occupational preferences, etc.), the literature was reviewed for a general theoretical foundation relevant to the specific instrument and method employed in this investigation. Classical sources reviewed included: Edwards, 1957; Oppenheim, 1966; Nunnally, 1967; Anastasi, 1968; and Berdie & Anderson, 1974.

Rating scales and checklists are paper-and-pencil data collection methods. They are both two-dimensional matrices in which a series of items or statements, representative of a particular content area, is listed along the vertical dimension, and response alternatives are typically listed horizontally. The methods require subjects to assign items to categories or continua indicating personal opinion or evaluation. It is significant to note that some sources clearly differentiate between

checklists and rating scales by specifying that categories are labeled by adjectives in checklists, and by numerical continua in rating scales (Oppenheim, 1966; Treece & Treece, 1977; Polit & Hungler, 1978). Other sources do not explicitly make this distinction (Anastasi, 1968; Berdie & Anderson, 1974). The distinction has theoretical significance, however, in that checklists, if characterized by adjective categories, are capable of generating nominal-level data or, at best, ordinal-level data, whereas rating scales, with numerical continua, are assumed to generate ordinal- or even interval-level data. While White (1972) has labeled her instrument a "checklist," numerical values are applied to the categories (4 = extreme importance to 0 = slight or no importance). Indeed, the statistical operations used in her study indicate that she made an assumption of interval-level data, an assumption more consistent with a rating scale.

Disagreement exists in the literature regarding the number of categories or discriminations that are optimal in checklists or rating scales. While Oppenheim (1966) advocates an odd number of response alternatives, Berdie and Anderson (1974) recommend an even number for the purposes of eliminating extreme response set biases and errors of central tendency. Although Garner (1960) empirically demonstrated small but definite increases in discrimination up to 20 categories, the number of categories employed on checklists and rating scales typically ranges from four to seven.

Rating scales and checklists are "free-choice" data collection methods in that restrictions are not specified to subjects regarding the

number of items that may be assigned to a given category or numerical value. Furthermore, in checklists and rating scales, responses to items are independent of one another. Hence, these methods are known as "normative" measures (i.e., each score for an individual evaluated relative to the average score of a group of individuals). In contrast, "ipsative" measurement involves the ordering or weighting of item scores relative to a personal or individual mean. Because of these properties, data obtained from the use of rating scales and checklists with individual subjects does not produce a specified distribution, and the methods may, therefore, be referred to as "distribution-free" forms of measurement (Block, 1957; Broverman, 1962; Polit & Hungler, 1978).

Related to the concept of normative measurement, rating scales and checklists are consistent with the nomothetic theoretical approach to information source and analysis characteristic of R methodology. By correlating tests using large-sized samples, R methodology is directed towards group generalizations and understanding through inter-individual differences. Thus, rating scales and checklists are usually administered to a large number of individuals, and statistical summaries and tests of significance are based on data obtained from the group. The assumption is made that the individual can be understood in accordance with his/her standing in relation to the group (Cronbach, 1953; Mowrer, 1953; Block, 1957; Broverman, 1962).

Rating scales and checklists typically are administered on a single administration basis, as was the case in White's (1972) study.

Some of the advantages cited in the literature of the use of rating scales and checklists as data collection methods include:

1. The methods are time and cost efficient for the collection of large amounts of data.

2. The methods provide for a degree of standardization in measurement (i.e., uniform question presentation and uniform form of response).

3. The methods are relatively easy for subjects to understand and complete (i.e., high degree of familiarity).

4. The methods offer the possibility of anonymity.

5. The methods may be self-administered.

6. Standardized data analysis procedures are readily available and relatively easy to apply.

7. The methods permit a high degree of study reproducibility.

8. Use of the methods eliminates some forms of researcher bias.

Several major disadvantages cited include:

1. Instruments used in these methods must be subjected to stringent prior development procedures and pilot testing.

2. Large sample sizes are required for use of these methods.

3. Interpretation differences regarding the meaning of categories/numerical values among subjects is a possibility.

4. Elaboration and/or explanation of responses are not possible in these methods (i.e., the methods generate data that may be considered superficial).

5. Inappropriate statistics are frequently employed in data analysis.

6. Responses are subject to many uncontrollable extraneous situational variables.

Q-Sort Technique

The Q-sort technique, a derivative of Q methodology, was developed in the field of psychology through the theoretical and empirical work of Stephenson (1953). As noted by Best (1970), it is a "technique for scaling objects or statements, a method for ranking attitudes or judgments, and is particularly effective when the number of items to be ranked is large" (p. 179). The Q-sort technique was originally designed for the study of the individual, but attention has more recently been devoted to its application to group phenomena and in public opinion research (Morsh, 1955; Jackson & Bidwell, 1959; Rinn, 1961; Stephenson, 1964; Schill, 1966; Best, 1970). While the Q-sort technique had its inception in psychological research, it has since been applied within many different disciplines and in a wide variety of types of studies. Additional references relevant to this data collection method include: Mowrer, 1953; Wittenborn, 1961; Brown, 1968; and Brown & Brenner, 1972.

In the traditional Q-sort technique, a subject is given a deck of cards with items or statements printed on them and is asked to sort the cards into a predetermined number of piles (an odd number typically from 7 to 11) according to a given dimension such as "most important -- least important" or "most approve -- least approve." The number of cards that may be placed into any given pile is also predetermined by the researcher -- fewer cards are placed at either extreme and more cards are placed in the center, resulting in the formation of a quasi-normal distribution. Stephenson recommends the use of a platykurtic arrangement. A numerical value is sequentially assigned to each pile. Typically,

from 50 to 100 items are employed in the Q-sort technique. In this method, the items, rather than subjects, represent the study "sample." The sample may be either unstructured (i.e., random) or structured, in which case the variables of a theory are built into the item sample in a balanced block design (i.e., Fisherian variate design). Operations in the Q-sort technique refer to the specific directions given to the subject for the sort and may include a self-sort, other-sort, ideal-sort, or prediction-sort. Data analysis for traditional Q-sorts include such procedures as factor analysis and variance/covariance analysis (Stephenson, 1953; Kerlinger, 1964; Best, 1970).

Thus, the Q-sort technique is a "forced-choice) data collection method in that restrictions are specified to subjects regarding the number of items that may be assigned to each rating category (pile). Also, since a subject's response to one item depends upon, and is restricted by, responses to other items, the Q-sort technique is an "ipsative" form of measurement. Polit and Hungler (1978) point out that in ipsative measures such as the Q-sort, the average of a group is not a relevant point of comparison since the average is identical for all subjects; hence, ordinary statistical tests of significance are not appropriate for use with such non-independent ipsative measures (p. 393). As noted above, the standard Q-sort technique is a distribution-producing form of measurement, resulting in the formation of a quasi-normal curve.

The Q-sort technique is a product of Q methodology, an ideographic theoretical approach to information source and analysis. The Q methodology is a wholistic approach in comparison with the more atomistic R

methodology in that it is directed toward understanding through intra-individual differences dependent on interactional variates in one interactional setting. The populations in Q methodology are classes of statements (items), whereas the populations in R methodology are groups of persons. In Q methodology, scores are assumed to be normally distributed with respect to the person-array; this contrasts with the assumption in R methodology that the scores of a sample of persons are normally distributed. The Q methodology, then, is concerned with dependency analysis, whereas R methodology is based on interdependency analysis (Stephenson, 1953). Hence, there are important fundamental theoretical assumptions upon which the Q-sort technique is based. The Q-sorts are typically administered to a small number of subjects. The single administration is the usual unit of data collection. Administrations with the specification of different operations or at different points in time are common, however, in studies using this method.

Since Stephenson's original work on and presentation of the Q-sort technique, several other researchers have tested various properties of the method or have proposed modifications in its original principles. For instance, several investigators (Block, 1956; Livson & Nichols, 1956; Hess & Hink, 1959; Gaito, 1962) tested the differences between forced and free sorting procedures and different forms of distributions (i.e., quasi-normal versus rectangular versus distribution-free). However, the findings and recommendations in this area have been varied and occasionally contradictory. It is significant to note that Block (1957) empirically found almost complete functional identity between the results ob-

tained from ipsative ratings treated normatively and conventionally acquired normative rating data. The Q-sort technique, normally employed for the collection of individual data, has been employed as a method for the collection of group data. For purposes of group data collection, Best (1970) suggests that Q-sorts can be used to solicit the "composite judgment" of the group through the identification of the mean value of the positions assigned to each item, indicating the relative importance assigned to items by the panel.

Some of the advantages of the Q-sort technique as a data collection method that have been cited in the literature include:

1. The Q-sort is inexpensive to use (materials) and adaptable to many situations.
2. The method has a built-in provision for completeness; subjects may leave items blank in questionnaire methods, whereas the Q-sort forces the respondent to complete the entire operation.
3. The method is free from response set biases.
4. The method is more penetrating than the questionnaire or rating scale and is a powerful tool for in-depth investigation of attitudes and opinions.
5. Data may be analyzed through either advanced statistical techniques or descriptive methods.
6. The method is particularly well adapted to theory.
7. The method typically requires few subjects.
8. Subjects are usually highly motivated by the task of Q-sorts.

Several major disadvantages cited include:

1. The method is time consuming to administer.

2. The method requires that detailed instructions be given to subjects who may have difficulty comprehending the instructions.

3. It is difficult to develop valid items for the instrument; poor items lead to meaningless choices.

4. Forced choices are determined according to the researcher's specifications (hence, the forced-choice procedure has been criticized as being artificial); subjects may object to the forced-choice procedure.

5. Without a sizable sample, it becomes problematic to generalize the results of a study to a larger population.

6. The use of ordinary tests of statistical significance is not appropriate.

7. The method is subject to questions of reliability, and reproducibility of studies is limited.

Several studies used the Q-sort technique for the investigation of role expectancies in various disciplines (Van Dusen & Rector, 1963; Kerlinger, 1966; Grannis, 1981). Furthermore, in addition to Whiting et al. (1958) and Whiting's (1955, 1959) research on patients' perceptions and the nurse-patient relationship, the Q-sort technique has been used in nursing investigations of patients' opinions of helpful nursing behaviors in bereavement (Freihofer & Felton, 1976) and in the development of an instrument for measuring the quality of nursing care given to spinal cord injury patients (Cornell, 1974).

The Delphi Method

The Delphi method was developed by the RAND Corporation as a technological forecasting tool, and its first significant applications were in an U. S. Air Force-sponsored study, entitled "Project Delphi," conducted in the early 1950's to solicit expert opinion on atomic warfare.

Since its inception, the Delphi method has been employed by various disciplines and in a variety of contexts, as documented by Helmer (1975) who was one of the pioneers of the method:

> While its principle area of application has remained that of technological forecasting, it has been used in many other contexts in which judgmental information is indispensable. These include normative forecasts; the ascertainment of values and preferences; estimates concerning the quality of life; simulated and real decision-making; and what may be called "inventive planning" . . . These uses of Delphi, to supply "soft" data in the social sciences and to provide decision makers with ready access to specialized expertise, are of great potential importance. (pp. xix-xx)

The wide range of problems for which the use of the Delphi method is suitable is further addressed by Linstone and Turoff (1975):

> When viewed as a communication process, there are few areas of human endeavor which are not candidates for application of Delphi. While many people label Delphi a forecasting procedure because of its significant use in that area, there is a surprising variety of other application areas. Among those already developed we find . . . distinguishing and clarifying real and perceived human motivations, exposing priorities and personal values, social goals. (p. 4)

Hence, the Delphi method has rapidly gained popularity and applicability in diverse areas of research and evaluation. Indeed, the RAND Corporation believes that Delphi marks the beginning of a whole new field of research, which it labels "opinion technology" (Ludlow, 1975, p. 114). The most comprehensive and current source available on the Delphi method is Linstone and Turoff's (1975) publication.

In a discussion of Delphi as a data collection method, Lindeman (1975) notes that the method "attempts, in a rapid and relatively efficient way, to combine the knowledge and abilities of a group of experts in quantifying variables that are either intangible or vague" (p. 435).

Thus, besides its predictive functions, the Delphi method has both exploratory and descriptive purposes. Linstone and Turoff (1975) offer the following summary of the method's procedure:

> To accomplish this "structured communication" there is provided: some feedback of individual contributions of information and knowledge; some assessment of the group judgment or view; some opportunity for individuals to revise views; and some degree of anonymity for the individual responses. (p. 3)

In its typical form, then, the Delphi method involves: 1) an initial open-ended or "brainstorming" round, 2) a series of questionnaire rounds (an average number of three), and 3) a final rank-order or prioritizing round. Controlled feedback during the multiple iterations is provided through group statistical summaries which are derived from analysis of data obtained in the previous round. Often, successive rounds include sequentially smaller numbers of items, as the least frequently prioritized items are eliminated from further consideration. Anonymity is provided through grouped data and feedback to insure equal input of all group members and to reduce the time-consuming confrontations that are common occurrence in face-to-face panels and committees. Hence, the Delphi procedure may be summarized as a "response-analysis-feedback-response" group process (Polit & Hungler, 1978, p. 396), with the final data representing a general group consensus. With regard to form, Linstone and Turoff (1975) note that most Delphi procedures use a paper-and-pencil response mode (termed "Delphi exercise"), but a computerized response mode (termed "Delphi conference") is now being developed.

In all of its rounds, the Delphi method typically is a free-choice data collection method. Since group averages are identified and used as

comparisons, it may be classified as a normative form of measurement. The Delphi method also represents a distribution-free form of measurement. The sizes of samples used in studies employing the Delphi method can vary from as few as seven or eight subjects to several hundred subjects. Various forms of statistical analysis are appropriate for use with data obtained in all rounds of the Delphi method, but much attention is usually devoted to descriptive analyses and descriptive summaries (i.e., group medians, percentiles, rank-orders).

Helmer (1975) notes that "despite many applications, Delphi still lacks a completely sound theoretical base" (p. xix). An initial attempt has been made by Mitroff and Turoff (1975) to identify and specify the philosophical and methodological foundations of the Delphi method. From their work it can be deduced that the Delphi method, similar to Q methodology, is based on an assumption that subjective material constitutes empirical reality and that subjective data, therefore, has scientific validity. This is in contrast with the more objective orientation of R methodology. Like R methodology, however, the Delphi method represents a nomothetic approach in that information is gathered for the purpose of generalized, rather than individualized, understanding. The Delphi method differs from methods derived from R methodology since no attempt is made to understand the individual through comparison of inter-individual differences in the Delphi. The source of data and focus of attention in the Delphi method is clearly the group -- indeed, individual data are continually lost during the Delphi method's successive rounds.

Linstone and Turoff (1975) point out that "most evaluations of the

technique [Delphi] have been secondary efforts associated with some application which was the primary interest" (p. 11). Hence, there has been a dearth of empirical findings of a methodological nature concerning the Delphi method. Only a few researchers have tested selected properties of the method or have proposed modifications in the original principles of the method. As an example of a modification, Ludlow (1975) has advocated that the concept of "informed judgment" be substituted for the more traditional concept of "expert opinion." This would expand the appropriate contexts for use of the method to include areas of concern for various lay populations. Day (1975) gave feedback of group scores by simply summing the scale values on an "importance scale" and dividing the total by the number of ratings, in contrast to the more complex forms of feedback such as confidence ratings and interquartile ratings frequently employed in applications of the Delphi method. In a methodological investigation of the round-by-round effect of feedback through the provision of actual or false feedback, Scheibe, Skutsch, and Schofer (1975) found that feedback does, indeed, have considerable influence on the responses of individual participants in terms of movement toward the group mean. Similarly, Cyphert and Gant (1970) demonstrated, through the inclusion of a "bogus" item in a 61-item questionnaire, that the Delphi method can be used to mold opinion as well as to collect it; furthermore, the effect of movement towards the group average was demonstrated even when the respondents' previous individual responses were provided in subsequent rounds. In the complex study by Scheibe et al. (1975), the researchers compared the use of three different methods within the Delphi method format (simple ranking, a rating scale

method, and a paired comparison method); they found that the rating scale method was considered by the participants to be the most comfortable to perform and that the participants felt uncomfortable with "forced ranking" in the Delphi procedure.

Some advantages of the Delphi method identified in the literature include:

1. The method can be used to obtain data from a large number of subjects in various and different locations.

2. The method is a relatively rapid and efficient way to obtain data that is truly of a group nature.

3. The round response format is conducive to a precise, clearly-defined conceptual summary of many individuals' opinions into a few or even one statement.

4. Anonymity encourages honesty in expression of personal opinion.

5. High response rates have been shown in Delphi studies, attributable to either a high degree of subject involvement or anonymity.

6. Data analysis is accomplished throughout application of the method rather than at the end of the study, and relatively simple descriptive statistical methods are appropriate for use with the data obtained.

Some disadvantages cited include:

1. The Delphi method is costly and time-consuming for the researcher in comparison with other data collection methods.

2. The method is dependent on the cooperation and continued interest of subjects across rounds and over time.

3. The method is subject to a number of biases due to uncontrollable situational and other extraneous variables.

4. The results are strictly the opinions of group members and may or may not accurately represent reality.

5. The method may result in manipulated or arbitrary consensus.

The best-known example of the use of the Delphi method within the area of nursing research is a 1975 study by Lindeman, entitled "Delphi Survey of Priorities in Clinical Nursing Research." Researchers in related disciplines who also used the Delphi method include: Milholland, Wheeler, & Heieck, 1973; Jillson, 1975; Sheridan, 1975; Sims, 1979.

The Delphi-Sort Method

The Delphi-sort method is a recently developed approach to data collection that was conceptualized in 1981 by two nurse researchers, Bunt and Patsdaughter, who were faced with a clinical research problem for which no existing methodology seemed to be completely satisfactory. The particular research question involved identification of nursing care priorities by patients and nurses, so the Delphi technique of generating intra-group consensus initially seemed appropriate. In its true form, however, the Delphi technique is rather complex and is not rapid or efficient enough to gather data from constantly-changing, captive subjects who are extremely diverse in both background characteristics and levels of functioning (characteristics of patient populations). Hence, modifications in the format of the Delphi method, such as elimination of the open-ended round and the substitution of an indirect form of feedback for the more complex statistical feedback of a conventional Delphi exercise, were deemed necessary to reduce problems such as inefficiency, noncompliance, attrition, and ineffective communication. Furthermore, it was thought by the researchers that a more "hands-on" and creative response form than the traditional questionnaire would generate increased subject interest and involvement, especially among particular types of

subjects such as low socioeconomic class patients or patients with limited attention spans. Thus, card sorting, such as in the Q-sort technique, was selected as the preferred response mode. In pilot testing of this new method, the problem of response sets/biases arose, so the decision was made to incorporate the "forced-choice" concept of the Q-sort technique to a degree. In summary, the researchers formulated a data collection approach utilizing some features and concepts of two existing methods that were combined in such a way as to maximize the major advantages of each and to offset some of their major disadvantages. Delphi and Q-sort, thus, became Delphi-sort. Since the development of this novel approach has been fairly recent, no published material regarding the method is available to date. However, several unpublished manuscripts which contain descriptions and discussions of the Delphi-sort have been prepared (Bunt & Patsdaughter, 1981; Patsdaughter et al., 1981).

Bunt and Patsdaughter (1981) have provided the following summary description of the Delphi-sort procedure:

> The Delphi-sort utilizes the four-round format of Delphi methodology. Indirect rather than direct feedback is provided as subjects sort from a decreasing number of items from round to round. The purpose is to structure group communication and generate group consensus. The physical structure of the Delphi-sort resembles that of the Q-sort in that subjects are asked to sort statement cards (items) into categories (typically four) having different values. A modified version of the forced-choice concept of the Q-sort is also implemented by limiting the number of cards that can be placed into any given category. This number varies for each of the first three rounds. As in Delphi, in the fourth and final round, subjects prioritize a small number of items that emerge from the earlier consensus rounds. The final round data is then grouped and weighted in order to establish the final group priorities. Both

> content of the items selected and final priority ranking represent a given group's consensus. (pp. 1-2)

Similar to Q-sort statement populations, an instrument which fits a theoretical framework may be used (structured sort), or items may be randomly selected (unstructured sort). Virtually any existing or developed instrument may be used to derive the statements to be prioritized within this method, but since each round consists of a smaller number of statements (items), it is recommended that the initial number of items be large (i.e., 50 or more). In order to provide the indirect feedback in the method, a frequency count sheet is employed to identify the most frequently prioritized items in each round. Approximately one-half of the items (those least prioritized in round one) are eliminated in round two, an additional one-third or one-fourth of the items (those least prioritized in round two) are eliminated in round three, and only one-fourth to one-sixth of the original number of items are presented to subjects in the final ranking round. The Delphi-sort is applicable with sample groups of various sizes, but since the method involves the generation of group consensus, it is recommended that the sample consist of no less than 20 subjects. Bunt and Patsdaughter (1981) have noted that the Delphi-sort can be applied in the descriptive study of a single group or for comparative analyses of two or more groups on a given problem or issue.

Hence, the Delphi-sort is a group, semi-forced, rectangular distribution-producing form of measurement. Since group frequencies and average group ratings are calculated, it is primarily a normative mea-

surement method. Data analysis involves the use of descriptive procedures and non-parametric statistics such as the Chi-Square test.

Like Q methodology, the Delphi-sort is based on the assumption that subjective data constitute empirical reality. However, similar to R methodology, the Delphi-sort represents the nomothetic approach to information source and understanding. In contrast to both Q and R methodologies but in comparison to the Delphi method, the Delphi-sort is concerned with the group, rather than the individual, as the unit of focus.

One significant underlying assumption of the Delphi-sort method is that it is based upon Ludlow's (1975) concept of "informed judgment" rather than the "expert opinion" notion of the traditional Delphi method. Therefore, the method has applicability in a wide variety of problem contexts and with diverse types of subjects.

Since the Delphi-sort is a relatively new data collection method, there have been no methodological studies conducted to specifically investigate the properties of the method or to compare the method with more traditional methods to date. Furthermore, since the method has only been used in one study thus far, advantages and disadvantages of the method have not been subjected to sufficient empirical documentation.

In summary, methodology is a significant issue in any area of research activity. Four data collection methods applicable to the study of perceptions, expectations, values, and priorities include: 1) rating scales (and checklists), 2) the Q-sort technique, 3) the Delphi method,

and 4) the Delphi-sort method. The literature pertaining to these methods has been reviewed to gain an understanding of the history, applications, procedures, methodological and theoretical foundations, and advantages and disadvantages of each of these four methods. Points of comparison and contrast in the four methods, previously addressed, are presented in summarized form in Table 1.

Relationship of Clinical and Methodological Aspects of the Investigation to the Literature

The current study was designed in accordance with many clinical and/or methodological recommendations of earlier investigators. Similar to most of the clinical studies cited, the current research includes the identification of patients' expectations or priorities for nursing care activities. Consistent with the study of Whiting et al. (1958), the Q-sort technique is included as one methodological approach. This investigation also provides for three additional data collection approaches in terms of several important variables, as suggested by Whiting et al. (1958) and Patsdaughter et al. (1981). The tool initially used by Whiting et al. (1958), modified and used by White (1972), and later employed by Patsdaughter et al. (1981) served as the instrumentation for the present study. In the current study, the rating scale method of White's (1972) investigation and the Delphi-sort method of the research of Patsdaughter et al. (1981) are also included among the comparison methods. The Delphi exercise was the fourth comparison data collection method used, one of the two methods from which the Delphi-sort was initially developed. The present study incorporated as many design features

Table 1

Selected Points of Comparison and Contrast

Four Methodological Approaches

Methodological Approach	Rating Scales	Q-Sort Technique	Delphi Method	Delphi-Sort
Historical Background	Behavioral Sciences	Psychological Research	Technological Forecasting	Nursing Research
Data Collection Mode	Paper-and-Pencil Mode	Card Sorting	Paper-and-Pencil Mode/ Computerized Mode	Card Sorting
Administration Format	Single Administration	Single Administration	Rounds	Rounds
Data Source	Groups of Individuals	Individuals	Groups	Groups
Size of Person Sample	Large	Small	Variable	Variable (minimum of 20)
Size of Item Sample	Variable	Large (minimum of 50)	Variable	Large (minimum of 50)
Type of Measurement	Free-Choice/ Normative	Forced-Choice/ Ipsative	Free-Choice/ Normative	Semi-Forced Choice/ Normative

Table 1

(Continued)

Methodological Approach	Rating Scales	Q-Sort Technique	Delphi Method	Delphi-Sort
Distribution of Subject's Responses	Distribution-Free	Quasi-Normal Distribution	Distribution-Free	Rectangular Distribution
Statistical Analysis	Interdependency Analysis Correlations of Tests	Dependency Analysis Correlations of Persons	Descriptive Group Summaries/ Non-parametric Statistics	Descriptive Group Summaries/ Non-parametric Statistics
Methodological/ Theoretical Foundation	R Methodology/ Nomothetic Approach	Q Methodology/ Ideographic Approach	Nomothetic Approach	Nomothetic Approach

as possible (i.e., sample selection, instrumentation, setting, successive research) to minimize some methodological flaws of previous studies.

CHAPTER III

RESEARCH QUESTIONS AND HYPOTHESES

Thus far, the general dual purpose of this study has been identified as: 1) the identification and analysis of hospitalized adult patients' priorities for nursing care activities, and 2) the systematic comparison of four methodological approaches used for identification of those priorities. In Chapter I, the historical background and rationale for this investigation were provided, and the significance of the clinical and methodological problem areas to the profession and practice of nursing and to nursing research, respectively, was addressed. Chapter II consisted of a presentation and summary of the literature that was reviewed, analyzed, and critiqued for the purpose of linking this research to relevant empirical and theoretical works, as well as for identifying significant issues and gaps in existing knowledge. In the present chapter, the specific research questions which this investigation sought to answer and the hypotheses formulated on the basis of the literature reviewed and logical deductions will be stated and discussed.

The specific clinical and methodological research questions addressed by the investigation reported in this thesis were as follows:

1. What are hospitalized adult patients' priorities for nursing care activities and from which of four major content categories (physical aspects of care, implementation of medical care, psychological aspects of care, and preparation for discharge) are these priorities derived?

2. Are there inter-group differences in the priorities for nursing care activities identified by four selected data collection methods (rating scale, Q-sort, Delphi exercise, Delphi-sort)?

3. Do the four data collection methods selected for the identification of priorities for nursing care activities differentially influence the degree of intra-individual change in priorities?

4. What are the advantages and disadvantages of the use of each of the selected data collection methods for identifying priorities in terms of: 1) time and cost, 2) subjects' evaluations, 3) researchers' evaluations, and 4) other measurement considerations?

The first research question was clearly a clinically-oriented one. It was answered, in part, by examination of the actual activities which comprised the eight-item priority list generated within each of the four comparison groups. Of even greater importance than the specific items (activities) prioritized[1] were the content categories that these items represented. Each of four categories reflected a distinct role of the nurse. Hence, the content category from White's (1972) Nursing Activities Checklist from which each priority item was derived was identified. One hypothesis that was formulated to help answer the first research question was:

H.1: Patients in all data collection method groups will prioritize proportionately more items from White's "physical aspects of care" and "implementation of medical care" categories than they will items from the "psychological aspects of care" and "preparation for discharge" categories.

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[1]It should be noted that the word "prioritize" does not appear in the dictionary as such. However, "-ize" is cited as a verb suffix meaning "to engage in a specified activity" (Webster, 1981, p. 611). Therefore, the word "prioritize" can be defined as a verb form of the word "priority" meaning "engaging in the process of ranking options in a hierarchical order; to engage in the establishment of priorities." The verb form is, however, commonly used in some professional fields.

This hypothesis was based on the findings reported in previous investigations of patients' nursing care expectations and priorities (Legan, 1965; Patsdaughter et al., 1981; White, 1972; Whiting et al., 1958).

The next three specific research questions of this study were primarily of a methodological orientation. Question two asked whether the method of data collection effected the priorities identified by each of the four comparison groups. A rough answer to this question was obtainable by mere inspection of the priority lists of the four comparison groups and comparison of both specific activities prioritized and the frequencies of items derived from each of the four content categories within each group's priority list. In an attempt to answer this research question more precisely, a second hypothesis was formulated:

> H.2: There will be significant differences between the proportion of items derived from each of the four content categories in the eight-item priority list of each data collection method group and the proportion of items derived from each content category by all groups combined.

It was thought that significant differences would be found among the priority lists of the four comparison groups due to inherent differences in the four data collection methods, that is, differences in response modes (paper-and-pencil versus card sorting), administration formats (single administration versus rounds), data source (individuals versus groups), types of measurement (normative versus ipsative and free-choice versus forced-choice) and distributions of subjects' responses (distribution-free, quasi-normal distribution, rectangular distribution).

Question three addressed the effect that the four different data collection methods employed in this study had on the priorities of individual subjects. To provide a means to answer this question, individual subjects in all of the comparison groups completed a pre- and post-test measure (both identical written rating scales) on the day before and the day after the administration of the data collection method designated for each sample group. A third hypothesis was formulated with regard to this question:

> H.3: There will be less change in individual priorities in subjects in the rating scale and Q-sort groups than there will be in subjects in the Delphi exercise and Delphi-sort groups.

This hypothesis was based on the fact that the data source in both the rating scale and Q-sort methods is the individual, whereas both the Delphi exercise and the Delphi-sort are actually group measurements. Furthermore, the administration format of both the rating scale and the Q-sort methods is that of a single administration, whereas the administration format of both the Delphi exercise and the Delphi-sort methods is that of a series of rounds with the provision of feedback.

The fourth specific research question concerned the advantages and disadvantages of the four different data collection methods used in the investigation and identification of priorities. Data included: 1) measures and reports of both subjects' and data collectors' evaluations regarding the methods, which were obtained following administration of each data collection method, and 2) notes regarding time/cost, problems encountered, unsolicited comments from subjects and data collectors, etc., which were kept by the primary investigator throughout the various

stages of the research process. No specific hypothesis was formulated with respect to this research question. Rather, the question was addressed primarily in a descriptive manner.

Thus, this investigation was designed and conducted to answer four specific research questions and to test three related hypotheses regarding the nursing care priorities of hospitalized adult patients and four comparison data collection methods used in the investigation of priorities. The questions were reflective of significant problem areas and issues in both the nursing profession and nursing practice (i.e., the need for consideration of patients' perceptions, expectations, and priorities) and nursing research (i.e., the need for increased systematic attention to methodology).

CHAPTER IV

METHODS

This investigation may be classified as an exploratory, descriptive clinical study and a quasi-experimental methodological study, combined and conducted simultaneously.

The clinical study was exploratory and descriptive in that it sought to identify patients' priorities for nursing care activities and to classify these priorities according to four content categories.

Kerlinger (1964) defines methodological research as "controlled investigation of the theoretical and applied aspects of measurement, mathematics and statistics, and ways of obtaining and analyzing data" (p. 700). Abdellah and Levine (1979) further specify that the purpose of methodological research is to "develop methods, tools, products, or procedures for conducting further research or for use in practice" (p. 447). This study compared four methodological approaches for investigating priorities (in this case, for nursing care activities) in terms of data obtained, time/cost factors, evaluations of the methodology by subjects and researchers, and selected measurement/data collection considerations. According to the criteria of Campbell and Stanley (1963), the investigation was quasi-experimental in nature due to a lack of randomization, although comparison groups and pre- and post-measures were included in the design.

Details regarding the specific setting, subjects, instrumentation, research design, and data collection procedures used in the conduct of this investigation will now be described and discussed.

Setting

The setting for the investigation was a 1,183-bed facility located in a major midwestern city. The hospital is university affiliated with teaching and research orientations and serves as a major referral center for the midwest. The hospital also serves a metropolitan region that includes a great diversity of demographic groups.

This institution was selected as the setting for the current investigation because: 1) its large patient population permitted access to the desired number of subjects, 2) the patient population was suitable to the nature and purpose of the investigation, 3) the principal investigator had conducted previous research activity within the institution, which facilitated access and communication within the institution, and 4) the precursor study to this investigation was conducted at the institution, thus permitting a greater degree of comparison and generalization of findings.

Eight medical-surgical nursing units in one of the medical center's hospital pavilions were used for data collection. The units were non-randomly chosen by consensus of the principal investigator and representatives of nursing administration in the pavilion, who considered such factors as staffing and patient census at the time of the study and willingness of the nursing staff to cooperate with the researcher.

Subjects

The investigation required the selection of subjects for four comparison groups:

1.	Rating Scale (RS) group	(N=20)
2.	Q-sort (Q) group	(N=20)
3.	Delphi exercise (D) group	(N=20)
4.	Delphi-sort (DS) group	(N=20)
	Total Number of Subjects	N=80

Major considerations that influenced the sample selection process included: subjects had to be physically stable and psychologically competent for participation in the study; subjects had to be able to read and comprehend the written materials; subjects in the Q, D, and DS groups were required to be available for extended periods of time (i.e., they could not be scheduled for surgery or any lengthy procedure during the data collection period); subjects had to be willing to spend a fair amount of time for the data collection exercises; and subjects had to be willing and competent to sign a consent form or be able to give appropriate verbal consent. Specific criteria for subject selection in addition to the primary ones cited above included: subjects had to be at least 21 years of age but no more than 70 years of age; subjects must have been hospitalized for at least two days, but for no longer than three weeks; subjects had to have the manual dexterity to complete the rating scales and/or sort cards (or require minimal assistance); and it had to be anticipated that the subjects would remain in the hospital for the three days required for data collection. The non-random sampling procedure was purposive in that an attempt was made to balance the com-

position of the four comparison groups with regard to the variables of age, sex, and medical versus surgical diagnosis.

On the day that data collection for each of the four comparison groups commenced, the principal investigator sought volunteers from among the patients on the units selected for use in this investigation. Prior to approaching any patient, charts and/or Kardexes were reviewed and staff nurses were consulted to determine whether the potential subject met the selection criteria delineated above. Each potential subject was then approached by the principal investigator and given a brief verbal explanation of the nature and purpose of the study. If the patient was interested in participating in this study he/she was given a consent form to sign, specific to the sample group to which he/she was assigned (Appendix I). Included with the consent form was a personal data sheet (Appendix II) that the patient was also asked to complete at that time.

Ethical Procedure/Protection of Human Subjects

Only volunteer subjects who had no known physical, medical, or psychological contraindications to participating in this study were included as subjects of this investigation. It was also assured that participation by the patients would not interfere or conflict with their therapeutic treatment regimes. All patients who participated in this investigation signed an informed consent form in the presence of the principal investigator.

Subjects were given a guarantee of confidentiality of the demographic data they were requested to supply. It was impossible to guarantee total anonymity, however, since subjects had to be relocated on subsequent data collection days and correlations between subjects' pre- and post-test measures were sought. In order to make subjects feel more comfortable in providing the information requested and to insure them that their personal identity would not be publicly disclosed, hospital identification numbers and room numbers instead of names were used to relocate and identify subjects. No form of identification was required during the actual administration of the comparison data collection methods. Indeed, anonymity is an inherent feature of the two group data collection methods used -- the Delphi exercise and the Delphi-sort -- since information obtained from individual subjects is recorded in group frequency form. It was emphasized to subjects that participation or non-participation in this study would not affect the nursing care or treatment that they would receive during their stay in the hospital. While it was also emphasized that it was important in all phases of this study that subjects who started the data collection process continue to completion, subjects were informed of their option to withdraw from participation at any time that they thought it was necessary to do so.

The risk-benefit ratio for this investigation was deemed to be favorable since this investigation involved no experimental manipulation of either physical or psychological nature and involved only subjects who were physically and psychologically stable and voluntarily participated. Prior to any actual data collection, the proposal

for this research received the approval of the Institutional Review Boards of the involved institutions.

Instrumentation

The instrument used in all four data collection methods in this investigation consisted of the 50 items (Appendix III) contained in White's (1972) Nursing Activities Checklist. Written permission was obtained from White for use of this instrument. Since a breakdown of the specific items into the four content categories represented in the instrument was not available in the existing literature, a categorization list (Appendix III) was also obtained directly from White. Category I (physical aspects of care) contained 20 items, category II (implementation of medical care) contained eight items, category III (psychological aspects of care) contained 14 items, and category IV (preparation for discharge) contained eight items.

White established content validity for the instrument by submitting the items to graduate nurses (doctoral candidates, nursing faculty, and nursing practitioners) for review and revisions (White, 1972; U. S. Health Resources Administration, 1979). Since no published information dealing directly with reliability of previous administrations of the instrument was available, a measure of test-retest reliability was obtained by the current investigator prior to the use of the instrument in this investigation. The instrument was administered to a group of 20 lay persons and a group of 20 registered nurses, with a two-week interval between the test and retest. Median intra-individual test-retest relia-

bilities were found to be .52 and .73, respectively. It should be noted that one by-product of the current investigation was additional empirical information regarding the reliability of the Nursing Activities Checklist instrument.

Research Design

The quasi-experimental design for this investigation is depicted graphically in Figure 1.

	Day:	1	2	3	Week
Group:	RS	1	1	1	1
	Q	1	2	1	1
	D	1	3	1	2
	DS	1	4	1	3

Where: 1 = Written rating scale
2 = Q-sort
3 = Delphi exercise
4 = Delphi-sort

Figure 1. Graphic illustration of the research design.

The design for this clinical and methodological investigation was a combination of a pre-test/test/post-test design and a comparison group design, which permitted the introduction of as much control as practical and feasible over the experimental situation. Data collection was conducted over a three-day period for each sample group in an attempt to control for the effects of maturation and differential attrition. Fur-

thermore, data collection for all four groups was conducted within a period of three weeks in an attempt to limit the effect of history as a threat to internal validity. Manipulation was provided by the administration of the comparison data collection methods. The design contained built-in measures to determine the magnitude and extent of testing effects as threats to internal validity. Indeed, one of the specific methodological questions addressed in this investigation concerned the testing effects of the comparison data collection methods.

Data Collection Procedure

Data collection on days one and three for each sample group was carried out by the principal investigator and one research assistant. The comparison methods on day two of each data collection week were administered by six volunteer data collectors. In the morning prior to each data collection session, training sessions were held for the volunteer collectors at which time: 1) the data collectors were given an overview of the nature and purpose of the study, 2) specific instructions for data collection (including standardized written scripts) were provided, 3) potential problems in data collection were discussed and questions of the data collectors were answered, and 4) data collectors were familiarized with the study's setting, including the patient care units and nursing staff.

Thus, on day one (Friday) of the first data collection week, after informed consent and personal data forms were completed, the principal investigator and research assistant administered a written rating scale

to the 20 subjects in the RS group and the 20 subjects in the Q group. The following instructions were given to subjects both verbally and in writing:

> These statements describe some activities that a registered nurse might perform for a patient. You probably consider some of the statements to be more important than others. You are being asked to rate each statement according to its importance to you. Please place a check for each statement in one of the columns provided: extreme importance, very important, medium importance, or slight importance.

On day two (Saturday) of data collection week one, five volunteer data collectors: 1) administered the rating scale again to the subjects in the RS group, and 2) administered a Q-sort to the subjects in the Q group. In the Q-sort, the subjects were asked to sort 50 cards with the items from the Nursing Activities Checklist printed on them into a quasi-normal distribution according to perceived levels of importance, as illustrated in Figure 2:

# of cards	2	4	6	8	10	8	6	4	2
pile	1	2	3	4	5	6	7	8	9
	least important							most important	

Figure 2. Distribution for the Nursing Care Priority Q-sort.

It should be noted that this Q-sort had been previously pilot tested at the time that this study was designed to determine the ability of lay subjects to perform the exercise and for timing. Subjects in the pilot study had few difficulties in understanding or performing the task, and completion of the sort took an average of 28 minutes per subject. On day three (Sunday) of data collection week one, the principal investigator and assistant again administered the written rating scale to the subjects

in both the RS and Q groups.

On day one (Friday) of week two of data collection, the principal investigator and assistant administered the written rating scale to the 20 subjects in the D group. On day two (Saturday) of data collection week two, a four-round written Delphi exercise was administered to the subjects of the D group by four volunteer data collectors. In round one of the Delphi exercise, subjects were given the Nursing Activities Checklist to complete exactly as in previous rating scale administrations, and then were asked to rate the items according to their perceived level of importance. Following the completion of round one by all subjects, the median rating of each item by the group of 20 subjects was calculated (extreme importance = 4, very important = 3, medium importance = 2, slight importance = 1). The group median for each item was then indicated on the forms for round two, as shown in Figure 3. Indicators were plotted in the center of a response category for whole number medians, and along the line between two response categories for medians ending in 0.5; subjects were informed of this distinction. Subjects were told at the onset of round two that the indicators reflected the overall average choice of a group of 20 subjects of which they were a part. They were then asked to complete the rating scale as before. Following the completion of round two by all group subjects, group medians were again calculated for each item and indicated on the forms that were administered in round three. The same instructions were given to the subjects prior to round three as were given prior to round two. After all subjects completed rating the 50 items in round three, group sum scores

Nursing Activity	Extreme Importance	Very Important	Medium Importance	Slight Importance
1. Take my temperature and pulse		●		
2. Give me or assist me with a daily bath			●	

Figure 3. Illustration of feedback to subjects in the Delphi exercise.

were calculated for each of the 50 items based on round three data. The eight items that had the highest total sum scores from round three were identified. These eight items were then typed on a form with the following instructions:

> Below are the eight items that were rated as being most important by the group in round three. Please rank order these items in terms of their importance to you. Assign the number "1" to the most important item, the number "8" to the least important item, and order all other items in between.

The rank-order form was then xeroxed and administered to each of the 20 subjects in the D group. Round four was the last round of the Delphi exercise. On day three (Sunday) of data collection week two, the principal investigator and assistant again administered the original rating scale to the subjects in the D group.

On day one (Friday) of week three of data collection, the principal investigator and assistant administered the written rating scale to the 20 subjects in the DS group. On day two (Saturday) of data collection week three, four volunteer data collectors administered the Delphi-sort exercise to the subjects of the DS group. In round one of the Delphi-sort, each subject was handed a deck of 50 cards, each card with

an item from the Nursing Activities Checklist printed on it. Subjects were instructed to place each card, according to perceived importance of the item, into an appropriate category of a compartmentalized box. Category headings were: extreme importance, very important, medium importance, and slight importance. No further instructions or restrictions were specified to the subjects prior to round one. Immediately after each subject finished sorting the 50 cards, the data collector returned to the central tally station where the responses were recorded. All of the cards in the "slight importance" and "medium importance" categories were combined and disregarded; the cards in the "extreme importance" and "very important" categories were combined, and a tally mark was entered on a frequency count sheet next to each number representing a card placed in either of these two categories. The disregarded cards were replaced and the deck was returned to numerical order. The deck of 50 cards was then taken to the next subject of the group, and the same procedure was carried out. After all 20 subjects of the group completed round one, the frequency count sheet was examined to determine the 24 most frequently tallied items. These 24 cards were then selected from the deck of 50 (with the other 26 cards set aside) and were used as the deck handed to subjects for round two of the Delphi-sort. Subjects were given the same instructions for round two as for round one. In addition, they were told they could place no more than eight cards into any given category in round two. Again, after each subject sorted the round two deck of cards, the data were immediately tallied in the same manner as following round one. When all 20 subjects completed round two, the frequency count sheet was again examined and

the most frequently tallied 16 items were identified. These 16 cards were then used as the deck for round three, in which subjects were told that they could place no more than five cards into any given category. Each subject sorted the round three deck of cards, and the responses were tallied. Following the completion of round three by all subjects, the most frequently tallied eight items were identified. These eight cards were given to each subject during round four with the following instructions:

> These cards (items) were rated as being the most important by the group in round three. Please arrange these cards in order of importance to you. Place the most important card on the top and the least important card on the bottom of the deck, and arrange all other cards in descending order in between.

The rank-order for each subject was then recorded by the data collector, the cards were returned to numerical order, and the deck of eight cards was taken to the next subject of the group. This constituted the fourth and final round of the Delphi-sort. On day three (Sunday) of data collection week three, the principal investigator and assistant again administered the written rating scale to the 20 subjects in the DS group.

During day two data collection sessions, data collectors were requested to complete a form immediately after collecting data from each subject. Data collectors recorded: 1) the subject's identification number, 2) the time required from the end of instructions to the completion of the exercise, 3) problems encountered, and 4) subject's comments. Data collectors were instructed to record such problems as subject's difficulty in understanding instructions or in performing the task, extraneous interruptions or input to the task, changes in subject's

physical or mental condition, etc. They were instructed to record anything said by the subject that directly related to the data collection process.

Following completion of the day two comparison data collection methods, a method evaluation form was also administered by the volunteer data collectors to each subject in the sample group. This form is included in Appendix IV.

Furthermore, after each day two data collection session, the volunteer data collectors were interviewed by the principal investigator, and were asked to provide feedback regarding the comparison data collection method administered that day. Specifically, they were asked to: 1) list some advantages and disadvantages of the method administered that day, and 2) state which data collection method, of those they had administered, they would use if they were to conduct an investigation regarding attitudes, preferences, or priorities and to state reasons for their preference.

During the planning stages of this investigation and throughout the data collection process, records were kept by the principal investigator regarding the cost and time requirements to carry out each of the four comparison data collection methods.

CHAPTER V

INTERNAL VALIDITY FINDINGS OF THE INVESTIGATION

In order to establish the validity of the clinical and methodological results of this investigation, it is first necessary to present the findings related to several internal validity issues. These include: 1) demographic characteristics of the four comparison groups, 2) homogeneity among the comparison groups according to baseline responses to the instrument, and 3) reliability of instrumentation.

Demographic Findings

Some similarities and slight differences were noted in comparison of the demographic data obtained from the subjects in the four groups of this investigation. Demographic data are summarized in Table 2. The RS comparison group had a mean age of 51.4 years, a median of 54.0, and a range of 25 to 70 years. The Q comparison group had a mean age of 51.3 years, a median of 56.5, and a range of 26 to 70 years. The D comparison group had a mean age of 46.0 years, a median of 45.0, and a range of 25 to 70 years. The DS comparison group had a mean age of 45.1 years, a median of 42.5, and a range of 26 to 70 years. The RS and Q groups, thus, were comprised of slightly older subjects than the D and DS groups. While there appear to be differences between the average ages of the RS and Q groups and the D and DS groups, the differences were not statistically significant for either means ($\chi^2 = .70$, $p < .90$) or medians

Table 2

Summary of the Demographic Data of the Subjects in the Four Comparison Groups

	Comparison Group			
	RS	Q	D	DS
Age (years):				
Mean	51.4	51.3	46.0	45.1
Median	54.0	56.5	45.0	42.5
Range	25-70	26-70	25-70	26-70
Sex:				
Male	15	13	13	13
Female	5	7	7	7
Educational Level:				
No College Education	14	9	11	11
Some College Education	6	11	9	9
Nature of Diagnosis:				
Medical	10	10	10	10
Surgical	10	10	10	10
Duration of Hospitalization (days):				
Mean	8.6	10.0	8.1	9.2
Median	7.5	10.0	7.0	7.0
Range	3-21	3-21	3-21	3-21
Number of Previous Hospitalizations:				
Mean	4.6	5.2	4.3	5.0
Median	2.0	5.5	3.0	3.0
Mode	2.0	2.0	3.0	3.0
Range	0-15	1-13	0-12	0-25

(χ^2 = 2.79, $p < .50$) among the four comparison groups. The age ranges for the four groups were nearly identical.

The RS group, with 15 male subjects and five female subjects, differed slightly in sex composition from the other three comparison groups which were composed of 13 males and seven females. Sex differences were not found to be statistically significant (males: χ^2 = .22, $p < .98$; females: χ^2 = .15, $p < .99$).

Greater differences in the four comparison groups existed in the educational level of the subjects in each group, as evident in the frequencies per category (Table 2). Similarities and differences among the groups were more apparent when the educational level categories were collapsed into: 1) subjects who did not have, and 2) those who did have some college education. The RS group was the least educated of the four groups since 14 subjects in this group had no college education, and only six subjects had some college education. The Q group was the most educated of the four comparison groups, with nine subjects who had no college education and 11 subjects having had some college education. The D and DS groups were each comprised of 11 subjects who had no college education and nine subjects who had some college education. Among the comparison groups, there were no statistically signficant differences between the number of subjects who had no college education (χ^2 = 1.13, $p < .80$) and the number of subjects who had some college education (χ^2 = 1.00, $p < .80$).

The four comparison groups were identical in the ratio of the number of subjects hospitalized with a medical diagnosis to the number

of subjects hospitalized with a surgical diagnosis, depicted in Table 2. Each group included ten subjects with a medical diagnosis and ten subjects with a surgical diagnosis.

The RS group had a duration of hospitalization mean of 8.6 and a median of 7.5 days. The Q group had a mean of 10.0 and a median of 10.0 days, the D group a mean of 8.1 and a median of 7.0 days, and the DS group a mean of 9.2 and a median of 7.0 days. No statistically significant differences were found among the mean durations of hospitalization of the four comparison groups ($\chi^2 = .22$, $p < .98$). The range for each of the four comparison groups was 3 to 21 days (Table 2).

Some differences were identified in the averages and ranges of number of previous hospitalizations for the four comparison groups. The RS group reported a mean of 4.6, a median of 2.0, and a range of 0 to 15 previous hospitalizations. The Q group reported a mean of 5.2, a median of 5.5, and a range of 1 to 13 previous hospitalizations. The D group reported a mean of 4.3, a median of 3.0, and a range of 0 to 12 previous hospitalizations. The DS group reported a mean of 5.0, a median of 3.0, and a range of 0 to 25 previous hospitalizations. No statistically significant differences were found among the mean numbers of previous hospitalizations of the four comparison groups ($\chi^2 = .03$, $p < .99$). A wider range of number of previous hospitalizations was shown by the DS group but actually reflected one subject who fell outside of the typical ranges of the other groups.

Thus, through the use of purposive sampling, the comparison groups of the investigation seemed to be fairly equivalent along selected subject

variables. On all selected variables, means among the four comparison groups were not statistically significantly different.

Homogeneity of Baseline Responses

Since subjects in all four comparison groups completed an identical written rating scale on day one of data collection for each group, it was possible to use the baseline data obtained to statistically test for homogeneity among the four groups. To accomplish this, the Kolmogorov-Smirnov Two-Sample Test was used. The Kolmogorov-Smirnov test is a non-parametric statistic for ordinal-level data (an assumption which was made in this investigation regarding data obtained from the Nursing Activities Checklist, with four levels of importance used for rating each of 50 items) and appropriate for use with small samples (N=40), particularly samples of equal size (Guilford, 1965). To apply this test, a sum score of responses to the checklist was calculated for each comparison group. The sum scores were arranged in ascending order for two groups at a time, and both frequencies and cumulative frequencies were calculated. The K_c value, the difference between the cumulative frequencies of the two respective groups, was then found and the highest K_c value identified. Using the table of critical values of K in the Kolmogorov-Smirnov Two-Sample Test, the obtained K_c values were compared with the K values at the .05 level of significance for a two-tailed test. Calculations for this test are presented in Appendix V. Table 3 presents a summary of the various K_c values for all possible pairs of comparison groups. No K_c value was statistically significant. The findings indicated that the comparison groups non-randomly selected for use in this

Table 3

Summary Table of Kolmogorov-Smirnov Values

To Test the Differences Between the Comparison Groups

Using Day One Rating Scale Data

	RS	Q	D	DS
RS	--			
Q	2	--		
D	5	6	--	
DS	4	3	5	--

Two-Tailed Test
Level of Significance: p = .05
K = 9
N = 20

investigation were not statistically different when data obtained from the initial rating scale were compared.

Reliability of Instrumentation

An additional important issue in internal validity for any investigation is the reliability of the instrumentation.

In the various published and unpublished reports regarding the Nursing Activities Checklist, no information was available concerning reliability of use of the instrument. Additionally, in no known instance have sum scores for individuals been reported. A sum score for an individual would represent a single overall attitude, which this instrument was not initially designed to measure. Hence, the use of the standard test-retest correlation coefficients based on sum scores would be meaningless. Because subject responses to individual items were the concern of previous and the current investigations, a measure of intra-individual stability over time of responses to individual items was deemed to be a more appropriate and informative measure of reliability.

Appropriate choices for test-retest correlation coefficients include Spearman Rho and Pearson product moment correlation coefficients. A serious problem with tied-ranks is presented with the use of Spearman Rho since alternative responses to the items are limited to four options. The Pearson r has been used in situations where the data satisfy only the assumption of ordinal-level data if the results are interpreted cautiously (Labovitz, 1970, 1972; Nie, 1975; Tufte, 1970). To provide an estimate of reliability for use of the Nursing Activities Checklist in

this investigation, then, Pearson r test-retest reliabilities as a measure of intra-individual stability of responses to individual items were calculated. Day one and day three data from each subject in each comparison group provided for 80 individual reliability estimates. The typical methods for reporting reliability coefficients, ranges and medians, were used. Summaries are displayed in Table 4. Because of the restricted range of possible responses (i.e., 1 to 4), reported coefficients are likely to be very conservative estimates.

The ranges of reliability coefficients were quite similar for the four comparison groups, .07-.86 for the RS group, .16-.89 for the Q group, .18-.73 for the D group, .08-.76 for the DS group, and .08-.89 for all comparison groups combined. Median reliability coefficients were .57, .68, .49, .40, and .52, respectively. Each median coefficient was significant beyond the .01 level of confidence.

Some comparisons can be drawn between the measures of reliability reported here and the reliability coefficients obtained from the pilot study cited earlier. In the pilot study, the median intra-individual test-retest reliability coefficients for a group of 20 lay persons and 20 registered nurses were reported to be .56 and .74, respectively, also significant beyond the .01 level. The current median reliabilities, based on the four groups of 20 patients each, ranged from .40 to .68. While both sets of reliabilities were obtained from test-retest measures, a two-week interval was used in the pilot study, whereas the reliabilities of the current investigation were based on a two-day interval. No specific intervention was introduced between the test and retest mea-

Table 4

Test-Retest Reliability Coefficients for the Nursing Activities Checklist Obtained From Day One and Day Three Data of Each Comparison Group and All Four Groups Combined

	RS Group	Q Group	D Group	DS Group	All Sample Groups
Range	.07-.86	.16-.89	.18-.73	.08-.76	.08-.89
Median	.57**	.68**	.49**	.40**	.52**

*p < .05, r ≥ .276
**p < .01, r ≥ .367

sures in the pilot study, while an intervening data collection session was administered between the test and retest measures of the current investigation. The two-day time interval might be expected to yield higher test-retest coefficients; however, the intervening measurement might be expected to result in lower reliability coefficients.

Given that there were no significant differences among comparison groups across subject variables and baseline responses to the data collection instrument and that median intra-individual reliability coefficients in this use of the instrument were highly significant, a case can be made that internal validity, the basic minimum without which any research is uninterpretable, has been established.

CHAPTER VI

RESULTS OF THE CLINICAL STUDY

In the present chapter, the findings of the clinical study are addressed through a description of the data and data analysis procedures, presentation of both qualitative and statistical findings, and interpretation of the results. Included is a comparison of the findings of this investigation with those of previous works. Findings directly related to the clinical research question and hypothesis are reported. Raw data collected from the four comparison groups along with some intermediate calculations are provided for reference in Appendix V.

To address the clinical research question (research question one) posed for this investigation and to permit comparison of the findings derived from the four data collection methods, the top eight priorities for nursing care activities of each of the four comparison groups were identified. Priorities were determined from the data obtained during the day two data collection sessions for each of the comparison groups. Following the day two administration of the rating scale to the RS group, the total sum score for each of the 50 items in the rating scale was calculated, and the eight items with the highest total sum score values represented the eight priorities for nursing care activities for the RS group. Similarly, the total sum of placement values for each item in the Q-sort was calculated, and the eight items with the highest total sum

values represented the priorities for the Q group. The top eight items were automatically identified by the fourth round of both the Delphi exercise and the Delphi-sort, since round-by-round intermediate data analysis is a characteristic feature of both methods. To establish the priority order of these items, the data obtained during the final rank-order round of each of these two methods were plotted on a frequency distribution table for each comparison group, and frequencies were weighted according to the rank values assigned to each particular item (Appendix V). The weighting procedure was necessary because subjects were instructed to rank the most important item as number 1 and the least important item number 8. The frequencies were then multiplied by the weights, and the items were arranged in hierarchical order.

The priority lists for the four comparison groups are presented in Tables 5-8. Also shown is the content category from White's (1972) Nursing Activities Checklist from which each priority was derived.

A useful qualitative form of analysis is possible through mere inspection of the actual items contained in the priority lists of the four comparison groups, as well as through examination of the apparent similarities and differences among the groups' priorities. For instance, it is noteworthy that out of 50 possible items, all four eight-item priority lists were comprised of a total of only 11 different items. Indeed, six of the items (numbers 12, 15, 24, 42, 46 and 47) were contained in all four priority lists; hence, there was at least 75 percent commonality among the sample groups' priorities. More specifically, four of the items cited above (# 12 -- "Notice when I have pain and give medication

Table 5

Nursing Care Priorities of the RS Group

Priority	Item No.	Statement	Content Category
1	24	Give prescribed medications on time	II
2*	12	Notice when I have pain and give medications if ordered	II
3*	46	Carry out the doctor's orders	II
4	15	Observe the effects of treatments ordered by my doctor	II
5	42	Notice changes in my condition and report them	II
6	47	Explain about tests and x-rays ahead of time so I will know what to expect	III
7	45	Take time to listen to me	III
8	40	Take time to talk with my family and answer their questions	III

*Priorities 2 and 3 were actually equal since item #12 and item #46 both had total sum score values of 76.

Content Categories:
I = physical aspects of care
II = implementation of medical care
III = psychological aspects of care
IV = preparation for discharge

Table 6

Nursing Care Priorities of the Q Group

Priority	Item No.	Statement	Content Category
1	46	Carry out the doctor's orders	II
2	24	Give prescribed medications on time	II
3*	12	Notice when I have pain and give medications if ordered	II
4*	15	Observe the effects of treatments ordered by my doctor	II
5+	1	Take my temperature and pulse	II
6+	42	Notice changes in my condition and report them	II
7	4	Provide me with a clean, comfortable bed	I
8	47	Explain about tests and x-rays ahead of time so I will know what to expect	III

*Priorities 3 and 4 were actually equal since item #12 and item #15 both had total sum placement values of 137.

+Priorities 5 and 6 were actually equal since item #1 and item #42 both had total sum placement values of 135.

Content Categories:
I = physical aspects of care
II = implementation of medical care
III = psychological aspects of care
IV = preparation for discharge

Table 7

Nursing Care Priorities of the D Group

Priority	Item No.	Statement	Content Category
1	24	Give prescribed medications on time	II
2	46	Carry out the doctor's orders	II
3	12	Notice when I have pain and give medications if ordered	II
4	15	Observe the effects of treatments ordered by my doctor	II
5	42	Notice changes in my condition and report them	II
6	4	Provide me with a clean, comfortable bed	I
7	47	Explain about tests and x-rays ahead of time so I will know what to expect	III
8	27	Provide a comfortable, pleasant environment (proper room temperature, free from odors and disturbing noises)	I

Content Categories:
I = physical aspects of care
II = implementation of medical care
III = psychological aspects of care
IV = preparation for discharge

Table 8

Nursing Care Priorities of the DS Group

Priority	Item No.	Statement	Content Category
1	46	Carry out the doctor's orders	II
2	24	Give prescribed medications on time	II
3	12	Notice when I have pain and give medications if ordered	II
4	15	Observe the effects of treatments ordered by my doctor	II
5	42	Notice changes in my condition and report them	II
6	1	Take my temperature and pulse	II
7	47	Explain about tests and x-rays ahead of time so I will know what to expect	III
8	45	Take time to listen to me	III

Content Categories:
I = physical aspects of care
II = implementation of medical care
III = psychological aspects of care
IV = preparation for discharge

if ordered;" # 15 -- "Observe the effects of treatments ordered by my doctor;" # 24 -- "Give prescribed medications on time;" and # 46 -- "Carry out the doctor's orders") comprised, in slightly variant order, the top four priorities of all four comparison groups. Item #42 -- "Notice changes in my condition and report them" appeared in the fifth position in all four priority lists; even though it is numbered priority 6 in the Q group's priority list, it had the same total sum placement value as item #1. Item #47 -- "Explain about tests and x-rays ahead of time so I will know what to expect" also appeared in all four priority lists, but it usually was placed near the bottom of the list as priority number 6, 7 or 8. Hence, not only were close similarities apparent in the actual items prioritized by the four comparison groups, but the four groups also demonstrated congruence with respect to the actual order of priorities. Five of the six common items (the items highest in priority) were derived from content category II -- implementation of medical care. The sixth common item (the lowest among the priorities) was derived from content category III -- psychological aspects of care.

Item #1 -- "Take my temperature and pulse" was a priority identified by two comparison groups, priority five for the Q group and priority six for the DS group. Item #4 -- "Provide me with a clean, comfortable bed" was prioritized by both the Q group (priority 7) and the D group (priority 6). Item #45 -- "Take time to listen to me" was identified as priority number 7 by the RS group and priority number 8 by the DS group. Hence, there was almost 88 percent commonality between the priority lists of the Q and RS groups, the Q and D groups, and the RS and DS groups.

Two items appeared in the priority list of only a single group. Item #27 -- "Provide a comfortable, pleasant environment (proper room temperature, free from odors and distrubing noises)" was priority number 8 of the D group. Item #40 -- "Take time to talk with my family and answer their questions" was priority number 8 of the RS group.

Some attempts were made to provide explanations for the few group differences and low frequency priorities noted above. For example, since only the Q and DS groups prioritized item #4 -- "Take my temperature and pulse," the personal data forms of all four comparison groups were reviewed to determine if these two groups were composed of proportionately more patients hospitalized specifically with cardiac problems or infections, but upon gross examination this explanation did not seem to be supported. This attempt was complicated, however, since wide variations (lack of standardization) existed in the diagnoses recorded on the personal data forms. Furthermore, it was possible that patients in the Q and DS groups had a higher incidence of development of complications of a cardiac or infectious nature during their hospitalization, but only admission diagnoses listed on the Kardex and patients' reports were recorded on the personal data forms. It was thought to be interesting that the D group prioritized two items, item #4 -- "Provide me with a clean, comfortable bed" and item #27 -- "Provide a comfortable, pleasant environment (proper room temperature, free from odors and disturbing noises), that were directly related to the immediate physical environment. One possible explanation for these findings was that data collection for this group took place on an atypical sixty degree, sunny week-

end late in February. Subjects in this group may have felt particularly confined in the hospital and their attention may have been centered on making their immediate environment as bearable as possible. Also of interest is the fact that the RS group prioritized both item #45 -- "Take time to listen to me" and item #40 -- "Take time to talk with my family and answer their questions." Perhaps this orientation towards interpersonal interaction and communication was brought out by or was a function of the nature and characteristics of the specific data collection method used with this group (i.e., rapid administration, informal paper-and-pencil mode, individual data source, single administration, little contact with researchers, etc.). The above explanations, while interesting possibilities, are recognized as being only partial, untested interpretations for some of the usual or atypical findings in the identification of patients' nursing care priorities.

Table 9 shows a comparison of the percentages of items from each content category in the priority list of each comparison group and all groups combined and the actual percentage of items per content category in the Nursing Activities Checklist. Each comparison group and all groups combined prioritized a disproportionately small percentage of items from content category I -- physical aspects of care and content category IV -- preparation for discharge than the percentages of items in these categories in the instrument. In fact, no items from content category IV were prioritized by any group and no items from content category I were prioritized by the RS and DS groups. With the exception of the RS group, content category III -- psychological aspects of care

Table 9

Percentages of Items Per Content Category

in the Priority Lists of the Comparison Groups

and in the Nursing Activities Checklist

	RS	Q	D	DS	All Groups	Nursing Activities Checklist
Category I	0.0	12.5	25.0	0.0	18	40
Category II	62.5	75.0	62.5	75.0	55	16
Category III	37.5	12.5	12.5	25.0	27	28
Category IV	0.0	0.0	0.0	0.0	0	16
	100.0	100.0	100.0	100.0	100	100

Category I: Physical Aspects of Care
Category II: Implementation of Medical Care
Category III: Psychological Aspects of Care
Category IV: Preparation for Discharge

was also disproportionately underrepresented. On the other hand, each group individually and all groups combined prioritized a disproportionately large percentage of items from content category II -- implementation of medical care than the percentage of items in this category in the instrument.

Hypothesis 1 was formulated, from previous findings and logical deductions, to help answer the first research question regarding the categorization of patients' nursing care priorities:

> H.1: Patients in all data collection method groups will prioritize proportionately more items from White's "physical aspects of care" and "implementation of medical care" categories than they will items from the "psychological aspects of care" and "preparation for discharge" categories.

To test this hypothesis, the Chi Square (χ^2) statistic was used. McNemar (1969) refers to Chi Square as a "frequency comparison" statistic. The Chi-Square test is applicable with categorical variables and measures whether the observed, as compared with expected, categorical frequencies differ significantly, or as a result of chance. Haber and Runyon (1977) also refer to the statistic as a "goodness of fit" technique. To use the Chi-Square test, there must be no zeros in the expected frequency cells and no more than 20% of the cells with less than 1-5 cases. Since such small frequencies did occur in the present study data, use of the Yates' correction factor for continuity was necessary. The Yates' formula is required in the one-degree-of-freedom situation to obtain a closer approximation of those χ^2 values obtained from empirical distributions to the theoretical distribution (Ferguson, 1971; Guilford, 1965; Haber & Runyon, 1977; McNemar, 1969). The following

formula was used to calculate χ^2 values:

$$\chi^2 = \frac{(|O - E| - 0.5)^2}{E}$$

Where: O = the observed number in a given category

E = the expected number in a given category

As can be seen in Table 10, in comparison of the frequencies observed in the priority lists of the four comparison groups with the actual expected content category frequencies based on the Nursing Activities Checklist, the priorities of all four groups were in the direction predicted although the findings were not statistically significant at the established .05 level. McNemar (1969) suggests further examination of the data for "contributions to discrepancies" since particular categories may contribute more to discrepancies between observed and expected frequencies than do others. To further examine the "fit" between the priorities of the four comparison groups and the actual distribution of items into content categories in the Nursing Activities Checklist, the data were broken down into the four original content categories, as opposed to the combinations specified in the hypothesis. As shown in Table 11, when the observed and expected frequencies for the four content categories were tested, the Chi-Square values for each group were statistically significant. It was also apparent that the greatest contribution to discrepancies in all four tests was from content category II -- implementation of medical care. The contribution, in all cases, resulted from frequencies in the direction hypothesized.

A word of caution must be inserted at this time regarding interpretation of the findings just reported. Despite the fact that the

Table 10

Chi-Square Tests Between the Priorities of the Four Comparison Groups and Expected Frequencies in Combined Content Categories of the Nursing Activities Checklist

RS Group

	O	E	χ^2
Categories I + II	5	4.5	0
Categories III + IV	3	3.5	0
Sum	8	8.0	0
			$p < 1.00$

Q Group

	O	E	χ^2
Categories I + II	7	4.5	.89
Categories III + IV	1	3.5	1.14
Sum	8	8.0	2.03
			$p < .20$

D Group

	O	E	χ^2
Categories I + II	7	4.5	.89
Categories III + IV	1	3.5	1.14
Sum	8	8.0	2.03
			$p < .20$

DS Group

	O	E	χ^2
Categories I + II	6	4.5	.22
Categories III + IV	2	3.5	.29
Sum	8	8.0	.51
			$p < .50$

Level of Significance: $p \leq .05$
Degrees of Freedom = 1

Table 11

Chi-Square Tests Between the Priorities of the Four Comparison Groups and Expected Frequencies in the Four Content Categories of the Nursing Activities Checklist

RS Group

	O	E	χ^2
Category I	0	3.2	2.88
Category II	5	1.3	7.88
Category III	3	2.2	0.04
Category IV	0	1.3	0.49
Sum	8	8.0	10.69
			$p < .02$

Q Group

	O	E	χ^2
Category I	1	3.2	0.90
Category II	6	1.3	13.57
Category III	1	2.2	0.22
Category IV	0	1.3	0.49
Sum	8	8.0	15.18
			$p < .01$

D Group

	O	E	χ^2
Category I	2	3.2	0.15
Category II	5	1.3	7.88
Category III	1	2.2	0.22
Category IV	0	1.3	0.49
Sum	8	8.0	8.74
			$p < .05$

DS Group

	O	E	χ^2
Category I	0	3.2	2.28
Category II	6	1.3	13.57
Category III	2	2.2	0.04
Category IV	0	1.3	0.49
Sum	8	8.0	16.38
			$p < .001$

Level of Significance: $p \leq .05$
Degrees of Freedom = 3

Yates' correction formula was employed, the frequencies per cell in the previous tests were so small that small differences in the frequencies were magnified by the statistical procedure and produced exaggerated differences in statistical values. For example, note in Table 10 that with one to two item differences between the groups, the p values varied from .99 to .20 to .50. One to two item differences in the cells in Table 11 resulted in p values ranging from .05 to .001. Hence, the statistical findings reported must be interpreted cautiously, and perhaps more emphasis should be placed on the "observed" results themselves than on statistical findings since they probably are more relevant and meaningful than the latter.

In an attempt to provide further interpretation of the data, as well as to compensate somewhat for the small frequencies, a Chi-Square test was used to test the "fit" between the priorities of all groups combined and the expected frequencies for the combined categories based on the actual distribution of items in the Nursing Activities Checklist. As shown in Table 12, using the combined data from the four comparison groups, Hypothesis 1 was statistically supported (i.e., the patients did prioritize proportionately more items from the "physical aspects of care" and "implementation of medical care" content categories than they did from the "psychological aspects of care" and "preparation for discharge" content categories). When the priorities of all four comparison groups combined were used as the observed frequencies and the content categories were broken down into the original four to give the expected frequencies (Table 12), it became evident that the greatest contribution to discre-

Table 12

Chi-Square Tests Between the Priorities of All Four Comparison Groups Combined and Expected Frequencies in Combined Content Categories of the Nursing Activities Checklist

	O	E	χ^2
Categories I + II	25	17.9	2.43
Categories III + IV	7	14.1	3.09
Sum	32	32.0	5.52
			$p < .02$

Level of Significance: $p \leq .05$
Degrees of Freedom = 1

Chi-Square Tests Between the Priorities of All Four Sample Comparison Groups Combined and Expected Frequencies in the Four Content Categories of the Nursing Activities Checklist

	O	E	χ^2
Category I	3	12.8	6.76
Category II	22	5.1	52.74
Category III	7	9.0	0.25
Category IV	0	5.1	4.15
Sum	32	32.0	63.90
			$p < .001$

Level of Significance: $p \leq .05$
Degrees of Freedom = 3

pancies in the hypothesized direction again came from category II -- implementation of medical care. Given the information provided by analysis of directional trends and additional findings (i.e., when comparison groups were combined and when content categories were broken down), Hypothesis 1 of this investigation was accepted.

Since this investigation was grounded, where possible, to previous studies pertaining to the nursing care priorities of patients, the presentation and interpretation of the results regarding priority identification and categorization (i.e., the clinical component of this investigation) would not be complete without a comparison between the findings presented here and those reported in earlier studies. Table 13 was compiled to facilitate the comparison of patients' nursing care priorities identified in this investigation and 1) the priorities identified by the two groups of patients in the 1981 study by Patsdaughter et al., and 2) the nursing care activities identified as being most important by patients in the 1972 study by White. As was noted previously, these three investigations employed the same instrument, and the current investigation used both of the two different data collection methods used in the previous studies. All three studies were conducted in large metropolitan acute-care hospitals (the investigation reported here and the 1981 study conducted in the same setting). Although some variation in exact priority or rank order position was evident, a majority of the specific items (activities) prioritized in this investigation were also highly prioritized or valued by subjects in the two earlier studies. This was especially notable for priorities highest on the list in terms of frequen-

Table 13

Comparison of Nursing Care Priorities Identified in the Present Study with the Findings of Two Previous Studies

Priorities Identified in Present Study*	Priority Number in Eight-Item Priority List From Two Sample Patient Groups (Patsdaughter et al., 1981)	Rank Order Position of Items by Patient In 50-Item Instrument Sample (White, 1972)
Give prescribed medications on time (30)	MC = 2 LSC = 2	2
Carry out the doctor's orders (29)	MC = 1 LSC = 1	1
Notice when I have pain and give medication if ordered (24)	MC = 5 LSC = 4	6
Observe the effects of treatments ordered by my doctor (21)	MC = 4 LSC = 6	7
Notice changes in my condition and report them (15)	MC = 3 LSC = 3	4
Take my temperature and pulse (7)	MC = 6 LSC = 5	12
Explain about tests and x-rays ahead of time so I will know what to expect (7)	MC --- LSC ---	11
Provide me with a clean, comfortable bed (5)	MC = 8 LSC = 8	3
Take time to listen to me (3)	MC --- LSC ---	N.R.
Provide a comfortable, pleasant environment (proper room temperature, free from odors and disturbing noises) (1)	MC --- LSC ---	8
Take time to talk with my family and answer their questions (1)	MC --- LSC ---	N.R.

*Number in parentheses is a weighted sum of the frequencies of the item in the priority lists of the four sample groups combined.

MC = Middle Class Patients, LSC = Low Socioeconomic Class Patients, N.R. = Not reported.

cies and values. Hence, these three studies combined indicate a fairly high degree of consistency and consensus in terms of particular nursing care activities prioritized or valued by patients across situations and over time. Since different instruments were used in other reported studies to evaluate and/or describe patients' nursing care expectations and priorities, further specific comparisons were not possible.

It was possible, however, to compare findings of this investigation with those of previous studies in the area when content categories or general realms of the role of the nurse, versus specific nursing activities, were used as the unit of analysis. As was shown descriptively, as well as through statistical testing of Hypothesis 1, the priorities of all comparison groups in this investigation were highly over-representative of the "implementation of medical care" content category and highly under-representative of the "preparation for discharge" content category. While the comparison groups did prioritize some activities from the "physical aspects of care" and "psychological aspects of care" content categories, findings were less than expected for both content categories. These findings were highly congruent with the findings reported in related previous works by Patsdaughter et al. (1981) and White (1972). The percentage breakdown for both sample groups combined by content category found in the Patsdaughter et al. (1981) study was: category I = 18.75%, II = 75%, III = 6.25%, and IV = 0% as compared to the current breakdown of 18%, 55%, 27%, and 0%, respectively. Current findings were also consistent with findings regarding patients' expectations for nurses to follow the doctor's orders, recognize and report condition

changes, and demonstrate knowledge of medications and treatments reported by Legan (1965), and the findings related to technical skills reported by Risser (1975) and Hinshaw and Oakes (1977). Whiting et al. (1958) found in their Q-sort study, on the other hand, that patients rated items derived from the category labeled physical care as being most important, followed by items derived from the liaison category (which included implementation of medical care activities), followed by items derived from the patient education category. Items derived from the supportive emotional care category were rated as being least important. In contrast to the findings of this investigation were Tagliacozzo's (1965) findings which emphasized psychological activities, Yatts' (1967) findings which emphasized physical care activities, Risser's (1975) findings which emphasized the educational role of the nurse, and the findings of Hinshaw and Oakes (1977) which stressed cooperation and coordination functions. However, the identification and comparison of similarities and differences in the findings of unrelated studies were complicated by the use of different instruments, methods, subject populations, and settings.

In summary, the findings of this investigation regarding the identification and classification of nursing care priorities indicated that subjects in all four comparison groups were in fairly close agreement in terms of specific activities prioritized. The five nursing care activities prioritized most highly by subjects were: "Give prescribed medications on time," "Carry out the doctor's orders," "Notice when I have pain and give medication if ordered," "Observe the effects of treatments ordered by my doctor," and "Notice changes in my condition and report

them." The subjects in all four groups prioritized proportionately more items from the "physical aspects of care" and "implementation of medical care" content categories than they did items from the "psychological aspects of care" and "preparation for discharge" content categories; furthermore, the greatest contribution to discrepancies between expected and observed priority frequencies in the hypothesized direction was from the "implementation of medical care" content category. Comparison of the findings of this investigation with previous related works indicated a degree of consistency and consensus in patients' specific nursing care priorities over time. The findings of this investigation and related works also showed that patients placed high priority on nursing activities related to implementation of medical care, low priority on activities pertaining to preparation for discharge, and medium degrees of priority on activities of physical and psychological aspects of care (the former prioritized somewhat higher than the latter). Both support and disagreement with regard to the findings of this investigation were identified in the reports of unrelated studies. Possible explanations for and nursing implications of these findings will be addressed in the final chapter of this report.

CHAPTER VII

RESULTS OF THE METHODOLOGICAL STUDY

The Relationship of Data Collection Methods and Group Differences

The second research question of this investigation concerning possible differences in the priorities for nursing care activities related to particular data collection methods, was already answered indirectly, both qualitatively and quantitatively. As noted, a high degree of congruence was identified among those specific nursing care activities which comprised the eight-item priority lists of the four comparison groups. Upon examination of percentages of items per content category, similar trends were displayed among the four comparison groups even though exact percentages varied somewhat. While frequency number and value differences were apparent in the Chi-Square tables presented in the evaluation of Hypothesis 1, directional trends in terms of content categories were the same for the four comparison groups. In view of the similarities among groups, it would appear that the data collection method used with a given comparison group had little or no effect on the priorities identified by that group.

The second hypothesis was formulated in the attempt to answer the second research question more precisely.

H.2: There will be significant differences between the proportion of items derived from each of the four content categories in the eight-item priority list of each data collection method group and the proportion of items derived from each content category by all groups combined.

To test this hypothesis, the Chi-Square (χ^2) statistic was again used. McNemar (1969) recommends that in testing the differences between groups, it is better to calculate an overall χ^2 using a contingency-type table with columns designating the groups being compared and the rows designating the response options. Unless the overall χ^2 is significant, it is unnecessary to proceed with possible separate comparisons (p. 267). Hence, the following formula was used in calculating χ^2 for the differences between the proportion of items derived from each of the four content categories in the eight-item priority list of each data collection method group and the proportion of items derived from each content category by all groups combined:

$$\chi^2 = N\left[\frac{\sum_c f^2_{1c}/N_c}{n_1} + \frac{\sum_c f^2_{1c}/N_c}{n_2} + \frac{\sum_c f^2_{3c}/N_c}{n_3} - 1\right]$$

The contingency table used is presented in Table 14 and calculations for this test are shown in Appendix V.

The difference between the four sample groups and all groups combined was not found to be statistically significant. Despite McNemar's (1969) recommendation, this curious author proceeded to calculate the χ^2 values for differences between each sample group and all groups combined. Findings were: RS group -- $\chi^2 = .40$, $p < .90$; Q group -- $\chi^2 = .12$, $p < .95$; D group -- $\chi^2 = .79$, $p < .70$; and DS group -- $\chi^2 = .12$,

Table 14

Chi-Square Contingency Table to Test the Difference in Items Per Content Category Between the Priority Lists of the Four Comparison Groups and All Four Groups Combined

Sample Groups	RS	Q	D	DS	Total (n)
Category I	0	1	2	0	3
Category II	5	6	5	6	22
Category III	3	1	1	2	7
N	8	8	8	8	32

$\chi^2 = 5.37$

$p < .50$

Level of Significance: $p \leq .05$

Degrees of Freedom = 6

Note: Content Category IV was not included in this test since the expected frequencies for this category for all groups were 0.

$p < .95$, with the level of significance set at .05 and two degrees of freedom. A degree of caution must be used in interpretation of the findings of the reported statistical tests since the frequencies per cell were again small. Even so, the p values for both the contingency table test and individual tests did not approach the value required for the established level of significance. Hypothesis 2 of this investigation, then, was rejected.

As noted earlier, it was expected that differences might occur among the priority lists of the four comparison groups due to the inherent differences in the four selected data collection methods used for priority identification. Dimensions along which such differences might occur included administration format, data collection mode, data source, and type of measurement. Both the qualitative and quantitative analyses presented above provided the same answer to the second research question of this investigation. There were no significant differences in the priorities for nursing care activities identified by the four selected data collection methods. It was also noted that any identified differences among the content category distribution of items of the priority lists of each comparison group and all groups combined might reflect the extent to which the data collection method used for that group operated as an intervening variable in the generation and identification of the respective group's priorities. In fact, no differences were found. However, caution must be used in assuming the inverse (i.e., that since no differences between groups were found, the selected data collection methods had no effect on priority generation and identification).

Considering the obvious differences in the four data collection methods used in this study, there are several possible reasons which would explain the lack of group differences related to the data collection methods. First, a high degree of patient consensus regarding importance of or priorities for particular categories of nursing care activities has been shown across studies, especially in those studies which used the Nursing Activities Checklist. Differential effects of the data collection methods may have been reduced, "masked" or overridden by either high patient consensus in this area or by the fact that particular items of the Nursing Activities Checklist instrument functioned as stronger intervening variables. Perhaps differential effects of the methods would have been apparent if priority lists larger than those comprised of eight items were identified. There may have been less inter-group consensus among activities of lower priority and the different characteristics of the methods might have produced greater inter-group differences. In the identification of the final equal-size priority lists for the four comparison groups, it is likely that some of the intermediate effects of the methods were eliminated or "lost" in the process. As noted previously, different analyses are typically appropriate to the data obtained from the four selected methods (i.e., interdependency analysis and correlations of tests for rating scales, dependency/factor analysis and correlations of persons for the Q-sort technique, and descriptive group summaries and non-parametric statistics for both the Delphi exercise and the Delphi sort). Although use of such forms of analyses in the current study may have led to group differences, comparison of group data would have been more complicated if

not impossible. The findings of this investigation, however, were somewhat congruent with the 1957 findings reported by Black with almost complete functional identity between the results obtained from ipsative ratings treated normatively and conventionally acquired normative ratings. It must also be noted that statistical tests were applied to content category frequencies and to not specific item frequencies. It would, thus, be an inappropriate interpretation of the findings of this study to state that data collection methods had no effect on priority identification in the four comparison groups. In summary, while it was a noteworthy finding of this study that no differences in the priorities for nursing care activities of four comparison groups were identified through the use of the data collection methods used, the ability to generalize this finding to the use of less homogeneous samples, different instruments, identification of different numbers of priorities, etc., is somewhat limited.

The Relationship of Data Collection Methods and Change in Individual Priorities

In order to evaluate the relationship between the data collection methods and change in individual priorities, the absolute units of change and the absolute number of items change from the pre-test to the post-test measure were calculated for each subject in each of the four comparison groups. The raw data, intermediate calculations, and descriptive statistics for absolute units change and absolute number of items change are presented in tabular form in Appendix V. It was found that the order of the four comparison groups for both total number and mean of absolute

units change was: RS<Q<D<DS. Inspection of the above summary data indicated similarities between the RS and Q groups and the D and DS groups with a great apparent difference between the former two groups and the latter two groups. Similar trends were noted, to a lesser extent, in the group summary data for absolute number of items change from day one to day three administrations of the rating scale.

Hypothesis 3 was formulated in order to evaluate the third research question of this investigation:

> H.3: There will be less change in individual priorities in subjects in the rating scale and Q-sort groups than there will be in subjects in the Delphi exercise and Delphi-sort groups.

To test this hypothesis, the Fisher's t formula for the difference between correlated pairs of means, designed especially for use in testing the difference between means from small sample groups, was employed. The use of a t test, a parametric statistic, was considered appropriate in this situation since the data for the absolute units change and absolute number of items change were ratio-level in nature. Guilford (1965) notes that the necessity for use of small sample statistics (such as the t test) is based on differences in kurtosis between small and large sample data, with large sample data more often providing an approximation to the normal curve (mesokurtic distribution) and small sample data more often subject to fluctuations in kurtosis. He writes, "The truth of the matter is that the needs for small-sample treatment of data increase as N decreases and they [small-sample methods] may become critical very quickly below an N of 30. Small-sample methods apply regardless of the size of N, but they become imperative for N much below

30" (p. 181). The following formula, then, was used for the computation of t in the tests of Hypothesis 3 of this investigation:

$$t = \frac{M_d}{\sqrt{\frac{\Sigma x^2 d}{N(N - 1)}}}$$

where M_d = the mean of the N differences of paired observations and x_d = the deviation of a difference from the mean of the differences.

The t values obtained for all possible pairs of comparison groups using data representing the absolute units of change and absolute number of items change from day one and day three rating scale administrations are presented in matrix form in Tables 15 and 16, respectively. In both instances, significant differences ($p < .01$) between means were found, using a two-tailed test, for the RS and D groups, the RS and DS groups, the Q and D groups, and the Q and DS groups. The differences between means for the RS and Q groups and the D and DS groups, however, were not significantly different. Furthermore, when the data representing the absolute units of change data for the RS and Q groups and the absolute units of change for the D and DS groups were combined, the t value for the differences between means was highly significant ($p < .001$). Combination of the data representing absolute number of items change for the RS and Q groups and the D and DS groups was also highly significant ($p < .001$).

Since the total sum values for absolute units of change and absolute number of items change were less for the RS and Q groups than for the D and DS groups, Hypothesis 3 was accepted. Less change in individ-

Table 15

t Values for the Differences Between Means of Absolute Units of Change From Day One to Day Three Rating Scale Administrations For the Comparison Groups

	RS	Q	D	DS
RS	-------			
Q	0.75 NS	-----		
D	4.22**	3.16*	-------	
DS	3.82**	3.10*	0.67 NS	-----

Level of Significance: $p \leq .05$

Degrees of Freedom = 38

* $p < .01$
** $p < .001$
NS not significant

Table 16

t Values for the Differences Between Means of Absolute Number of Items Change From Day One to Day Three Rating Scale Administrations For the Comparison Groups

	RS	Q	D	DS
RS	-------			
Q	0.34 NS	-----		
D	3.40*	2.84*	-------	
DS	3.86**	3.32*	0.66 NS	-----

Level of Significance: $p \leq .05$

Degrees of Freedom = 38

* $p < .01$
** $p < .001$
NS not significant

ual priorities occurred in subjects of the RS and Q comparison groups than in subjects in the D and DS groups.

The findings regarding the magnitude or extent of change in individual priorities of subjects in the four comparison groups could be attributed to inherent similarities and differences between the selected data collection methods used in this investigation. In both the rating scale and the Q-sort methods, the source of data was the individual subject, whereas the data source in both the Delphi exercise and the Delphi-sort methods was actually the group. It is likely that the prioritites of the subjects in the D and DS groups were influenced by exposure to the responses and priorities of the group as a whole during the day two administration of the "test" data collection methods. This is consistent with the 1970 findings of Cyphert and Gant and the 1975 findings of Scheibe, Skutsch, and Schofer with respect to individual movement toward the group average in Delphi studies, even with the provision of false feedback and presentation of the subjects' earlier responses. Subjects in the RS and Q groups, on the other hand, were not exposed to an intervening source of comparison and contrast (or points of reference) for their individual priorities, and fewer changes in individual priorities were demonstrated by subjects in these two comparison groups.

Also operative was the administration format difference between the two pairs of comparison groups. The format of both the rating scale and Q-sort methods was that of a single administration, whereas the administration format of both the Delphi exercise and the Delphi-sort methods was that of a series of rounds with the provision of feedback.

Subjects in the D and DS groups were not only exposed to group response, but they also had repeated exposures to indications of group judgment or to selected items. Subjects in the RS and Q groups were exposed to the same items on day two of data collection as on day one, but they only had one single re-exposure with no form of feedback or reinforcement. It is possible that the testing effects (effects of repeated exposure) and/or the experimental effects (effects of exposure to certain research elements such as feedback, prolonged or frequent contact with researchers, etc.) specified by Polit and Hungler (1978) were manifested by the greater magnitude of change in individual priorities in the D and DS groups than in the RS and Q groups.

Apparently, the features of data source and administration format exerted more influence than other inherent features of the methods. While the rating scale and Delphi exercise methods were similar in data collection mode (both used the paper-and-pencil mode), as were the Q-sort and Delphi-sort methods (both used the card-sorting mode), the group split in terms of magnitude of change in individual priorities did not fall along these lines. Thus, novelty effects related to the card-sorting mode, which might have been anticipated to be operative in the Q and DS groups, apparently had slight influence. There were also similarities and differences between the methods with respect to type of measurement. The rating scale and Delphi exercise methods were free-choice/normative measurements, whereas the Q-sort was a forced-choice/ipsative form of measurement and the Delphi-sort was a semi-forced-choice/normative form of measurement. The findings regarding change in

individual priorities were not apparently related to such method features. Likewise, the rating scale and Delphi exercise methods generated distribution-free responses from subjects, whereas the Q-sort method generated responses which formed a quasi-normal distribution and the Delphi-sort method generated responses which formed a rectangular shaped distribution. No influence of the distribution of subjects' responses was reflected in the findings regarding individual priority change. Perhaps the effects of the above differential features of the methods were hidden or overpowered by the stronger differential effects of individual versus group data source and single administration versus rounds between the rating scale and Q-sort methods, and the Delphi exercise and the Delphi-sort methods identified earlier.

Advantages and Disadvantages of the Four Data Collection Methods

As noted earlier, the fourth research question of this investigation concerned the advantages and disadvantages of each of the four comparison data collection methods used in this clinical and methodological investigation in terms of: 1) time and cost factors, 2) subjects' evaluations, 3) researchers' evaluations, and 4) other measurement considerations. No specific hypothesis was formulated with respect to this question. A primarily qualitative form of analysis was conducted, including a descriptive presentation and interpretation of the selected data collected and experiences encountered in the study, and comparison of the findings of this investigation with some of the advantages and disadvantages of the methods identified and cited earlier.

Time and Cost Factors

The data pertaining to time and cost factors were primarily in the form of records and notes kept by the principal investigator throughout the various stages of the research process. Time is a significant research variable, and the amount of time required to conduct an investigation is an important consideration for researchers in terms of selecting a practical and feasible method, planning for the investigation and securing and budgeting funds, and giving subjects a reasonable estimate prior to obtaining informed consent. Therefore, records were kept during the actual data collection sessions of this investigation, both for: 1) the amount of time required by subjects in each of the four comparison groups to complete the respective data collection exercises, and 2) the total number of research staff hours that were required, to permit comparison of the four selected methods used in this investigation along the time variable.

It was noted earlier that data collectors were requested to record the time required from the end of instructions to the completion of the exercise for each subject during the day two data collection sessions. A descriptive summary of these data is presented in Table 17. The D group was the highest of the four comparison groups in average times required and range of time required, whereas the RS group was the lowest of the four in both average times and range of time required by subjects to complete the data collection exercises. The observed order of the groups for all time measures was RS<Q<DS<D. A comparison was made between time requirements of the pilot study and those of the current

Table 17

Descriptive Summary of Time in Minutes

By Subjects in Each of the Four Comparison Groups

to Complete the Data Collection Exercises

	RS Group	Q Group		D Group	DS Group
Mean	9.45	15.40	Round 1	9.25	6.80
			Round 2	10.70	6.30
			Round 3	7.85	3.70
			Round 4	4.90	2.75
			Total	32.70	19.55
Median	10.00	15.00	Round 1	8.50	5.00
			Round 2	10.00	5.00
			Round 3	6.50	3.00
			Round 4	3.25	3.00
			Total	30.00	16.50
Mode	10.00	10.00	Round 1	-----	5.00
			Round 2	10.00	5.00
			Round 3	-----	-----
			Round 4	-----	2.00
			Total	23.00	16.00
Range	5-17	7-25	Round 1	3-20	3-14
			Round 2	7-18	2-15
			Round 3	3-20	2- 8
			Round 4	1-12	1- 5
			Total	18.5-62	11-38

study. Pilot study time requirements for each data collection method were: RS = 10 minutes, Q = 30 minutes, D = 10 minutes per round, total of 40 minutes, and DS = 30-35 minutes total time. In comparison with the observed mean number of minutes per subject, pilot study time requirements were slightly higher for subjects in the RS and D groups and considerably higher for subjects in the Q and DS groups. The observed times for the current study can be explained, in part, by the inherent features of the four methods. The rating scale involved one free-choice/distribution-free administration of a paper-and-pencil 50-item instrument. The Q-sort technique involved a single administration of a 50-item instrument, but additionally included physical manipulation of cards by subjects and forced-choice responses which conformed to an established quasi-normal distribution. The Delphi-sort involved four rounds of data collection in which subjects physically manipulated a decreasing number of cards from round to round and semi-forced choice responses which conformed to a rectangular distribution. The Delphi exercise involved completion of a paper-and-pencil 50-item instrument during three rounds (and during two of which group feedback had to be considered) and a final rank-order round, along with responses which were free-choice and distribution-free. Thus, total number of items, the requirement of forced-choices and a specified distribution of responses, physical manipulation, and a series of rounds all seemed to be variables which increased the time required by subjects for exercise completion. Since these were variables operative, to some extent, in at least two or more of the methods used, it was impossible to determine from the descriptive summaries the exact contribution of each to time required. Advanced sta-

tistical analysis techniques (regression analysis, analysis of covariance, etc.) were not employed with the data, however, since a number of subject variables were uncontrolled in this investigation and timings were occasionally complicated by extraneous variables and problems.

Table 18 contains summary data for the total number of hours required of all subjects, by comparison groups, for completion of the data collection exercises and the total number of research staff hours required for the entire data collection process, by comparison group. The former summaries were derived by summing the time in minutes required by each subject in each of the four comparison groups to complete all phases of the data collection exercises (from end of instruction to end of response time) and dividing by 60 to convert to hours. The latter summaries were calculated by multiplying the number of hours spent at the data collection site during day two of each data collection week by the number of research staff used during the respective data collection week. The time contributed by the principal investigator (who coordinated activities, assumed responsibility for data recording and intermediate data analysis, etc., but did not participate in actual data collection) and the time contributed by the volunteer data collectors were recorded separately, but the total staff time was calculated using both. In addition to the actual time required by subjects for completion of the data collection exercises, the total staff hours reported were comprised of the following components: 1) brief training sessions for data collectors (all methods), 2) organization and distribution of data collection materials (all methods), 3) transit time for data collectors

Table 18

Time in Hours Required by All Subjects for Data Collection Exercise Completion and Total Number of Staff Hours Required for the Entire Data Collection Process For Each Comparison Group

	RS Group	Q Group		D Group	DS Group
Subject Time			Round 1	3.1	2.3
			Round 2	3.6	2.1
			Round 3	2.7	1.2
			Round 4	1.7	0.9
	3.2 hours	5.1 hours		11.1 hours	6.5 hours
Staff Time					
Data Collectors:	7.5	37.5		40.0	32.0
Principal Investigator:	1.5	7.5		10.0	8.0
Total	9.0 hours	45.0 hours		50.0 hours	40.0 hours

between the central office to and from subjects on the nursing units, with intermediate transit time included in the Q-sort and Delphi-sort methods, 4) time for instructions for subjects (all methods), 5) on-site data recording time for the Q-sort, Delphi exercise, and Delphi-sort methods, 6) interim calculation and data analysis time for the Delphi exercise and Delphi-sort methods, 7) time to reorder cards between subjects in the Q-sort and Delphi-sort methods, 8) time for indication of group feedback on forms for the last three rounds of the Delphi method, 9) miscellaneous time for problems encountered, interruptions, and "public relations" communication (all methods), and 10) time for reasonable breaks throughout the day (all methods). The above components accounted for the discrepancies between the required subject exercise completion times and the required staff hour times evident in Table 18. The order of the four comparison groups for time required by all subjects for data collection exercise completion was: RS<Q<DS<D, the same order as that reported previously for average time per subject. The order for the four comparison methods for staff time required for the entire data collection process was: RS<DS<Q<D. In order to provide a further rough estimate of efficiency of the four comparison methods, Table 19 shows the percentage of the total staff time accounted for by subject response time and the percentage of total staff time accounted for by all other aspects of the data collection process (peripheral staff time) for each of the four methods. Also displayed in this table are the "Subject: Peripheral" time efficiency ratios calculated for the four methods. The lower the "Subject:Peripheral" ratio, the more efficient was the method. The order of the four comparison methods according to this measure of

Table 19

Percentage of Total Staff Time

Accounted for by Subject Response Time and Peripheral Staff Time

And Subject: Peripheral Time Efficiency Ratios

For Each Comparison Group

	RS Group	Q Group	D Group	DS Group
Subject Response Time[1]:	35.6	11.3	22.2	16.3
Peripheral Staff Time[2]:	64.4	88.7	77.8	83.7
Total Time	100.0%	100.0%	100.0%	100.0%
Subject:Peripheral Efficiency Ratio[3]:	1:1.8	1:7.8	1:3.5	1:5.1

[1]Subject Response Time = Percentage of Total Time Required by all subjects for data collection exercise completion

[2]Peripheral Staff Time = Administrative time + material preparation time + transit time + subject instruction time + data recording time + interim data analysis time + miscellaneous time

[3]Subject:Peripheral Efficiency Ratio = $\frac{\text{Subject Time}}{\text{Peripheral Time}} = \frac{1}{X} = 1:X$

efficiency was: RS<D<DS<Q. Thus, in comparison of the four selected data collection methods with respect to the time variable, the rating scale method required the least subject time and total staff time, and had the lowest "Subject:Peripheral" efficiency ratio (i.e., the most efficient). The Q-sort method ranked second lowest in terms of subject time required, but it was the third highest in terms of total staff time required and had the highest "Subject:Peripheral" efficiency ratio (i.e., least efficient). The Delphi-sort method ranked third highest in terms of subject time required, second highest in terms of staff time required, and third highest on the "Subject:Peripheral" efficiency ratio. While the Delphi exercise ranked highest of all four methods in terms of both subject and staff time required, it had the second lowest "Subject:Peripheral" efficiency ratio.

While advanced statistical procedures were not used to calculate the degree of contribution of each "peripheral" factor, notes kept throughout the data collection sessions provided some explanations for the findings related to timing. The rating scale method required the least amount of staff time and was the most efficient of the four methods because the training session for data collectors was brief; the data collection materials were easy to organize; subjects had little difficulty understanding the instructions, having been exposed to the method from the previous day; and data collectors did not have to return to the central office between subjects. In addition, the method consisted of only one round with no required on-site calculations or data analyses. The Delphi exercise and the Delphi-sort were similar methods in terms of

their inherent round formats, the requirement of interim calculations and data analysis, and time needed for indication of group feedback. The Delphi exercise, however, required more subject and staff time but was found to be more efficient than the Delphi-sort primarily because more total time was accounted for by subject response time as opposed to peripheral staff time. The greater "Subject:Peripheral" time ratio for the Delphi-sort method was found to be attributable to the need for more complicated instructions to subjects in the DS group regarding the semi-forced-choice responses required in the method and the requirement for data collectors to return to the central office after each subject so that responses could be recorded and cards could be returned to the original standardized order. While the Q-sort method was ranked second among the four in terms of required subject time and third in terms of staff time, the method was found to be the least efficient because the method necessitated complex and lengthy instructions to both data collectors and subjects and required transit time to and from the central office by data collectors after each subject so that responses could be recorded and the 50 cards could be rearranged in preparation for data collection from the subsequent subject. Instruction time, transit time, and card arrangement, therefore, appeared to be the "peripheral" variables that had the most effect on efficiency in this investigation conducted with lay subjects in a clinical setting.

The general consensus among literature sources reviewed was that both the rating scale and the Delphi exercise are "relatively" rapid and time efficient methods, but that the Q-sort is a time-consuming method.

Rarely, however, are components of the time variable delineated or analyzed in the literature. The time variable is a major determinant of the practicality and feasibility of any research investigation and is an important consideration in the selection of a particular data collection method, sometimes from among several apparently appropriate methods. Furthermore, researchers must be accountable to funding agents, data collectors, and potential subjects in terms of the time variable. In this study, then, an exploratory attempt was made to provide empirical documentation and report a descriptive analysis relative to several dimensions of the time variable in terms of the four comparison data collection methods. Findings indicated that even though there was a ceiling on total time (one day per method), the four methods did vary in subject time required, total and "peripheral" staff time, and efficiency.

Cost, similar to time, is an important research variable in terms of study practicality and feasibility (Polit & Hungler, 1978). It is closely linked to the time variable since, in many instances, the largest portion of the research budget is allocated to research personnel salary or staff compensation. For the comparison of the four data collection methods of this study, only those costs directly related to the day two data collection methods and sessions are reported and discussed. Since subjects were volunteers and no fees were charged for facilities, only costs related to materials and estimated personnel costs were recorded. Variables that were extraneous to the actual data collection process or that were common to all methods were excluded from consideration (transportation and parking, for example). Even though volunteer data col-

lectors were actually used in the investigation and the principal investigator was included in the total staff hours, personnel costs were calculated using a constant intermediate rate of $8.00 per hour. It was recognized, however, that actual rates would vary widely depending on qualifications of data collectors, changing economic conditions, specific geographic location, etc. The cost figures recorded for the four data collection methods compared in this investigation are presented in Tables 20, 21, 22, and 23.

The basic concerns for analysis were again cost components and general trends, as opposed to specific or absolute figures. The order of the four comparison data collection methods with regard to the total cost variable was: RS<DS<D<Q. It is apparent in the tables for the four comparison methods that personnel costs represented the largest cost component in all four cases. With respect to personnel costs, the order of the four comparison methods was: RS<DS<Q<D. The order for the four comparison methods in terms of costs of materials was: RS<D<DS<Q. Thus, the rating scale method was the lowest of the four comparison methods in terms of total cost, material costs, and personnel costs. It, therefore, represented the most economical of the four comparison methods in this one investigation.

In considering the above findings for possible method selection for future studies, it is important to bear in mind that for studies using larger samples or for repeated studies or data collection sessions, personnel costs could be expected to increase progressively in a multiplicative manner. It is important to note, though, that while the rating

Table 20

Costs for the Rating Scale Method

Materials:	Typing services (@$1.25 per page)	$ 3.75
	Xeroxed forms (3 pages x 20 subjects, @$0.05 per page)	3.00
	Miscellaneous supplies (pens, clipboards)	5.00
	Subtotal	$ 11.75
Personnel:	9 staff hours (@$8.00/hour average)	$ 72.00
	Total	$ 83.75

Table 21

Costs for the Q-sort Method

Materials:	Plasticized cards (5 decks of 50, @$5.00 per deck)	$ 25.00
	Card preparation labor (5 decks of 50, @$10.00 per deck)	50.00
	Portable Q boards (5 boards @$6.00 per board	30.00
	Miscellaneous supplies	5.00
	Subtotal	$ 110.00
Personnel:	45 staff hours (@$8.00/hour average)	$ 360.00
	Total	$ 470.00

Table 22

Costs for the Delphi Exercise Method

Materials:	Typing service (@$1.25 per page)	$ 3.75
	Xeroxed forms (3 pages x 3 rounds x 20 subjects; 1 page x 1 round x 20 subjects, @$0.05 per page)	10.00
	Miscellaneous supplies (pens, clipboards, ink pads)	7.00
	Subtotal	$ 20.75
Personnel:	50 staff hours (@$8.00/hour average)	$ 400.00
	Total	$ 420.75

Table 23

Costs for the Delphi-Sort Method

Materials:	Plasticized cards (4 decks of 50, @$5.00 per deck)	$ 20.00
	Card preparation labor (4 decks of 50, @$10.00 per deck)	40.00
	Portable Delphi-sort boxes (4 boxes @$6.00 per box)	24.00
	Miscellaneous supplies (data recording forms, markers, etc.)	7.00
	Subtotal	$ 91.00
Personnel:	40 staff hours (@$8.00/hour average)	$ 320.00
	Total	$ 411.00

scale and Delphi exercise methods were among the lowest in terms of material costs in this small sample, single investigation, the materials of both of these methods are "consummable" (i.e., they are for one time use only and require constant reproduction). The higher material costs for the Delphi-sort and Q-sort methods, on the other hand, represent more "durable" materials that could be used repeatedly.

The general consensus of most literature sources reviewed was that the rating scale and Q-sort are relatively cost-efficient methods, whereas the Delphi exercise was identified as being more costly in comparison to other data collection methods. Again, however, distinctions are not typically made or specified in the literature between total costs, material costs, personnel costs, or other cost variables. The findings from this study relevant to cost indicated variations between four comparison data collection methods along delineated components of the cost variable. In congruence with the literature reviewed, the findings of this investigation showed that the rating scale was the lowest of the four comparison methods in total cost, personnel costs, and material costs. Contrary to indications in the literature, the findings of this study showed that the Q-sort was highest among the methods with respect to total cost and material costs and third highest of the four in terms of personnel costs. In partial agreement with the literature citations, the Delphi exercise was found to be highest in personnel costs, but intermediate in total and material costs. The Delphi-sort, a method for which no comparative analysis exists yet in the literature, was found to be intermediate in terms of all cost dimensions when compared with the three more traditional methods.

To summarize the major findings of this investigation relevant to both time and cost factors, the rating scale method was found to be the most efficient of the four comparison methods with respect to all aspects of the time and cost variables. Variations among the other three comparison methods were identified along four components of the time variable: total subject time, total staff time, peripheral staff time, and time efficiency. Of the four methods, the Delphi exercise method required the most subject response time and total staff time, whereas the Q-sort method required the most peripheral staff time and was found to be the least time-efficient of the methods. Variations also were identified among the three methods along three cost measures: total cost, personnel costs, and material costs. The Q-sort method was found to require the highest total cost and materials costs, whereas the Delphi exercise required the highest personnel costs. The Delphi-sort ranked in intermediate positions for all time and cost measures evaluated. It is important to note that while time and cost have been identified as major research variables in terms of practicality and feasibility of an investigation, these variables must be considered along with other major factors that are also significant in method comparison and evaluation, several of which were also explored in the methodological study of this investigation and will now be addressed.

Subjects' Evaluations

The ability to obtain subjects for a research investigation and maintain the cooperation of subjects throughout the data collection process are additional important considerations for researchers. Three

variables are dependent, in part, on what is requested or required of subjects by the data collection method. The reactions or responses of subjects to data collection methods, however, are seldom addressed or are given little serious, systematic attention in the research literature. Subject evaluation was selected as a research variable for exploration and analysis in the comparison of the four data collection methods of the study. As noted earlier, quantitative and qualitative data pertaining to subjects' evaluations were collected in both a structured and unstructured manner through: 1) administration of a method evaluation form following data collection on day two for each comparison group, and 2) notes of subjects' comments related to the methods recorded by data collectors while subjects were actually participating in the day two data collection exercises. It should be emphasized that a qualitative analysis and interpretation in terms of directional trends and apparent relationships are offered for this exploratory aspect of the study, although some findings are reported in the form of numerical or statistical summaries.

The method evaluation form administered to subjects of each comparison group consisted of four Likert-type rating items and two open-ended items. Data obtained from these components of the method evaluation form are summarized in Tables 24 and 25, respectively, for the four comparison groups. All four comparison groups indicated some degree of "like" as opposed to "dislike" regarding study participation (mean values above 3.00) in response to the question "How much did you like participating in today's research study?" Subjects in the Delphi exercise group, on

Table 24

Responses to Likert-Type Items of the Method Evaluation Form
By Subjects of the Four Comparison Groups

Item 1: Indicate how much you liked participating in today's research study.

	Disliked Strongly 1	2	3	4	Like Very Much 5	Total	Mean Response
RS Group	0	2	5	5	8	20	3.95
Q Group	0	2	5	5	8	20	3.95
D Group	1	1	7	3	8	20	3.80
DS Group	0	0	4	6	10	20	4.30

Item 2: Indicate how much this study allowed you to express your true feelings or attitudes.

	Not At All 1	2	3	4	Very Much 5	Total	Mean Response
RS Group	0	3	6	2	9	20	3.85
Q Group	0	0	5	6	9	20	4.20
D Group	1	1	4	5	9	20	4.00
DS Group	0	1	4	6	9	20	4.15

Item 3: Would you participate in this kind of study in the future?

	No 1	2	3	4	Yes 5	Total	Mean Response
RS Group	0	2	5	3	10	20	4.05
Q Group	1	1	5	1	12	20	4.10
D Group	3	1	3	3	10	20	3.80
DS Group	1	0	3	1	15	20	4.45

Item 6: How would you rate today's study method in comparison with the written form you completed yesterday (subjects in the Q, D, and DS groups only)?

	Liked It Less 1	2	3	4	Liked It More 5	Total	Mean Response
Q Group	5	3	2	2	8	20	3.25
D Group	0	3	6	7	4	20	3.60
DS Group	2	0	4	1	13	20	4.15

Table 25

Responses to Open-Ended Items of the Method Evaluation Form

By Subjects of the Four Comparison Groups

Item 4: What are some of the things that you liked about the study method?

RS Group: "It was fast" (frequency = 5)

Q Group: "It encouraged me to prioritize my needs"
"It gave me more options than a questionnaire" (frequency = 2)
"It encouraged me to give alot of thought to my answers"
"Card sorting is much more interesting than a questionnaire" (frequency = 3)

D Group: "It helped me organize my priorities" (frequency = 2)
"The method was very thorough"
"It showed me how the group I was a part of thought" (frequency = 2)
"I could express my feelings even though I sometimes changed my mind"
"I felt like someone really wanted to know how I felt because the researchers kept coming back to me"

DS Group: "It gave me the chance to think about the questions in an orderly fashion"
"It was extensive/thorough" (frequency = 3)
"I learned about what other patients thought was important"
"The method was fast and concise"
"Card sorting is much more interesting than a questionnaire" (frequency = 4)

Table 25

(Continued)

Item 5: What are some of the things that you disliked about the study method?

RS Group: "Not enough choices were provided"
"I felt like I was taking a test"
"There were no opportunities to explain answers" (frequency = 2)
"It took too long to read"

Q Group: "Card manipulations distracted from concentration on the items"
"All of the activities are important; I didn't like having to rate some as not being important" (frequency = 6)
"It took too long" (frequency = 2)
"I wasn't given a chance to explain my answers"

D Group: "I felt like I was being forced to conform to the group" (frequency = 2)
"I felt like I was being tested to see if my answers would change"
"There was no space for comments"
"I hate questionnaires"
"The last eight statements were not the activities that were important to me" (frequency = 2)
"I didn't like answering the same questions over and over again"
"It took too long" (frequency = 4)

DS Group: "Many activities that were important to me were eliminated" (frequency = 3)
"I didn't like the repetition of questions"
"I didn't like being forced to rate some activities as not being important" (frequency = 4)
"It took too long"

the average, liked overall study participation least, whereas subjects in the Delphi-sort group liked overall study participation most. Some of the various method features or aspects that contributed to subjects' overall "dislike/like" ratings of each respective method are presented descriptively in Table 25.*

In response to the question regarding the extent to which each comparison data collection method allowed for expression of true feelings or attitudes, again the means for all four comparison groups were above the neutral value. However, subjects in the RS group, on the average, indicated the lowest perceived ability to express true feelings and attitudes, whereas subjects in the Q group indicated the highest average perceived ability for true personal expression. The above finding from the RS group is consistent with the disadvantage of superficiality of the rating scale method cited from literature sources. On the other hand, the finding from the Q group was in contrast to the disadvantage of artificiality of the Q-sort method related to the forced-choice and specified distribution requirements cited in the literature, but consistent with the identified advantages that the Q-sort is more penetrating than other methods and free from response set biases. Perhaps subjects in the Q group responded more in terms of available number

*It should be noted that one significant incidental methodological finding from use of the method evaluation form in this investigation was that structured questions yielded a 100% response rate, whereas unstructured questions yielded a very low response rate -- many subjects responded to the Likert-type items but left the open-ended items blank. Also there were many variations in the form and content of responses given to open-ended items, making summary and content analysis of findings complicated. For these reasons, the data obtained from the open-ended questions were used to supplement findings from the Likert-type items and were not analyzed separately.

of discriminations rather than to the forced-choice/specified distribution requirements of the method in their responses to item #2. As indicated by the comments presented in Table 25, subjects in the D and DS groups acknowledged the opportunity provided by the methods for identification of personal priorities, but also felt as if they were being forced to conform to the group and resented the fact that their personal priorities were not always represented in the final round of the Delphi exercise and Delphi-sort methods. It is evident in Table 25 that some subjects in all comparison groups regretted not having the opportunity to explain or elaborate on their responses in each of the four comparison methods. It is interesting that such comments, though, are contrary to the reported incidental finding of this investigation related to structured versus open-ended questions.

In response to Item #3 regarding subjects' willingness to participate in a similar kind of study in the future, the order of the mean responses of the four comparison groups was: D<RS<Q<DS. The direction of these findings, then, was congruent with the order of the average "dislike/like" ratings of the comparison groups in terms of study participation in Item #1.

In the fourth Likert-type item of the method evaluation form, subjects of the Q, D, and DS groups were asked to rate the "test" data collection method in comparison with the written rating scale completed on the previous day. The mean responses of subjects in all three comparison groups indicated that each "test" method was preferred over the written rating scale (mean values above 3.00). The order of the three comparison

groups in terms of preference of the "test" method over the written rating scale was: Q<D<DS. Interpretation of this finding was somewhat difficult in view of the findings that the average ratings of subjects of the D group for liking of participation, expression of personal feelings and attitudes, and willingness to participate in similar future studies were lower than the average Q group ratings. This finding was also perplexing in view of the fact that the Q-sort, in contrast to the rating scale and Delphi exercise, involved a card-sorting response mode, a method aspect that was apparently liked by subjects as indicated in Figure 25 (consistent with an advantage of the Q-sort identified in the literature). Perhaps subjects in the Q group did appreciate having the opportunity to make more discriminations and the inherent thoroughness of the method but did not necessarily like the stringent forced-choice/specified distribution requirements (as indicated by the responses of six subjects shown in Table 25). Perhaps the cards in the Q-sort method initially aroused interest and had a novelty effect, but Q group subjects found it difficult to make comparisons and meaningful discriminations in the process of manipulating 50 cards at one time. Even though, as indicated previously, the Delphi exercise required more total time, perhaps subjects in the Q group did not like having to spend a relatively long block of time for data collection, especially when compared to the relatively short amount of time required to complete the day one written rating scale. Since both the rating scale and Q-sort are individual data source, single administration methods, perhaps the higher method ratings given by subjects in the D and DS groups, in comparison of the respective "test" method with the written rating scale, were functions

of the group feedback inherent in the two methods and/or aspects related to the methods' rounds (i.e., the option to re-evaluate answers, extensiveness, increased feelings of involvement in the study, etc.). Support for this finding interpretation is provided by the comments of D and DS group subjects cited in Table 25.

The majority of subject comments recorded by data collectors during actual data collection paralleled the responses to the open-ended questions of the method evaluation form presented in Table 25. Very few comments were recorded from subjects in the RS group. Four RS group subjects, however, commented that they thought that all items were extremely important (in contrast to the response from an RS group subject on the evaluation form that not enough choices were provided on the rating scale). Comments recorded from 14 subjects in the Q group were related to the forced-choice/specified distribution requirements of the method, six positive comments were recorded from subjects related to the card-sorting mode, and three negative comments were recorded from Q group subjects regarding difficulty handling the 50 cards. These recorded comments, then, added support to several of the previously offered finding interpretations. Five recorded comments from D group subjects represented negative reactions to item repetition; seven recorded comments from D group subjects indicated irritation with the amount of time required for all phases of the data collection exercise, and three comments were positive reactions to the provision of group feedback. Comments recorded from five DS group subjects were either positively or negatively related to group feedback ("I'm glad to see that the group

thinks the same way I do;" "These activities are not the ones that are important to me"), eight recorded comments were positive responses to the card-sorting mode, three recorded comments represented negative reactions to the semi-forced choice requirement of later rounds, and nine recorded comments pertained to subjects' increasing involvement and interest in the method.

To summarize the findings of this investigation relative to subjects' evaluations of the four comparison data collection methods, while subjects in the Q group showed the highest average rating of the four comparison groups with respect to method provision for the expression of personal feelings and attitudes, the average ratings of subjects in the DS group were highest among the four comparison groups in both subject "liking" of study participation and subject willingness to participate in a similar future study, as well as being the highest among three groups in comparison of the groups' respective "test" methods with the written rating scale. Additionally, it was found that all three comparison groups preferred the comparison "test" method (Q-sort, Delphi exercise, or Delphi-sort) over the written rating scale completed by the subjects on the previous day. Some method variables that were found to influence subjects' method evaluations were: time required by subjects (too much time was frequently identified as a negative method feature); number of choices or discriminations inherent in the method (subjects typically liked or wanted more options); the opportunity to explain or qualify responses (subjects in all four comparison groups indicated that they would have liked such an opportunity); forced-choice and specified

distribution requirements (subjects generally reacted negatively to these method features); perceived thoroughness or extensiveness of the method (evidently, subjects felt as though they were participating in a more significant endeavor or making more significant contributions in the more penetrating or multiple iteration methods); response mode (subjects indicated more favorable reactions to the card-sorting as opposed to the paper-and-pencil mode); group feedback (both positive and negative responses to feedback were indicated by subjects); and personal benefits or "enrichment" (several subjects indicated an appreciation for the opportunity to think through or organize their own priorities). Due to the nature of the data, though, it was impossible to determine the precise contribution of the above variables to overall subject method evaluation. It also appeared as though several of the influential variables were actually contradictory (for example, prolonged time was shown to have a negative effect on method evaluation, whereas thoroughness or extensiveness were found to have generally positive effects).

Researchers' Evaluations

In addition to the exploration of subjects' evaluations regarding the four comparison data collection methods of this investigation, the evaluations of the "researchers" (i.e., data collectors) who participated in this methodological investigation were also explored. As noted previously, two of the six data collectors for this investigation were graduate students, one had earned a bachelor's degree, and three were undergraduate students. Three of the six data collectors had direct past experience in research activity, and four of the six had taken

formal university-offered research courses ranging from introductory survey type courses to advanced courses in methodology and statistics. Thus, four of the six data collectors had some theoretical or practical basis for method evaluation. As noted previously, qualitative researcher evaluation data were obtained following day two data collection sessions through interviews with each volunteer data collector to obtain feedback regarding the particular data collection method administered that day. Specifically, data collectors were asked: 1) to list some perceived advantages and disadvantages of the respective method under consideration, 2) to state which data collection method (of the ones in which they participated in administration) they would use if they were to conduct a similar attitudinal or priority identification study and to specify reasons for their choice, and 3) to rank-order the comparison methods that they administered according to their overall preferences in view of the perceived advantages and disadvantages of each method and their experiences in method administration.

The advantages and disadvantages identified by the data collectors of this study for the four comparison data collection methods are presented in Tables 26-29. Although data collectors were asked to consider all phases of the research process in making their evaluations, emphasis in advantage and disadvantage identification seemed to be placed primarily on administration aspects relevant to the methods since interviews were held immediately following data collection sessions. The advantages and disadvantages of the methods identified by the data collectors were particularly pertinent to use of the methods with lay subjects and in

Table 26

Advantages and Disadvantages of the Rating Scale Method

Identified by Investigation Researchers

Advantages:

1. The method is time efficient (5)
2. The method is cost efficient (5)
3. Subjects have little difficulty understanding instructions for the method (4)
4. Subjects do not strongly object to data collection participation because the method is fast (3)
5. Materials for the method are easy to prepare and transport (3)
6. Data obtained from this method is easily adaptable for computer analysis (1)

Disadvantages:

1. Subjects have a tendency to leave items in rating scales blank (5)
2. Subjects often display a response set bias or extreme bias (4)
3. Subjects often express a dislike for questionnaire-type forms, i.e. there is little subject interest or involvement in the method (3)
4. Subjects often think of a rating scale as a "test" and answer how they think the researcher wants them to answer (3)
5. Subjects do not seem to give considerable thought to their answers on a rating scale (3)
6. The method does not allow for exploration or elaboration of responses (3)
7. The method cannot be used with subjects who cannot read (or cannot read English) (2)
8. The method is difficult to use with subjects who have difficulty writing (2)
9. Subjects do not compare each item with other items on the rating scale in giving their responses (1)
10. The method is very susceptible to many extraneous variables (subject's mood, situational factors) (1)
11. Unless a data collector remains with the subject, the subject may easily set the form aside and forget about it; there is a tendency for low response rate with the method (1)
12. Different subjects interpret the response categories differently (1)

Total Number of Researchers who participated in method administration = 5

Number in parenthesis indicates frequency of response

Table 27

Advantages and Disadvantages of the Q-Sort Method

Identified by Investigation Researchers

Advantages

1. The method is inherently thorough and complete (5)
2. Subjects are forced to make discriminations among items (5)
3. The method gives information regarding the subject's response to each item in relation to all other items (4)
4. Subjects seem to enjoy participating in the card-sorting method; "hands-on" experience increases subject involvement in the method (4)
5. Subjects seem to give considerable thought to their responses (4)
6. The same materials can be used repeatedly in the method (3)
7. Subjects seem to appreciate the greater number of response options inherent in the method (2)

Disadvantages

1. The method requires considerable time from both data collectors and subjects (5)
2. Subjects require repetition and reinforcement of instructions (5)
3. Materials for the method are somewhat difficult to transport from one location to another (5)
4. Many subjects respond negatively to being told that they have to rate some items as being of slight importance (i.e., forced-choice) and being told how many items they can put into each pile (i.e., specified distribution) (4)
5. Some subjects have difficulty managing so many cards (4)
6. The method is very difficult to use with subjects who have physical limitations (3)
7. Due to the novelty of the method, "outsiders" in the clinical field setting (i.e., visitors, roommates, staff, etc.) tend to interrupt or interfere with data collection and try to get involved or offer input (2)
8. Data recording requires additional time after data collection (2)
9. Some subjects make meaningless choices with leftover items (1)

Total Number of Researchers who participated in method administration = 5

Number in parenthesis indicates frequency of response

Table 28

Advantages and Disadvantages of the Delphi Exercise Method

Identified by Investigation Researchers

Advantages:

1. The method truly provides "group" opinion or priority data as opposed to grouped individual data (4)
2. The rounds and feedback of the method give subjects an opportunity to re-evaluate their responses (4)
3. Materials for the method are easy to organize and transport (4)
4. Materials for the method are relatively inexpensive (4)
5. Some data analysis is done round by round and findings are immediately apparent (3)
6. Some subjects seem to take study participation more seriously because of the multiple rounds (2)
7. Data obtained from this method is easily adaptable for computer analysis (1)

Disadvantages:

1. Some subjects become progressively less cooperative from round to round (4)
2. Subjects do not like receiving the same forms and items, even with feedback indication, from round to round (4)
3. The method requires considerable time from both data collectors and subjects (4)
4. Subjects do not seem to give thought to responses, especially in later rounds when they often respond "along with the group" (i.e., respond where feedback indicators are without reading) (3)
5. Many of the disadvantages of the rating scale are also involved in this method (i.e., potential tendency for subjects to leave items blank, response biases, potential tendency for low response rate, difficulty in use of the method with subjects who cannot read or write) (3)
6. Subjects express resentment when the group differs markedly from their own responses to items (2)
7. Subjects express concerns that they are being tested for response consistency or group conformity and give more concentration to recall of previous responses rather than concentrating on the items and feedback at hand (1)

Total Number of Researchers who participated in method administration = 4

Number in parenthesis indicates frequency of response

Table 29

Advantages and Disadvantages of the Delphi-Sort Method

Identified by Investigation Researchers

Advantages:

1. The method provides opinion or priority data that are truly of a "group" nature (4)
2. Subjects are forced in later rounds to make some discriminations among items (4)
3. The method is thorough and complete (4)
4. Subjects seem to enjoy participating in the card-sorting method and became actively involved in the response process (4)
5. Subjects express indications that they really feel part of a group which maintains their interest in the study and limits attrition (3)
6. The rounds, which provide for increasing discriminations and group consensus, are fairly well tolerated by subjects because of the progressive elimination of items (3)
7. Some data analysis is done round by round and the findings are immediately apparent (3)
8. Subjects seem to take study participation seriously because of the multiple rounds (2)
9. The method is relatively time efficient in view of the amount and type of data obtained (2)
10. Subjects seem to give considerable thought to their responses (2)

Disadvantages:

1. Materials are somewhat difficult to organize and transport (3)
2. Subjects require repetition and reinforcement of instructions, especially in later rounds when number of items per category restrictions are made (4)
3. Subjects resent being required to rate some items in the lower importance categories (4)
4. Due to the novelty of the method, "outsiders" in the clinical setting (i.e., visitors, roommates, staff, etc.) tend to interrupt or interfere with the data collection process (3)
5. Some subjects make meaningless choices to conform to the number of items per category restriction (2)
6. The method is somewhat difficult to use with subjects who have physical limitations, but becomes progressively easier from round to round due to the decreasing number of items (2)
7. The method is relatively time consuming for subjects and researchers (2)
8. Subjects resent when group priorities are markedly different from their own (2)
9. Only relatively simple or descriptive statistical analysis is appropriate for the data obtained through this method (1)

clinical/field-type settings due to a mind set developed by the data collectors as a result of the specific research context in which they were involved. Since the data collectors had a first-hand experience with each method immediately prior to the interviews and were asked to record subjects' comments and problems encountered during the data collection process, the advantages and disadvantages that were listed represented a synthesis of both researchers' and subjects' points-of-view.

Close congruence was apparent between the advantages and disadvantages of the rating scale method identified by the data collectors of this study and 1) the advantages and disadvantages cited in the literature, 2) other findings of this study regarding time and cost factors, and 3) previously reported subject evaluations and comments pertaining to this method. Two rather interesting identified advantages of the rating scale method were that the method is well suited for use in a clinical or field setting due to ease of transportation of supplies and materials and that rapid and efficient data analysis by computer is a possibility for data obtained from the method. Relevant disadvantages included the potential for many types of response biases in the rating scale method, questions related to reliability and validity of the method, the inherent superficiality of the method, and limitations for use of the method for particular subjects. Several identified disadvantages (i.e., tendency for subjects to leave items blank, tendency for low response rates) were compensated for in this investigation through the specific instructions given to data collectors prior to the onset of

data collection. Of the five data collectors who participated in administration of the rating scale method and one or more of the other comparison methods, none stated that they would select this method for use in a similar attitudinal or priority identification study because, as one noted, "despite the many practical features of the method, it does not yield as much in-depth or meaningful data as do the other methods."

The advantages and disadvantages of the Q-sort method identified by data collectors of the study also showed close overall agreement with those cited in the literature, the other methodological findings of the current study, and subjects' evaluations. It was interesting to note, though, that contrary to the findings of Whiting et al. (1958) regarding ease of use of the method in the clinical setting and with a wide variety of subjects, the data collectors in this study identified disadvantages related to mobility/transportation problems involved in the administration of the method in a clinical/field setting and several difficulties encountered with the method by lay subjects. Of the five data collectors who participated in administration of the Q-sort and one or more of the other comparison methods, two stated that they would select the Q-sort method over the other methods for use in a similar study. One data collector, who only additionally participated in the administration of the rating scale method, stated that "Both the increased amount of data and the quality of data (i.e., more carefully thought out responses) obtained from the Q-sort method offset its relative practical disadvantages in comparison with the rating scale." A second data collector who stated a preference for the Q-sort method also participated in administration

of the rating scale method and the Delphi exercise method. Reasons given for preference for the Q-sort over the other two methods were related to increased subject cooperation and involvement, increased subject concentration in responding, and the thoroughness inherent in the Q-sort method in comparison to the other two methods.

It is difficult to compare the advantages and disadvantages of the Delphi exercise method cited in the literature with those identified by data collectors of this investigation since several modifications in the traditional Delphi technique were made for application of the method for use with lay subjects in a clinical setting and for a one-day data collection session (for example, visual rather than numerical statistical feedback was used, rounds were several hours rather than days or months apart). However, in congruence with the literature, the data collectors in this study did identify the features of group data source, opportunity for response reconsideration and revision, and ongoing data analysis to be advantages of the method. Additionally, convenience of the materials for use in a clinical/field setting and potential for efficient computer data analysis were also identified by data collectors in this study. It was interesting to note that, in contrast with the advantages cited in the literature, neither subjects nor data collectors in this study identified anonymity or elimination of face-to-face confrontation as advantages of the method. This was probably due to several unique features of the specific research context in which the method was used in this study, such as the relatively neutral nature of the clinical research problem, lack of perceived threat of a power authority among the patient subjects, use of the method in a field rather than a bureaucratic setting,

etc. Disadvantages of the method identified by the data collectors of this study pertained primarily to subject dissatisfaction with and lack of involvement in the method, the time element, subject response biases, and artificiality of group consensus. Of the four data collectors who participated in administration of the Delphi exercise method and one or more of the other comparison methods of this study, none stated that they would select this method for use in a similar study, especially a study to be conducted in a clinical or field setting or one involving short-duration data collection. One noted that "lay [hospitalized] subjects just can't handle that much reading or paperwork; there are just too many reliability and validity problems in using this kind of written Delphi method with lay subjects." Another noted that "the potential advantages of the Delphi method are negated by the disadvantages related to the specific setting, the subjects, and the time limitations of this study."

It was noted earlier that since the Delphi-sort was a relatively new data collection method, no empirical documentation of the advantages and disadvantages of the method existed in the literature prior to this study. Identification of advantages and disadvantages of the method, then, was one significant contribution of the present study. In the comparison of Table 29 with Tables 27 and 28, it is apparent that many of the advantages and disadvantages of the Q-sort and Delphi exercise methods were also identified by the data collectors of this study as being advantages and disadvantages of the Delphi-sort method. Similar to advantages of the Q-sort, the advantages of the Delphi-sort identified included: thoroughness and completeness of the method; the ability of

the method to maintain the interest and involvement of subjects (partially a result of the "hands-on" card-sorting experience); the capability of the method to force subjects to make discriminations among items; and the ability of the method to evoke considerable subject thought with regard to responses. Similar to Delphi exercise advantages, some identified advantages of the Delphi-sort were: the provision of the method for obtaining truly group data; the effects that the method's inherent rounds seem to have in encouraging more serious study participation in some subjects; and the method's feature of immediate and ongoing data analysis. Another identified advantage of the Delphi-sort method was that subjects developed the feeling of being part of a group, which increased their interest and active participation in the study. Like the disadvantages of the Q-sort, identified disadvantages of the Delphi-sort included: the need for repetition and reinforcement of "complex" instructions; difficulty in transporting the materials of the method; negative subject responses to semi-forced choices; the tendency of subjects to make meaningless choices with leftover items; some difficulty of method use with subjects who have physical limitations; and the problem of "outsider" interference with a novel data collection method. Consistent with the disadvantages of the Delphi exercise, an identified disadvantage of the Delphi-sort method was subjects' resentment or frustration when group consensus differed from their own personal opinions. An additional identified disadvantage of the Delphi-sort was the fact that only relatively simple or descriptive statistics are applicable with the data obtained from the use of the method. It is interesting to note that the time requirement of the method was identified

as being both a method advantage and disadvantage by the data collectors of this study.

One of the data collectors who participated in administration of the Delphi-sort did not participate in administration of any of the other comparison methods of this study. Three data collectors who participated in administration of the Delphi-sort also participated in administration of all of the other comparison methods. Each stated that they would select the Delphi-sort method over all other methods for use in a similar study. One researcher commented: "Even though the method has some disadvantages, it elicits data that result in a group consensus on an issue and it elicits more subject cooperation than any of the other methods." Another commented that, "Using the method, it is possible to collect a great deal of meaningful data in a short period of time. Also, subjects liked the method -- they liked sorting cards more than filling out forms, they liked feeling a part of an ongoing, productive group, and they really thought about their responses in this method." A third commented that:

> Without some form of forced-choice requirement, subjects rate everything as being important like they did in the rating scale or they 'follow the group' like they did in the Delphi exercise; in other words, without a forced-choice requirement, subjects don't prioritize. On the other hand, with too many restrictions regarding forced-choices, like in the Q-sort, subjects get frustrated and make meaningless choices to 'get rid of the extra cards.' The Delphi-sort seems to provide an acceptable medium.

A summary of the overall preferences of the data collectors of this study for the comparison data collection methods that they administered is presented in Table 30. Thus, three data collectors who parti-

Table 30

Order of Preferences of Study Data Collectors for the Comparison Data Collection Methods

Data Collector 1:	DS only (no preference)
Data Collector 2:	Q>RS
Data Collector 3:	Q>RS>D
Data Collector 4:	DS>Q>RS>D
Data Collector 5:	DS>Q>RS>D
Data Collector 6:	DS>Q>RS>D

RS = Rating scale method

Q = Q-sort method

D = Delphi exercise method

DS = Delphi-sort method

cipated in the administration of the Delphi-sort method indicated a preference for the method over the other three comparison methods. Two indicated a preference for the Q-sort method over other comparison methods. The rating scale method was ranked higher than the Delphi exercise by all data collectors in this investigation. This finding was probably due to a combination of reasons, including: 1) the identified problems in the use of the Delphi exercise method in the context of this investigation, 2) the fact that the researchers perceived the Delphi exercise to have many of the same disadvantages identified for the rating scale method, and 3) the rating scale was evaluated to be time and cost efficient in comparison with the Delphi exercise.

In summary, several advantages and disadvantages of each comparison method identified by data collectors in this study were documented in this section. As indicated, a degree of congruency was noted between the identified advantages and disadvantages reported in this study and those cited in the literature, additional reported findings of this study and the evaluation of the methods and related comments by subjects of this study. When asked to indicate which of the comparison methods they would select for use in a similar attitudinal or priority identification study to be conducted in a clinical or field setting and to include the use of lay subjects, three out of six data collectors stated that they would use the Delphi-sort method and two stated that they would use the Q-sort method; choices were restricted, though, to the comparison methods in which the data collectors had participated in administering. None of the data collectors stated that they would use either the rating scale

method or the Delphi exercise method in a similar study. The method preferences of data collectors for a future study were also reflected in their rank-order preferences for the comparison data collection methods which they had administered.

Measurement Considerations -- An Overview and Summary

Rather than the presentation and analysis of an abundance of new additional data in this final subsection relevant to the fourth research question of this investigation, an attempt was made to provide a systematic qualitative comparison and analysis of the four selected data collection methods for priority identification using a framework derived from the methodological points of comparison and contrast delineated in Table 1 (p. 35) of this report. In this process, consideration was given to all of the previously reported data, findings, and interpretations of the various aspects of this investigation, as well as to the notes recorded under the "problems encountered" column on the form completed by data collectors during day two data collection session of the study, not formally presented thus far. The purpose of this subsection, then, was to provide an overview and summary of the comparison of the four data collection methods with respect to measurement variables and methodological issues.

The first methodological point delineated in Table 1 was historical background of the four comparison methods. As cited, the rating scale method was developed in the context of the behavioral sciences, the Q-sort method in the context of the discipline of psychology, the Delphi

exercise in the context of technological forecasting (although more recently, the broader label of "opinion technology" has been coined), and the Delphi-sort method in the context of nursing research. The clinical research problem of this investigation was attitudinal in nature, and more specifically, involved priority identification. The population consisted of lay persons, specifically hospitalized patients. The setting of the investigation reported here was the "field" or clinical arena, specifically an acute-care hospital. The comparison methods with historical bases in the behavioral sciences, including psychology, then, were appropriate with respect to the general nature of the problem and subjects of this research investigation. With regard to setting, much behavioral research has been conducted in field settings, and the ease and advantages of use of the rating scale method in a clinical setting in this investigation were identified in the researchers' evaluations and demonstrated through time/cost efficiency findings reported previously. Much psychological research, on the other hand, has historically been conducted in laboratory or relatively controlled settings. It was in such a context that the Q-sort method was developed. An explanation is, thus, provided for the problems that were identified in the transference of the Q-sort method to the context of gathering data from dispersed subjects in the clinical setting in this present investigation. With its roots in technological forecasting, the Delphi exercise, although specifically developed for priority identification, is fairly complex and sophisticated. While it has been used in a variety of problem contexts, it was especially designed for application in problem areas of a critical or controversial nature requiring group consensus.

It was also historically developed for use with expert subjects and to be administered, with necessarily time-spaced intervals between rounds, by sending out subsequent forms to subjects at their usual place of work or employment. Even with modifications made in the method, many problems were identified in the data and findings of time/cost efficiency, subjects' evaluations, and researchers' evaluations reported from the present research context. Perhaps the clinical research problem of the current investigation, although indeed significant, was not as critical or controversial as the problems typically addressed in Delphi studies, and the complex and comprehensive multiple iterations may not have been appropriate in the current research context. Despite the fact that Ludlow's (1975) concept of "informed judgment" has been viewed as an expansion of Delphi exercise applicability to include lay subjects, perhaps the format and concepts of the method were too "technological" for use with hospitalized patients who are characteristically of diverse backgrounds and are likely to have limited attention spans. Perhaps the "un-office-like" setting of hospital rooms in this investigation were not conducive to the administration of multiple rounds of forms with short intervals between administrations. No doubt, the need to have data collectors in this investigation administer and collect response forms (while a 100% response rate in a one-day data collection session was guaranteed) did decrease the cost and time efficiency of the method in the context of this investigation. In contrast with the other comparison methods of this investigation, the Delphi-sort was developed specifically in the context of nursing research in response to identified problems with the use of the other methods in a research context

(problem, subjects, and setting) similar to that of the present investigation. It was developed for research problems of an attitudinal nature, specifically priority identification problems and problems requiring group consensus. The concepts and features of the method were eclectically synthesized with consideration of the characteristics, abilities, and limitations of hospitalized patients. The method was also designed to be administered in short-duration data collection sessions in a field or clinical setting. In this present investigation, it was found that the method received the most favorable evaluations of both subjects and researchers, even though it was found to be intermediate among the four comparison methods with respect to time and cost variables. In summary, since, as Kuhn (1962) emphasizes, there is a significant relationship between the historical background of a research method and the research contexts in which the method is applicable and useful, the historical background of each of the four comparison data collection methods of this investigation served as a useful methodological point of analysis and interpretation for many of the diverse findings of this present investigation.

The second methodological point delineated in Table 1 was the data collection mode of the comparison methods, with the rating scale and the Delphi exercise methods characterized by the paper-and-pencil mode and the Q-sort and Delphi-sort methods characterized by a card-sorting mode. As noted in the previous sections, data collection mode was apparently not an influential variable with respect to either group differences related to the data collection methods or to change in individual prior-

ities related to the data collection methods. It was, however, identified as a variable related to time requirement differences between the methods, with the card-sorting mode associated with increases in both subject and personnel time in comparison with the paper-and-pencil mode. The card-sorting mode was also found to be related to increased material costs, although, as noted, this mode consists of more "durable" materials than those of the paper-and-pencil mode. Findings regarding subjects' evaluations reflected subject preference for the card-sorting mode over the paper-and-pencil mode, as did the findings reported for the evaluation of the methods by the data collectors of this investigation. Furthermore, in the notes regarding problems encountered in data collection recorded by the data collectors, more problems with administration of paper-and-pencil mode methods were identified in the collection of data from subjects with physical limitations than were problems with card-sorting mode methods. However, notes also indicated that "outsider" interference was a greater problem with the methods characterized by the card-sorting mode than the paper-and-pencil mode methods. The findings of the study, then, indicated that differences in data collection mode of the four comparison methods did not influence the empirical findings obtained from use of the comparison methods. The data collection mode was found to be an influential variable with regard to practicality and feasibility advantages and disadvantages of use of the comparison methods with more positive time and cost findings generally associated with paper-and-pencil mode and preferences of subjects and data collectors generally favoring the card-sorting mode.

The analyses of the findings of this investigation for method comparison in terms of the next two methodological points delineated in Table 1, administration format and data source, were inherently interrelated since the two individual data source methods (e.g., the rating scale and the Q-sort) are also both single administration methods, whereas the two group data source methods (e.g., the Delphi exercise and Delphi-sort), are both inherently round format methods. While neither administration format nor data source were identified to be influential variables in the findings of this investigation regarding group priority differences related to the comparison data collection methods, findings regarding change in individual priorities related to the data collection methods indicated greater change associated with the two group data source/round methods than for the two individual data source/single administration methods. Determination of the relative influence of data source/administration format variables on the time and cost findings for the four comparison methods of this investigation was complicated by many other inherent differences within the two pairs of similar data source/administration format methods (for instance, the number of item differences between rounds of the Delphi exercise and Delphi-sort methods, the number of discrimination differences between the rating scale and Q-sort methods, etc.), although some increase in both time, and thus personnel cost, was attributed to group and round method features of the Delphi exercise and Delphi-sort methods. Similarly, the influence of the data source and administration format method variables on subjects' evaluations was also complicated by other operative variables and apparently contradictory findings. For example, subjects in the D and DS

groups indicated both positive and negative reactions regarding group feedback; subjects in the two round methods also indicated that they positively valued the thoroughness of the methods, but showed negative reactions to repetition of items and the time requirements of the methods. Data collectors in this investigation did identify the group data source and round format (with the provision of group feedback and opportunity for re-evaluation of personal responses or method provisions for further discriminations) as being advantages of both the Delphi exercise and Delphi-sort methods. They also identified many disadvantages of the Delphi exercise and Delphi-sort related to group feedback and rounds. In summary, then, the findings of this investigation related to data source/administration format differences between the four selected data collection methods were both inconclusive and complex, making an overall comparative summary statement about the methods in terms of these methodological variables virtually impossible. From a theoretical point of view, however, the group data source methods, with inherent round formats, would seem to be more appropriate for research problems related to group priority identification, such as was the nature of the clinical research problem of the investigation reported in this report, than would be the single-administration, individual data source methods. This theoretical issue, however, will be addressed further shortly when analysis relevant to the methodological/theoretical foundations of the comparison data collection methods is presented.

The next two selected points of comparison and contrast for the four methodological approaches delineated in Table 1 are the size of

person sample and size of item sample. These two methodological variables, however, were held constant, as a form of research control, in the application of the four data collection methods in this investigation. Each of the four comparison groups consisted of 20 subjects, and the instrument employed with each comparison method was the 50-item Nursing Activities Checklist. However, considering the theoretical ideals presented in Table 1, the size of the person sample used in this investigation was much smaller than the size recommended in the research literature in which the rating scale method is employed. On the other hand, the sample size of 20 was somewhat larger than the person sample size recommended in the literature for use of the Q-sort method. No particular person sample size has been recommended or identified as optimum for Delphi exercise investigations, whereas a recommendation has been made for a minimum sample of 20 subjects for applications of the Delphi-sort method. The size of the comparison groups used in this investigation, then, was more appropriate for both the Delphi exercise or Delphi-sort methods and less methodologically appropriate for the other two comparison methods. No standardized recommendations have been specified in the literature for either the rating scale method or Delphi exercise method regarding size of item sample. In the research literature pertaining to the Q-sort method, recommendations are made for use of a large-sized (minimum of 50) sample of items. This same recommendation for item sample size has also been made for application of the Delphi-sort method. The 50-item instrument used in this investigation, therefore, met the specified requirements in terms of size of item samples for both the Q-sort and Delphi-sort methods and actually was meth-

odologically appropriate for use in all four comparison methods.

Analyses of the findings of this method comparison investigation with respect to the next two points delineated in Table 1, type of measurement and distribution of the individual subject's responses, must be done simultaneously since the two methodological variables were inherently inter-related in the methods. The rating scale and the Delphi exercise are characterized as being distribution-free methods, and they both represent free-choice/normative forms of measurement. The Q-sort and the Delphi-sort, on the other hand, are both distribution-producing methods, even though a subject's responses form a quasi-normal distribution in the former method and a semi-rectangular distribution in the latter method. Both the Q-sort and the Delphi-sort represent, to a slightly different degree, forced-choice forms of measurement, although the Q-sort method is actually an ipsative form of measurement and the Delphi-sort is a more normative form of measurement. No apparent influence of these differential methodological variables, however, was identified in the findings of this investigation regarding either group priority differences related to the data collection methods or changes in individual priorities related to the data collection methods. While identification of the differential influence of the type of measurement/distribution of responses variables in the time and cost findings of this investigation was complicated due to the other inherent differences within the two pairs of methods similar with respect to these variables (i.e., differences in administration formats, data sources, response modes), some degree of time and, thus, personnel cost increases were attributed

to the forced-choice and specified distribution requirements of the Q-sort and Delphi-sort methods. The comments of subjects recorded during actual data collection and the subjects' responses to open-ended items of the method evaluation form indicated a degree of subject dissatisfaction and frustration with the forced-choice/specified distribution requirements of the Q-sort and Delphi-sort methods. Findings regarding subjects' overall method evaluations derived from the general Likert-type items of the method evaluation form, on the other hand, indicated more favorable subject evaluations of the two forced-choice/specified distribution methods than of the two free-choice/distribution-free methods. It was recognized, however, that other differential methodological variables, such as data collection mode, were also operative in the determination of overall evaluations. It was possible, though, that the subjects' overall preference for the Delphi-sort method over the Q-sort method was related, to a degree, to the less stringent semi-forced-choice and less structured semi-rectangular-distribution features of the Delphi-sort in comparison to the more stringent forced-choice and highly structured quasi-normal distribution requirements of the Q-sort. Similarly, even though data collectors in this investigation identified some disadvantages of the Q-sort and Delphi-sort methods related to the forced-choice/specified distribution features of the methods, they also identified the apparent increased discriminations among items that resulted from these two methodological variables as being advantages of the two methods. The overall method evaluations of the data collectors seem to reflect distinctions related to the type of measurement/distribution of responses variables between the four methods, with

the Delphi-sort and Q-sort methods rated more favorably by the researchers than the rating scale and Delphi exercise methods. It is interesting to note, however, that while the data collectors of this investigation identified many disadvantages (e.g., various forms of response set biases) related to the free-choice/distribution-free characteristics of the rating scale and Delphi exercise methods (i.e., tendency for incompleteness, extreme bias, bias of central tendency, acquiescence, social desirability), disadvantages or biases related to the forced-choice/specified distribution characteristics of the Q-sort and Delphi-sort methods (i.e., tendency toward meaningless choice) were also identified. There were potential research biases and related measurement problems, then, identified for all four comparison methods, despite differences in the methodological variables of type of measurement and distribution of responses. It is also noteworthy that even though data collectors, and subjects to a lesser degree, indicated that the potential for increased discriminations in the two forced-choice/distribution-producing methods was an advantage of the Q-sort and Delphi-sort methods over the two free-choice/distribution-free methods, the findings of lack of apparent influence of the type of measurement and distribution of responses variables on the empirical findings (group priority differences, individual priority change) of this investigation did not support this perceived measurement advantage. These above investigation findings were somewhat in contradiction to the 1960 findings of Garner regarding the effects of number of choices on discriminations, but somewhat congruent with 1956 findings reported by Block, the 1956 findings of Livson and Nichols, and the 1959 findings of Hess and Hink regarding the effects of type of

measurement and shape of distribution on discriminations. Regarding normative versus ipsative measurement distinctions between the four methods, while the Q-sort was originally developed as an ipsative measurement method, the data obtained from all four methods of this investigation were treated normatively (as legitimized through the 1957 methodological findings of Block and in the 1970 theoretical writings of Best). No comparison of the method from the findings of this investigation in terms of this measurement variable was possible. In summary, then, the findings of this investigation did not show effects of measurement differences related to differences in the type of measurement and distribution of responses methodological variables among the four comparison data collection methods. More positive time and cost findings were found to be associated with the two free-choice/distribution-free methods, while the preferences of subjects and data collectors generally favored the two forced-choice/distribution-producing methods. Recognition of the simultaneous influences of other methodological/measurement variables and other complicating factors in the interpretation of the findings of this investigation, however, make comparison of the four data collection methods in terms of these methodological distinctions somewhat inconclusive.

The next methodological point of comparison in Table 1 is statistical analysis. As indicated, inter-dependency analysis and correlations of tests are the forms of statistical analysis typically employed with data obtained from the rating scale method. The forms of statistical analysis recommended in the literature for Q-sort method data include

dependency analysis techniques and correlations of persons. For both the Delphi exercise and Delphi-sort methods, descriptive group summaries and non-parametric statistics are the most typically used or recommended forms of statistical analysis. To standardize the data obtained from the four different comparison methods in the present investigation, descriptive group summaries and non-parametric statistics were the forms of statistical analyses used for the data obtained from all four data collection methods. Thus, the forms of statistical analyses used in this investigation were more appropriate for data obtained from the Delphi exercise and Delphi-sort methods and less methodologically appropriate (i.e., less sophisticated, with resulting loss of potential information) for the data obtained from the rating scale and Q-sort methods. It must also be recalled that standardization of statistical analysis techniques for the methods was offered as one possible explanation for the lack of group priority differences found among the four comparison groups of this investigation.

The final methodological point of comparison in Table 1 is the methodological/theoretical foundation of the methods. With respect to this methodological point, the rating scale method is based on R methodology and is consistent with the nomothetic theoretical approach to information source and analysis. It is most appropriate in research activity directed towards group generalizations and understanding through inter-individual differences (i.e., research contexts in which the assumption is made that the individual can be understood in accordance with his or her standing in relation to the group). The Q-sort method, on

the other hand, is based on Q methodology and is consistent with the ideographic theoretical approach. It is most appropriate in research activity directed towards understanding through intra-individual differences dependent on interactional variates in one interactional setting (i.e., research contexts in which the assumption is made that the individual can be understood through "wholistic," in-depth investigation of the individual). Both the Delphi exercise and Delphi-sort methods are consistent with the nomothetic theoretical approach in that the goal of research activity for both methods is group generalizations. Unlike the methods based on either R or Q methodology, however, no attempt is made specifically towards individual understanding through use of these methods since the group is truly the focus in the research context and it is group understanding that is sought. The clinical question of the research investigation reported here, "What are the priorities for nursing care activities of hospitalized patients?" then, was clearly of a nomothetic orientation. The rating scale, Delphi exercise, and Delphi-sort methods were, therefore, more theoretically appropriate for use in this investigation than was the Q-sort method. The appropriateness of the three nomothetic methods, however, is dependent on assumptions made with respect to two methodological questions of a philosophical nature: 1) can group priorities truly be determined by the sum of individual priorities without provisions for group interaction and feedback?, and 2) can priorities identified through group processes be applied toward individual understanding? The R methodologists make assumptions reflecting a positive answer to the first question, but other methodologists (including Delphi researchers) make assumptions re-

flecting a negative answer to the first question. Neither side, however, has given much attention towards the second question. Since much debate on these philosophical issues exists and will be ongoing in the methodological literature, comparison of the methods used in the investigation on philosophical grounds will be left open for the reader.

In summary, both advantages and disadvantages have been identified with respect to each of the four data collection methods of this clinical and methodological investigation. The methodological points of comparison and contrast delineated in Table 1 of this report has provided a useful framework for method comparison, permitting consideration of all of the previously reported data, findings, and interpretations.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

The purpose of this final chapter is to provide a general summary of the clinical and methodological findings reported and discussed in previous chapters. Attempts will be made to translate the clinically-oriented findings into implications for the nursing profession and nursing practice and the methodologically-oriented findings of the investigation into implications for nursing research. Remaining gaps in knowledge will also be identified, and specific recommendations for future research will be offered.

The major findings of this investigation are listed ad seriatum.

Clinical findings:

1. Despite methods used, all four comparison groups of patients were in basic agreement regarding specific nursing care activities prioritized.

2. A disproportionately larger number of items from the "implementation of medical care" content category was prioritized than from the other three categories.

3. No items from the "preparation for discharge" content category were prioritized by any of the comparison groups.

Methodological findings:

1. Methods were not found to result in inter-group priority differences among the four comparison groups.

2. Differences related to methods were identified in the degree of intra-individual change in priorities. As compared to those methods with individual data sources, methods which generated group consensus resulted in greater intra-individual change.

3. The four data collection methods of this investigation differed along the dimensions of time and cost variables. The rating scale was the most time and cost efficient of the four methods.

4. Although subjects responded favorably to all methods, they responded least favorably to the rating scale. Subjects' responses to the various methods varied along the dimensions of completeness, structure, time, group feedback, and "hands-on" manipulation.

5. In addition to each dimension identified by subjects, data collectors also included in their evaluations applicability to setting and subjects, subjects' responses, and complexity level of the methods. Without exception data collectors preferred the sort methods over the written methods. For those data collectors exposed to all four methods, invariably the methods were preferred in the following order: DS>Q>RS>D.

Several major limitations were recognized in this investigation. All subjects were selected from a limited segment of one institution. Samples were non-random and relatively small. Although data were available on a number of subject variables, it was impossible to determine the relative influence of these variables on investigation results. It was also impossible to control for many identified and unidentified subject variables. The sample population was limited to those patients hospitalized over the weekend, who may have differed from patients admitted and discharged during the week. Time and cost data were derived from rough measurements. Because evaluations of methods were based primarily on qualitative data, the evaluations of both subjects and data collectors were subject to extraneous biases (e.g., recency effects). Due to the various limitations identified, caution must be used in generalizing the findings of this investigation to other contexts.

Results of the current investigation complement and supplement ex-

isting research. In the clinical study of this investigation, the nursing care activities highly prioritized by four in-patient subject groups were congruent with findings of previous researchers (Legan, 1965; White, 1972; Risser, 1975; Hinshaw & Oakes, 1977; Patsdaughter et al., 1981). The current research also included systematic attention to methodology, a relatively neglected issue in previous studies. Both the strategy of successive research and the use of a variety of methodologies to study a single problem were features of this investigation. An important additional contribution of this investigation was empirical documentation of reliability estimates of the use of the Nursing Activities Checklist instrument.

Nursing Care Priorities of Patients

Implications for the Nursing Profession and Nursing Practice

In terms of the characteristics of the scope of nursing practice identified in the American Nurses' Association's policy statement (1980), the priorities of hospitalized adult patients reflected perceptions of a rather restricted boundary for nursing and a wide area of inter-professional intersection. In view of the nursing profession's social commitments of accountability in the provision of essential and valued services and responsibility in meeting the perceived needs of the diversity of individuals who comprise the larger society, an apparent disparity between the identified limited nursing care priorities of patients and the movement within the nursing profession toward expansion of the scope of nursing practice warrants additional exploration and attention.

The findings of the present clinical study that a disproportionate number of the hospitalized patients' priorities for nursing care were those activities related to the implementation of medical care raises some important questions and issues. Do sick persons come to hospitals (and, hence, to nurses) primarily for the provision of medical care? Perhaps the American public, and, therefore, hospitalized patients, have been highly influenced by the grand testimonies and sensational portrayals of medical diagnostic techniques, technologies, and treatments in the media of our society. Do they now place such high value on these "modern wonders and miracle cures" that they minimize their own basic physical comforts and psychological needs? Have hospitalized patients also relinquished the opportunity for involvement and active participation in their own personal care? Perhaps such media figures as Ben Casey, Marcus Welby, and Trapper John have inspired such complete faith and trust in physicians that the words "doctor" and "medicine" have become synonymous with the words "health practitioner" and "health care" in the minds of patients. It is noteworthy that out of the 11 different nursing care activities prioritized by the patients in the four comparison groups of this investigation, the words "doctor" or "medication" were either explicitly contained or implied in five. Do patients expect nurses to serve merely as "handmaidens to physicians" or as round-the-clock "physician extenders"? Is it that patients indeed feel that they want, need, or value primarily the medical aspects of nursing care or are they unaware or uninformed of the other realms of the role of the nurse and the variety of other activities that nurses are prepared for, are able to and expect to perform? Perhaps patients and the general

public they represent have been socialized to think that nurses are only capable of performing the duties portrayed by nurses on television.

As noted previously, patients in the present investigation did not prioritize any nursing activities related to preparation for discharge. Does this imply that patients do not value self-care activities, that they do not want to or have not been encouraged to assume obligations for their own health but, rather, have delegated this responsibility to the medical establishment and institutions in our society? Does it indicate that patients view activities such as patient teaching and home care arrangements as being solely medical functions as opposed to nursing activities? Hasn't the nursing profession communicated to the public that the goal of nursing is "to help the patient gain independence as rapidly as possible" (A.N.A., 1980, p. 9). Perhaps practicing hospital nurses, for a variety of possible reasons (i.e., bureaucratic job descriptions, time schedules, short-staffing), have not shown patients that preparation for discharge activities are nursing responsibilities and have not convinced patients of the benefits of such activities.

What can be done by the profession and nursing practitioners towards narrowing the apparent gap between patients' and nurses' priorities for nursing care activities? In response to these questions, further considerations with respect to both the findings of this investigation and the previously offered possible explanations are provided, along with questions and recommendations for further investigation in this area.

First, it must be recalled that the present investigation was conducted in one institutional setting on medical-surgical units. Perhaps the priorities for nursing care activities identified by these investigation subjects are not the priorities of all medical-surgical patients. Perhaps different priorities would be identified by patients on different types of in-patient units (for example, patients on obstetrical, psychiatric, cancer/terminal care, intensive care, pediatric/adolescent, or geriatric units). Since the present investigation was conducted in a large, acute-care facility, it is possible that patients in smaller or rural hospitals might have different priorities for nursing care activities. It is also likely that different priorities would be identified by patients in chronic care, outpatient, or community settings. The above, then, are all potential variables for future investigations for the identification of patients' priorities for nursing care activities. It must also be recalled that the present investigation used fairly small, non-random samples and that many extraneous patient variables were not controlled. Hence, an additional recommendation for future research in the area includes replication of the present study using larger patient samples and controlling for such variables as age, sex, level of education, socioeconomic status, race/ethnicity, diagnosis, and past illness or hospitalization experiences to document the relationship between these variables and the nursing care priorities of patients. The nursing profession serves a great diversity of patients in a variety of different settings. Thus, before the question of the responsiveness of the nursing profession to societal needs and demands can effectively be addressed, the priorities for nursing care activities of a greater

range of actual and potential nursing care consumers than the patients who served as subjects in the present investigation must be empirically documented. Furthermore, the above limitations of this investigation and identified gaps in knowledge should be kept in mind by practicing nurses as they attempt to apply the findings in their practice for purposes of either "starting at the level of the patient" or initiating patient awareness measures with respect to the various roles of the nurse.

It has been reported that no differences in the nursing care priorities of patients in four comparison groups were found in this investigation using four different data collection methods for priority identification. Would differences be identified through the use of other data collection methods (for example, a structured interview)? As noted earlier different patient priorities were identified by Whiting et al. (1958) even though a data collection method used in the present investigation and a similar instrument were employed. Were patient priority differences a function of the specific instrument used in the study by Whiting et al., of other study variables, or of time period differences? A current replication of the study by Whiting et al. would be beneficial. Furthermore, combined clinical and methodological research for the development of additional up-to-date instruments for the measurement of patients' priorities for nursing care activities is needed.

As noted earlier in this report, patients in the present investigation were asked to rate activities that a "registered nurse" might perform for a patient in terms of perceived levels of importance. Would

patients identify different priorities if the educational level for a nurse generalist were specified (i.e., registered nurse graduate of an associate degree program, diploma program, or baccalaureate program)? In view of the trend towards specialization within the nursing profession, would patients identify different priorities if the titles "nurse practitioner" or "clinical nurse specialist" were specified? These are additional potential areas for future investigation that would not only provide further information on patients' priorities for nursing care activities, but would also give some indications of whether or not patients understand the differential preparation and qualifications of practicing nurses and how patients view the changing role of the nurse.

Since the nursing care priorities of patients in the present investigation were found to be highly over-representative of implementation of medical care activities, a study in which an instrument consisting of medically-oriented activities was used and in which patients were asked to indicate whether the activities were within the role of the doctor, the nurse, or both would be interesting. Similar studies could be done using registered nurse -- nursing assistant or registered nurse -- social worker options. Such investigations would provide additional information on patients' perceptions of the intersection between nursing and related professionals or health care workers.

In considering patients' priorities for nursing care activities, the question must also be raised as to whether the expressed priorities of patients are true representations of the perceptions, needs, and expectations that patients have for nursing care activities or if they

represent artifacts of other influential phenomena in society and within the health care delivery system (i.e., the influence of the media, stronger political and public relation efforts by the medical profession than by the nursing profession, bureaucratic restrictions on nursing practice). There has been some concern recently, within the nursing profession, with the elimination of negative images of nursing in the media and toward use of the media as a positive form of profession-to-public communication. Perhaps either cross-sectional or longitudinal research activities at either the local or national level could be used to document the changes in the public opinion or priorities that are related to such public awareness measures. Similarly, nurses within a given institutional setting could implement either formal or informal patient consciousness-raising programs and document patient response through pre- and post-program changes in nursing care priorities. Such efforts would empirically test the validity of patients' priorities -- whether they are consciously chosen options or whether they reflect uninformed or unrecognized mind sets or stereotypes.

In summary, the implications for the nursing profession and nursing practice derived from examination of the identified nursing care priorities of patients in the present investigation, as well as similar findings from earlier studies, fall into two broad areas: 1) increased public accountability on the part of the profession and practicing nurses to potential and actual nursing care consumers, and 2) increased systematic, on-going attention to priority identification and evaluation. It is through such efforts that the public will come to recognize the rele-

vance of nursing within the complex health care delivery system and perceive potential nursing contributions, as well as nursing's professional concern with public good. It is through such efforts that a "mutually beneficial relationship" can develop between nurses and patients.

Comparison of Methodological Approaches

Implications for Nursing Research

In this relatively small-scale, time-limited investigation, it was found that the four selected data collection methods did not produce inter-group differences in those nursing care priorities identified by patients in four comparison groups. It was found, however, that the four methods did differentially influence the priorities of individuals in the comparison groups and that there were differences between the four methods in terms of time and cost factors, subjects' evaluations, researchers' evaluations, and additional measurement considerations.

Methodological research questions are raised in view of the findings of the present study. Since no inter-group priority differences were identified through the use of one selected instrument (i.e., the Nursing Activities Checklist), would the use of a different instrument(s) across four comparison groups employing the same four methods of this investigation result in inter-group priority identification differences? Was such high inter-group priority consensus found in this investigation a function of true patient agreement, the instrument, or methods? Would lack of inter-group priority differences also be found in a comparative investigation using the rating scale, Q-sort, Delphi exercise,

and Delphi-sort methods with different types of patient subjects or in different types of settings?

Since differential degrees of individual priority change were found between two pairs of comparison groups in this investigation over a three-day period of time, would the degrees of change be different over longer time-spans? Is the high degree of individual priority change demonstrated through the use of the Delphi exercise and Delphi-sort in this present investigation temporary or long-lasting? Since both of the above methods for priority identification involve group feedback over rounds, at what point in the data collection process does change in individual priorities first develop? Was the high degree of individual priority change demonstrated in the two methods a function of group feedback and a series of rounds combined -- or would either an indication of group opinion or a series of rounds alone (i.e., repeated exposure to items) also produce such a change? What would be the effects on intra-individual priority change of various time intervals between rounds?

Would differences in time and cost factors, subjects' evaluations, and researchers' evaluations be found between the results reported in this study and a priority investigation conducted with the use of different types of subjects and in different settings? Limitations recognized in the present investigation lead to many potential problems for future methodological nursing research in the specific context of identification of patients' priorities for nursing care activities and the general research area of priority identification. If, as emphasized in

the previous section of this chapter, the identification of patients' nursing care priorities is a significant problem area for research in nursing, nurse researchers must devote increasing attention to methodology in this area. As noted repeatedly by Kruger et al. (1978), findings in any research area can only be considered valid if derived from valid measurement tools and appropriate methods.

As also pointed out by Kruger et al. (1978), time and cost factors have received little systematic attention and have been "inhibiting" or non-success factors in many potentially valuable nursing research activities (p. 323). In the present small-scale investigation, variations between the four comparison methods were identified in terms of both time and cost (and the subcomponents of each). Such differences, if multiplied by other research variables in a large-scale investigation, would be highly significant. Nurse researchers typically have limited monies, resources, and research personnel available to them. Much nursing research is carried out by master- and doctoral-level students who are faced with both restrictive time constraints and minimal funds. Other research activities are conducted by nursing faculty members who also have both time and cost difficulties. Presently, a very small number of practicing nurses are receiving support from their employing institutions for clinical research projects. Competition for research grants is intensive, available allocations are limited, and funding agencies are demanding budgetary accountability, including detailed time, cost, and resource justifications. In view of this situation, there is a need for additional methodological nursing research that addresses the

time and cost variables in the research process, either as intentional or incidental study problem areas. Results must be communicated to and shared with nurse researchers so potential pitfalls can be avoided and advancements can continue in various nursing research contexts.

A further methodological finding of the present investigation was the differential subject evaluations of the four comparison methods. The ability to obtain subjects for a research investigation and to maintain the cooperation of subjects through the data collection process are additional important considerations for nurse researchers, and such abilities are dependent, in part, on what is requested or required of subjects by the data collection method of a study. The reactions or responses of subjects to data collection methods, however, are seldom addressed or given little serious, systematic attention in the research literature. Subjects' evaluations, then, comprise a problem area for further methodological investigation in nursing research, either as a component of methodological studies or as incidental considerations in studies with specifically clinical foci. It is especially important that findings be communicated with other nurse researchers, who often use patients as research subjects. Patients in particular may have limited attention spans and other factors (i.e., pain, anxiety, the effects of medications, etc.) which may influence their tolerance for and reactions to data collection procedures.

In the present investigation, much valuable supplemental information for the comparison of the four data collection methods was obtained from data in the form of feedback from researchers (data collectors). It

was also found that the data collectors had differential preferences for the four comparison methods. It is a possibility in research that reactions of data collectors to a particular investigation method could influence the data collected (for example, through communication of reactions to subjects, increased or decreased data collector cooperation in following exact procedures). Indeed, this was one methodological dilemma addressed by Williamson (1978). Thus, it is recommended that researchers' evaluations be examined for the purposes of documenting further information on method administration as well as for identifying potential reactivity effects.

Through the use of four comparison data collection methods in a research design incorporating as many controls as possible (i.e., one problem, one instrument, similar sample groups, time controls, comparable data analysis techniques), it was found that many of the methodological findings of this investigation could be interpreted on a post hoc basis through a systematic analysis using an established framework for points of comparison and contrast. The variables along which the four selected methods were compared and contrasted included: historical background, data collection mode, administration format, data source, size of person sample, size of item sample, type of measurement, distribution of subject's responses, statistical analyses, and methodological/theoretical foundation. This form of analysis provided information related to both advantages and disadvantages of each of the four comparison methods of this investigation. While the four methods are similar in terms of general purpose (i.e., all were developed for and have been

used in attitudinal research and/or priority identification research), underlying methodological variables accounted for the differences in findings obtained, time/cost findings, subjects' evaluations, and researchers' evaluations. The implication of these results for nurse researchers is that, in addition to superficial method characteristics (i.e., general method purpose, use of a method in similar past studies), method selection should also include attention to the more specific methodological and measurement variables. Nurse researchers should address methodological issues in the interpretation of their research findings.

Finally, this investigation represented an example of what Noble (1979) has termed "successive research" in that it developed from several recommendations for future study made by the author and colleagues in a previous study. It was designed and conducted, in part, for empirical testing of a new data collection method (i.e., the Delphi-sort) developed in the context of nursing research. Thus, two final recommendations for future research in nursing pertain to the need for additional studies, clinically and/or methodologically oriented, based on the successive research strategy. It is through this type of research strategy that gaps in nursing knowledge will be filled in a systematic and progressive manner and that nursing theory and science will be expanded and refined. Additionally, there is a need for further development and testing of data collection methods for use in nursing research. Eclectic combinations or completely new and different methodological approaches which are specifically designed for nursing's unique research problems, sub-

jects, and settings are needed in addition to the more established methods of other related disciplines. Through both successive research and method development, nursing can experience the "scientific revolution" (Kuhn, 1962) necessary for growth and development of the profession.

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APPENDIX I

Consent Form--Rating Scale Group

INFORMATION ABOUT: Nursing Care Priorities of Patients: A Comparison of Methodological Approaches

I understand that this research study is being conducted by a graduate nursing student from Loyola University of Chicago as part of a Master's Thesis.

I understand that the purposes of the research study are: 1) to determine how important patients consider various nursing care activities to be, and 2) to evaluate different methods for recording and measuring patients' priorities. I have been told that the findings of this study will be used in the future to help nurses better assess and meet the nursing needs and expectations of their patients.

I understand that my participation in the research procedures will involve: 1) filling out a personal data form, 2) completing a 50-item written checklist on three consecutive days, and 3) completing a study evaluation form.

I understand that there are no risks involved in this research study. I have been informed that no names are required and that all personal data and responses on the checklists will remain confidential. I have also been informed that while it is important that participants who begin the study complete all portions of the study, I may withdraw from the study at any time I feel that it is necessary to do so. I have been assured that in no way will my participation or non-participation in this study affect the nursing care I will receive during my stay in the hospital.

I have read the above description and have had my questions regarding it answered. If I have further questions regarding this study, I may have them answered by the Principal Investigator. I acknowledge that I have been informed that this procedure is not involved in my treatment and is not intended to benefit or affect my personal health or care at this time. I freely and voluntarily consent to participate in this project.

_____ _____

Patient's Signature Date

_____ _____

Principal Investigator's Signature Date

Principal Investigator: Carol A. Patsdaughter, R.N., B.S.
Graduate Student, Medical-Surgical Nursing
Loyola University of Chicago

Consent Form--Q-Sort Group

INFORMATION ABOUT: Nursing Care Priorities of Patients: A Comparison of Methodological Approaches

I understand that this research study is being conducted by a graduate nursing student from Loyola University of Chicago as part of a Master's Thesis.

I understand that the purposes of this study are: 1) to determine how important patients consider various nursing care activities to be, and 2) to evaluate different methods for recording and measuring patients' priorities. I have been told that the findings of this research study will be used in the future to help nurses better assess and meet the nursing care needs and expectations of their patients.

I understand that my participation in the research procedure will involve: 1) filling out a personal data form, 2) completing a 50-item written checklist on days 1 and 3 of the study, 3) performing a "Q-Sort" exercise on day 2 of the study, and 4) completing a study evaluation form. I have been told that the Q-Sort involves sorting 50 cards with nursing care activities printed on them into piles that indicate how important I consider the activities to be. I have also been told that the Q-Sort will take about 30 minutes of my time.

I understand that there are no risks involved in this research study. I have been informed that no names are required and that all personal data and responses on the checklists and Q-Sort will remain confidential. I have also been informed that while it is important that participants who begin the study complete all portions of the study, I may withdraw from the study at any time I feel it is necessary to do so. I have been assured that in no way will my participation or non-participation in this study affect the nursing care I will receive while I am in the hospital.

I have read the above description and have had my questions regarding it answered. If I have further questions regarding this study, I may have them answered by the Principal Investigator. I acknowledge that I have been informed that this procedure is not involved in my treatment and is not intended to benefit or affect my personal health or care at this time. I freely and voluntarily consent to participate in this project.

_____ _____

Patient's Signature Date

_____ _____

Principal Investigator's Signature Date

Principal Investigator: Carol A. Patsdaughter, R.N., B.S.
Graduate Student, Medical-Surgical Nursing
Loyola University of Chicago

Consent Form--Delphi Exercise Group

INFORMATION ABOUT: Nursing Care Priorities of Patients: A Comparison of Methodological Approaches

I understand that this research study is being conducted by a graduate nursing study from Loyola University of Chicago as part of a Master's Thesis.

I understand that the purposes of this study are: 1) to determine how important patients consider various nursing care activities to be, and 2) to evaluate different methods for recording and measuring patients' priorities. I have been told that the findings of this study will be used in the future to help nurses better assess and meet the nursing care needs and expectations of their patients.

I understand that my participation in the research procedure will involve: 1) filling out a personal data form, 2) completing a 50-item written checklist on days 1 and 3 of the study, 3) participating in a "Delphi" exercise on day 2 of the study, and 4) completing a study evaluation form. I have been told that the Delphi exercise involves completing three 50-item checklists and one eight-item ranking form. I have also been told that the Delphi exercise will require about 10 minutes of my time at four different times during the day.

I understand that there are no risks involved in this research study. I have been informed that no names are required and that all personal data and responses on the checklists and Delphi exercise will remain confidential. I have also been informed that while it is important that participants who begin the study complete all portions of the study, I may withdraw from the study at any time that I feel it is necessary to do so. I have been assured that in no way will my participation or non-participation in this study affect the nursing care I will receive during my stay in the hospital.

I have read the above description and have had my questions regarding it answered. If I have further questions regarding this study, I may have them answered by the Principal Investigator. I acknowledge that I have been informed that this procedure is not involved in my treatment and is not intended to benefit or affect my personal health or care at this time. I freely and voluntarily consent to participate in this project.

_____ _____

Patient's Signature Date

_____ _____

Principal Investigator's Signature Date

Principal Investigator: Carol A. Patsdaughter, R.N., B.S.
Graduate Student, Medical-Surgical Nursing
Loyola University of Chicago

Consent Form--Delphi-Sort Group

INFORMATION ABOUT: Nursing Care Priorities of Patients: A Comparison of Methodological Approaches

I understand that this research study is being conducted by a graduate nursing student from Loyola University of Chicago as part of a Master's Thesis.

I understand that the purposes of this research study are: 1) to determine how important patients consider various nursing care activities to be, and 2) to evaluate different methods for recording and measuring patients' priorities. I have been told that the findings of this study will be used in the future to help nurses better assess and meet the nursing care needs and expectations of their patients.

I understand that my participation in the research procedure will involve: 1) filling out a personal data form, 2) completing a 50-item written checklist on days 1 and 3 of the study, 3) participating in a "Delphi-Sort" exercise on day 2 of the study, and 4) completing a study evaluation form. I have been told that the Delphi-Sort procedure involves sorting cards with different nursing activities printed on them into piles indicating different levels of importance. I will sort the cards four different times--and each time the deck will be made smaller in size. I have been told that the Delphi-Sort will require a total of about 30-35 minutes of my time to complete.

I understand that there are no risks involved in this study. I have been informed that no names are required and that all personal data and responses on the checklists and in the Delphi-Sort will remain confidential. I have also been informed that while it is important that participants who begin the study complete all portions of the study, I may withdraw from the study at any time that I feel it is necessary to do so. I have been assured that in no way will my participation or non-participation in this study affect the nursing care that I will receive while I am in the hospital.

I have read the above description and have had my questions regarding it answered. If I have any further questions regarding this study, I may have them answered by the Principal Investigator. I acknowledge that I have been informed that this procedure is not intended to benefit or affect my personal health or care at this time and that the procedure is not involved in my treatment. I freely and voluntarily consent to participate in this project.

_____ _____

Patient's Signature Date

_____ _____

Principal Investigator's Signature Date

Principal Investigator: Carol A. Patsdaughter, R.N., B.S.
Graduate Student, Medical-Surgical Nursing
Loyola University of Chicago

APPENDIX II

Personal Data Form

Dear Study Participant,

Thank you for your willingness to participate in this research study to determine how important patients consider various nursing care activities to be. In order to make the findings more meaningful, some information about you and your background is required. It is hoped that you will answer the following questions as completely as possible. Your responses will remain totally confidential. You are not requested to write your name anywhere on this paper--but please make sure that you indicate your hospital number and room number in the spaces provided so that you can be relocated tomorrow and the next day. Thank you.

1. Hospital Number: _____

2. Room Number: _____

3. Age in years since your last birthday: _____

4. Sex: ( ) Male ( ) Female

5. How much schooling did you complete? (Check One)

   ( ) Less than 7th grade
   ( ) 7th to 9th grade
   ( ) 10th to 11th grade
   ( ) high school diploma
   ( ) 1 to 3 years of college
   ( ) bachelor's degree
   ( ) graduate or professional degree

6. Why are you in the hospital now? (medical condition or diagnosis)

   _____

7. How long have you been in the hospital? _____

8. How many times have you been in a hospital (admitted as an inpatient) before this admission? _____

APPENDIX III

Items and Content Categories

of the Nursing Activities Checklist

Content Categories: I = Physical Aspects of Care
II = Implementation of Medical Care
III = Psychological Aspects of Care
IV = Preparation for Discharge

Items		Content Category
1.	Take my temperature and pulse	II
2.	Give me (or assist me with) a daily bath	I
3.	Assist with the care of my mouth and teeth	I
4.	Provide me with a clean, comfortable bed	I
5.	Help me with grooming, such as care of nails, hair, and/or shaving	I
6.	Be sure that I have the necessary equipment--glass, towels, soap, blanket, etc.	I
7.	Provide privacy during my bath and treatments	III
8.	Take special care of my skin so it does not become sore	I
9.	See that my unit is kept clean and tidy	I
10.	Allow me to make decisions about my own care	III
11.	Help me to assume a comfortable or appropriate position	I
12.	Notice when I have pain and give me medication if ordered	II
13.	Change my position frequently	I
14.	Make me comfortable by rubbing my back	I
15.	Observe the effects of treatments ordered by my doctor	II
16.	Consider my personal preferences when caring for me	III
17.	See that I have a bedpan or urinal when I need it	I
18.	Help me maintain or restore normal elimination	I
19.	Check on bowel functioning and report problems to the doctor	II
20.	Help me in and out of bed	I
21.	Help me get necessary exercise while I am in the hospital	I
22.	Discuss with me the amount and type of activity I should have at home	IV
23.	Encourage me to take more responsibility for my own care while in the hospital	III
24.	Give prescribed medications on time	II
25.	Teach me about the medications I will be taking at home	IV
26.	Plan my care so that I will be able to rest while in the hospital	I
27.	Provide a comfortable, pleasant environment (proper room temperature, free from odors and disturbing noises)	I
28.	Relieve my anxiety by explaining reasons for my symptoms	III
29.	Make me feel that you are happy to care for me	III
30.	Arrange for my priest, minister, or rabbi to visit me	III
31.	Make it possible for me to observe my religious practices in the hospital	III
32.	Assist me with my meals	I

Items		Content Category
33.	See that I have food and/or fluids between meals	I
34.	See that my food is served promptly	I
35.	Ask the dietitian to serve me soft foods that I am able to chew	I
36.	Help me understand how to plan the diet I will need at home	IV
37.	Be sure I have a copy of my diet	IV
38.	Talk with me about topics unrelated to illness (news, hobbies, other interests)	III
39.	Plan some diversion or recreation for me	III
40.	Take time to talk with my family and answer their questions	III
41.	Help me make arrangements for my care at home	IV
42.	Notice changes in my condition and report them	II
43.	Tell my doctor that I am worried about my condition	II
44.	Be understanding when I am irritable and demanding	III
45.	Take time to listen to me	III
46.	Carry out the doctor's orders	II
47.	Explain about tests and x-rays ahead of time so I will know what to expect	III
48.	Give me pamphlets to read and/or talk with me about my illness	IV
49.	Arrange for a public health nurse to visit me at home	IV
50.	Talk with my family about my illness and the care I will need at home	IV

APPENDIX IV

Evaluation Form

1. Indicate how much you liked participating in today's research study:

1	2	3	4	5
disliked strongly				liked very much

2. Indicate how much this study allowed you to express your true feelings or attitudes:

1	2	3	4	5
not at all				very much

3. Would you participate in this kind of study in the future?

1	2	3	4	5
no		maybe		yes

4. What are some of the things that you liked about the study method?

_____

_____

_____

_____

5. What are some of the things that you disliked about the study method?

_____

_____

_____

6. (For subjects in the Q, D, and DS groups only)
How would you rate today's study method in comparison with the written form you completed yesterday?

1	2	3	4	5
liked it less				liked it more

APPENDIX V

For the data in the following tables:

4 = extreme importance

3 = very important

2 = medium importance

1 = slight importance

SUBJECT:	1		2		3		4		5		6		7		8		9		10	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
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49	2	1	3	2	1	1	1	1	2	2	1	2	2	2	1	1	1	1	2	1
50	3	4	3	4	4	4	3	3	3	4	3	3	4	3	4	4	3	3	3	4

Raw "Pretest/Posttest" Data for the RS Group
From Day One and Day Three Rating Scale Administrations

SUBJECT:	11		12		13		14		15		16		17		18		19		20	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
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SUBJECT:	1		2		3		4		5		6		7		8		9		10	
ITEM:	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
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11	4	4	4	4	3	2	3	3	2	2	2	2	3	2	4	4	1	1	4	2
12	4	4	4	4	3	2	3	3	4	3	4	4	3	4	4	4	4	4	4	4
13	3	3	4	4	3	2	3	3	1	1	1	2	2	2	1	1	1	2	4	2
14	3	3	4	4	3	2	2	3	2	1	2	1	1	1	4	4	1	1	3	3
15	4	4	4	4	1	2	4	4	4	4	3	4	4	4	4	4	4	4	4	4
16	2	2	4	4	2	3	3	3	1	1	2	1	2	2	2	2	4	4	3	3
17	3	3	4	4	4	4	3	3	3	2	3	4	3	2	4	4	4	3	4	4
18	3	3	4	4	3	4	4	3	3	1	3	4	4	3	2	2	3	2	4	4
19	2	3	4	4	3	4	4	3	3	3	3	4	4	3	4	2	3	4	3	3
20	3	3	4	4	4	3	3	2	1	1	1	2	2	2	4	4	2	2	4	4
21	3	3	4	4	3	3	2	3	2	1	2	2	3	2	4	4	2	2	3	3
22	3	2	4	4	3	3	4	3	1	1	3	2	3	2	4	4	4	3	2	2
23	3	3	4	4	3	2	3	3	2	3	3	2	2	2	4	4	4	3	2	2
24	3	4	4	4	3	3	4	4	4	3	3	4	4	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4	4	3	1	3	3	4	4	4	4	4	4	4	4
26	4	4	4	4	4	3	3	3	2	1	2	3	3	2	3	4	4	2	4	3
27	4	4	4	4	3	2	3	3	4	3	2	3	3	2	4	4	4	2	4	3
28	4	4	4	4	3	2	4	4	1	3	2	1	4	4	4	4	4	4	4	4
29	4	4	4	4	3	3	2	3	4	3	3	4	3	2	4	4	2	1	4	4
30	1	1	2	1	1	2	2	3	2	1	1	2	2	1	4	4	1	1	2	1
31	1	1	1	1	1	1	2	3	2	1	1	2	2	1	4	4	2	2	2	1
32	3	3	3	2	2	2	2	2	2	1	1	2	1	1	4	4	2	2	4	4
33	1	1	4	4	2	3	2	2	4	1	1	1	2	2	4	4	3	3	4	4
34	2	2	4	3	2	4	2	2	3	1	2	4	3	2	4	4	3	2	3	3
35	2	2	3	3	3	3	2	2	1	1	2	2	2	2	4	3	2	2	3	3
36	3	2	4	3	3	3	4	4	3	1	3	3	4	4	4	4	3	3	4	4
37	3	2	4	3	3	3	4	4	2	3	3	2	4	4	4	4	4	4	4	4
38	1	2	4	4	2	2	1	1	1	1	2	1	3	2	2	2	1	1	1	1
39	1	4	4	4	2	2	3	2	1	1	2	1	2	2	2	2	3	1	2	2
40	4	4	4	4	2	3	2	2	3	3	3	2	3	4	4	4	3	4	4	4
41	4	4	4	4	3	2	3	3	2	1	1	3	2	2	4	4	2	4	4	4
42	4	3	4	4	3	2	4	4	4	3	3	4	4	4	4	4	4	4	4	4
43	4	3	4	4	3	2	3	4	4	3	3	3	4	4	4	4	3	3	4	4
44	4	4	4	4	2	2	2	3	4	1	2	2	3	3	3	3	3	1	4	4
45	3	4	4	4	2	2	3	4	3	1	3	2	3	3	4	4	3	2	4	4
46	4	4	4	4	4	3	3	4	4	3	3	4	4	4	4	4	4	4	4	4
47	4	4	4	4	3	3	4	4	2	4	3	3	4	4	4	4	3	4	3	4
48	4	4	4	4	3	1	3	2	1	3	2	1	4	4	4	3	2	4	3	2
49	1	4	4	3	2	1	3	2	1	1	1	2	1	1	1	1	1	1	2	2
50	4	4	4	4	4	1	3	3	3	3	3	3	4	4	4	3	4	4	3	3

Raw "Pretest/Posttest" Data for the Q Group
From Day One and Day Three Rating Scale Administrations

SUBJECT:	11		12		13		14		15		16		17		18		19		20	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
ITEM: 1	4	4	4	3	3	3	4	3	1	3	2	2	3	4	3	3	4	4	4	3
2	1	1	2	2	3	3	4	2	1	1	2	3	3	2	2	3	3	2	2	1
3	1	1	2	2	3	3	4	2	1	1	2	2	1	2	2	2	2	2	3	1
4	3	2	3	3	3	3	4	4	3	3	3	4	4	3	3	3	4	4	2	3
5	1	1	1	2	3	3	4	2	1	1	3	1	2	1	2	2	3	3	1	1
6	3	3	2	3	3	4	4	4	3	3	3	3	4	4	3	2	4	4	2	3
7	3	2	2	3	2	4	4	4	3	3	3	1	4	4	3	2	4	3	3	2
8	1	1	2	2	4	3	4	4	2	2	3	4	4	3	4	2	3	3	4	1
9	3	3	1	3	4	4	4	4	3	3	3	4	4	4	3	2	4	4	4	3
10	4	4	3	4	4	4	4	4	4	3	3	2	4	4	4	4	2	2	4	3
11	1	1	1	2	3	2	4	1	4	2	3	2	4	2	3	3	2	2	3	1
12	1	1	4	4	4	4	4	4	4	4	3	4	4	3	3	4	4	4	4	3
13	3	2	1	2	3	2	2	1	2	2	3	1	4	1	3	3	2	3	3	1
14	4	4	1	1	1	3	2	3	1	1	3	4	4	2	2	2	2	2	2	1
15	4	4	3	4	4	4	4	4	3	3	3	4	4	3	4	4	3	4	4	4
16	4	4	3	4	2	4	4	4	3	2	3	2	4	4	4	4	2	2	3	3
17	3	3	3	3	3	4	4	4	4	4	3	2	4	2	4	3	4	3	4	3
18	1	1	2	2	3	2	4	4	2	2	3	3	4	3	4	3	4	3	4	3
19	1	1	2	2	3	2	2	4	2	2	3	4	4	3	4	3	4	4	4	3
20	3	2	1	1	1	2	4	3	4	4	3	2	4	1	3	3	4	3	4	1
21	3	2	1	1	1	3	4	4	2	3	3	3	3	1	2	4	3	2	4	2
22	3	3	1	1	4	2	2	4	1	3	2	1	3	1	4	4	2	2	3	3
23	1	1	3	2	4	1	4	4	2	3	2	2	3	1	4	4	3	2	4	3
24	4	3	3	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	4	4
25	4	4	4	2	4	3	4	4	2	3	2	2	3	2	4	4	4	4	4	4
26	3	3	2	3	3	3	4	4	3	3	3	3	4	3	3	4	4	4	4	3
27	3	3	2	3	3	3	4	4	4	3	3	4	4	4	3	3	3	4	3	4
28	4	3	3	3	4	4	4	4	3	2	3	2	3	2	4	3	4	4	3	3
29	4	4	4	4	4	4	4	4	4	3	3	3	4	3	3	2	4	2	4	3
30	3	3	1	1	2	1	4	3	1	1	2	2	2	1	2	2	2	1	4	2
31	3	3	1	1	4	1	4	3	1	1	2	2	3	1	2	2	2	1	4	2
32	1	1	2	2	2	2	4	1	1	1	2	2	3	1	3	3	3	2	3	1
33	1	1	2	2	1	2	4	4	2	3	2	2	4	4	3	3	1	2	4	1
34	3	3	2	3	1	2	4	4	2	3	3	4	3	4	3	2	4	4	3	4
35	3	3	2	2	2	2	4	4	2	2	2	4	4	1	2	2	3	3	3	1
36	3	3	2	1	2	2	4	4	2	3	2	2	2	1	4	3	3	3	3	3
37	3	3	2	1	2	2	4	4	2	3	2	2	2	1	4	3	3	3	3	3
38	4	4	3	2	4	4	4	2	1	1	2	1	2	1	1	2	1	1	4	1
39	4	4	2	1	4	4	4	4	1	1	2	3	1	1	2	2	2	1	3	1
40	4	4	4	4	4	3	4	4	1	1	2	2	3	2	2	2	3	3	4	3
41	4	3	2	2	4	3	1	3	3	3	2	2	1	1	4	4	4	3	4	4
42	4	4	4	4	4	4	4	4	4	4	3	3	4	4	3	4	4	4	3	3
43	4	4	4	4	4	4	4	2	2	3	3	3	4	4	3	3	4	4	4	1
44	1	4	4	4	2	1	4	4	3	3	2	3	3	4	3	3	3	2	2	1
45	4	4	4	4	3	4	4	4	2	3	2	3	4	4	3	3	3	3	2	2
46	4	4	4	3	4	4	4	4	3	4	3	4	4	4	4	3	4	4	4	4
47	4	4	3	2	4	4	4	4	3	3	3	3	3	3	4	3	4	4	4	3
48	3	4	4	1	4	3	4	3	1	2	3	3	3	1	4	3	4	4	4	4
49	1	1	1	1	1	1	4	3	4	3	1	1	1	1	2	2	3	2	4	1
50	4	4	4	3	4	4	4	3	1	2	2	2	1	3	3	2	4	4	4	3

SUBJECT:	1		2		3		4		5		6		7		8		9		10	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
ITEM: 1	3	4	4	4	4	4	3	4	4	4	4	4	1	2	4	4	2	3	3	3
2	3	1	2	2	3	3	3	3	2	1	1	3	1	1	3	1	2	2	1	1
3	2	1	2	2	1	1	3	1	1	1	1	2	1	1	2	2	1	1	1	1
4	4	3	3	4	3	4	3	4	4	4	4	4	4	3	3	4	2	4	2	2
5	2	1	3	2	2	1	3	3	1	1	1	3	1	1	1	1	1	1	1	1
6	4	3	3	4	2	4	4	4	4	3	4	2	2	3	3	4	3	2	3	2
7	4	2	2	3	1	1	4	3	1	4	4	3	1	3	3	4	2	3	3	3
8	4		2	3	4	4	1	3	1	3	4	2	2	1	2	2	3	2	1	1
9	4	3	3	3	4	4	3	4	4	4	4	3	4	3	3	4	3	3	1	1
10	2	4	3	2	1	2	2	2	4	4	4	1	3	3	3	4	4	3	1	1
11	4	1	3	3	1	2	3	3	4	2	4	3	3	1	2	3	1	3	1	2
12	3	3	4	4	4	4	3	4	4	4	4	4	3	3	3	4	4	4	3	2
13	1	1	4	3	2	2	3	2	2	2	3	3	2	1	1	1	1	2	1	1
14	1	1	4	3	4	3	3	2	2	2	2	2	2	2	1	1	3	3	1	1
15	4	4	3	4	4	4	3	4	4	4	3	4	4	4	4	4	3	4	2	3
16	4	2	2	3	4	2	3	3	4	4	3	1	4	4	3	4	2	2	2	1
17	4	3	4	4	4	4	3	4	3	3	3	4	2	3	3	3	3	3	3	3
18	2	1	4	4	1	4	3	3	4	3	3	4	2	2	2	3	3	4	1	1
19	2	3	2	4	4	4	3	3	4	4	3	3	1	2	2	3	3	4	1	1
20	2	1	3	3	3	3	1	3	4	2	3	4	1	1	1	1	1	2	1	1
21	4	1	2	3	3	3	3	3	4	3	2	2	3	1	2	3	2	3	1	1
22	4	2	3	3	3	3	3	2	2	3	3	1	4	1	1	3	2	3	1	1
23	4	2	2	2	4	3	3	2	1	3	3	1	4	2	3	3	1	3	2	2
24	3	4	3	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	2	3
25	4	3	3	4	4	4	3	4	1	4	4	2	2	1	4	4	4	4	2	2
26	4	2	3	4	1	4	3	4	3	3	4	4	2	4	3	2	3	3	2	1
27	4	3	3	4	2	4	3	4	3	3	4	3	1	3	3	4	4	3	2	2
28	4	3	3	4	4	4	3	3	4	3	3	2	1	3	4	3	4	3	2	1
29	4	3	3	4	4	4	3	4	4	2	3	2	1	1	4	2	4	3	1	1
30	3	1	3	4	3	2	1	1	1	1	2	1	1	1	2	1	4	1	1	1
31	1	1	3	3	3	2	1	2	1	1	2	1	1	1	2	1	2	1	1	1
32	3	1	3	2	3	1	3	2	4	2	3	2	2	1	2	3	4	2	1	1
33	2	3	1	2	3	2	3	3	4	4	3	3	3	2	3	4	3	3	1	1
34	3	2	2	1	3	2	3	3	3	4	3	2	2	4	3	2	3	3	2	1
35	3	1	3	2	2	2	3	2	1	1	3	3	2	1	2	2	3	1	1	2
36	4	1	3	1	4	2	1	3	1	1	3	1	3	2	3	3	4	2	2	2
37	4	1	3	2	4	2	3	3	1	2	3	1	4	2	4	2	4	2	1	1
38	2	2	1	2	1	1	1	3	2	3	2	1	1	1	2	2	2	2	1	1
39	2	1	1	3	1	1	1	2	2	4	2	1	2	1	2	3	2	2	1	1
40	4	1	3	3	4	3	3	4	3	4	3	2	3	2	3	4	3	3	1	1
41	3	2	3	4	4	3	3	2	1	2	3	2	3	1	4	3	1	2	1	1
42	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	2	3	4	1	3
43	4	4	2	4	4	3	3	4	3	3	3	3	3	2	4	3	3	3	1	1
44	4	3	2	4	4	3	3	4	3	3	3	3	3	2	3	3	4	2	1	1
45	4	3	2	4	4	3	3	4	4	4	3	3	1	3	4	3	3	4	1	1
46	3	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	1	3
47	4	3	3	4	4	4	3	4	3	4	4	3	3	4	4	4	3	4	2	2
48	4	2	3	3	4	3	3	4	4	4	3	3	3	3	4	4	2	2	2	1
49	1	1	1	4	4	1	1	1	1	1	1	2	1	1	2	1	4	1	1	1
50	4	1	2	4	4	4	3	4	1	3	3	2	2	4	4	4	3	3	1	1

Raw "Pretest/Posttest" Data for the D Group
From Day One and Day Three Rating Scale Administrations

SUBJECT:	11		12		13		14		15		16		17		18		19		20	
ITEM:	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
1	4	3	2	4	4	3	3	4	4	4	2	4	4	3	4	3	4	3	2	2
2	1	3	3	2	2	3	3	2	1	2	3	2	3	1	2	2	2	1	1	1
3	1	3	1	2	1	1	1	2	1	1	3	2	3	3	1	1	1	1	1	1
4	3	4	3	4	4	4	4	4	4	4	3	4	4	1	4	3	4	4	3	4
5	1	1	2	2	1	2	1	1	1	1	3	2	3	4	4	1	1	1	1	1
6	2	4	3	4	3	4	4	4	4	4	3	3	3	4	4	3	4	3	3	2
7	2	4	3	3	4	1	4	3	4	4	3	3	2	1	4	3	3	2	4	4
8	1	3	1	3	4	3	3	3	3	3	3	3	4	4	4	3	4	3	4	4
9	2	4	3	3	4	3	3	3	3	4	3	3	4	4	4	3	4	2	4	4
10	4	3	4	3	3	2	3	2	3	4	3	3	2	1	4	3	2	3	4	4
11	2	3	1	3	4	2	4	3	3	3	3	3	3	3	1	3	2	2	3	1
12	4	4	1	4	4	4	4	4	4	4	3	4	3	4	4	4	2	4	4	3
13	1	2	1	2	3	2	3	3	1	4	2	3	4	1	4	2	2	1	2	1
14	1	2	1	3	4	1	2	3	1	2	3	2	3	2	4	3	1	3	2	2
15	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	3
16	2	3	4	3	3	3	2	3	2	4	4	4	3	4	1	3	3	3	4	4
17	3	4	4	3	4	3	4	4	3	3	4	4	3	3	4	3	1	3	4	1
18	1	3	3	3	3	3	3	3	3	3	3	3	4	2	4	3	1	3	2	1
19	4	3	2	3	3	3	3	3	3	3	3	3	4	2	4	3	3	3	1	1
20	2	3	2	3	3	3	3	2	1	2	3	3	3	1	4	2	1	1	1	1
21	4	3	2	3	4	3	3	3	2	3	3	2	3	1	4	2	1	1	4	4
22	3	3	2	3	3	3	3	2	1	3	3	3	3	1	4	2	1	1	4	1
23	1	3	4	2	3	3	4	2	4	3	3	3	3	2	4	2	2	3	4	4
24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4	4	4	4	4	4	4	2	4	4	3	4	3	1
26	1	3	2	4	3	3	3	3	3	4	3	4	3	4	4	2	3	3	4	3
27	3	4	3	4	4	4	3	3	3	4	3	4	3	4	4	3	4	4	4	4
28	3	4	4	4	2	4	3	3	3	4	2	4	3	2	4	2	2	3	4	1
29	4	4	4	4	4	4	4	4	3	2	3	4	2	1	4	3	2	3	4	4
30	1	2	1	4	1	2	2	1	1	1	2	1	2	1	1	2	1	1	4	4
31	1	1	1	3	1	2	1	2	1	1	2	1	2	1	4	2	1	1	4	4
32	1	2	1	1	2	1	1	2	1	2	3	2	3	1	1	3	1	1	1	1
33	2	3	2	2	4	2	2	3	1	4	3	3	3	2	1	3	2	2	2	2
34	2	4	1	1	4	2	3	3	3	4	3	3	2	4	3	2	3	3	3	3
35	1	3	1	2	4	2	3	2	1	1	3	3	3	1	1	2	1	1	1	1
36	1	4	2	1	1	2	3	3	2	1	3	3	3	1	4	3	1	1	1	1
37	1	3	2	2	2	2	3	3	2	2	3	3	4	1	4	3	1	1	1	1
38	2	2	3	3	1	1	3	2	1	3	2	3	2	2	1	2	2	1	3	3
39	1	3	3	3	1	1	4	3	1	4	2	3	3	2	1	3	1	1	2	2
40	1	4	3	3	2	3	3	4	1	4	3	4	3	2	1	3	2	3	1	1
41	3	3	3	4	2	3	3	3	1	3	3	3	4	1	4	2	1	3	1	1
42	4	4	3	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	3
43	2	3	2	4	4	4	3	4	1	4	4	4	4	2	1	3	3	3	3	3
44	3	3	3	4	4	4	3	4	1	3	3	3	2	4	2	3	3	2	2	2
45	3	4	3	4	3	3	3	4	2	4	3	3	2	4	1	3	3	3	3	3
46	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3
47	3	4	4	4	4	4	4	4	4	4	4	4	3	3	4	4	3	4	4	1
48	1	3	4	3	3	3	3	4	3	4	3	4	4	3	4	3	2	3	1	1
49	1	2	1	4	1	1	3	1	1	1	2	1	2	1	1	1	1	1	1	1
50	1	4	3	4	3	4	3	4	1	3	3	3	4	3	4	3	1	3	1	1

SUBJECT:	1		2		3		4		5		6		7		8		9		10	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
ITEM: 1	4	3	3	3	3	3	2	3	2	4	1	3	3	3	3	3	3	3	2	2
2	3	2	1	1	3	3	2	3	3	1	3	3	1	1	3	2	4	2	1	2
3	2	2	1	1	4	4	3	2	3	1	1	3	1	1	2	1	4	1	3	2
4	4	3	3	3	3	3	3	3	4	2	3	3	3	3	3	3	3	3	3	3
5	3	2	1	1	4	2	2	2	3	1	1	3	1	1	2	1	3	1	1	2
6	3	3	2	3	4	3	2	3	4	1	3	3	3	3	3	3	3	3	3	1
7	4	3	3	2	4	3	3	3	4	2	3	1	3	3	3	3	3	3	4	3
8	4	4	3	2	3	4	3	2	4	3	1	3	1	1	2	3	3	2	4	1
9	4	2	3	3	3	3	2	3	3	2	3	1	3	3	2	2	3	2	4	2
10	3	2	3	2	4	4	3	4	4	4	4	1	3	2	3	3	3	3	4	3
11	4	2	3	3	4	3	3	2	4	3	2	1	1	1	2	1	3	2	2	3
12	4	3	4	3	4	3	3	4	4	4	4	1	4	3	4	4	3	4	4	4
13	3	3	3	2	3	2	3	2	3	2	3	1	1	1	2	1	2	1	2	1
14	3	3	2	2	3	1	2	2	3	1	3	1	1	1	3	2	3	2	3	2
15	3	4	3	4	4	4	3	4	3	4	4	3	3	4	4	4	3	4	4	4
16	3	2	2	2	4	3	3	3	3	2	4	2	2	2	4	2	3	3	4	3
17	4	3	2	3	4	3	3	3	4	1	4	3	1	1	4	3	3	3	4	3
18	4	3	2	4	3	2	3	2	4	3	3	3	2	2	2	3	3	2	3	2
19	3	3	3	4	4	4	3	2	4	4	2	3	2	2	2	4	3	3	4	2
20	2	2	2	2	2	2	4	4	3	2	3	3	1	1	2	1	4	1	2	2
21	3	2	3	3	3	2	3	3	4	1	2	3	1	1	3	1	4	1	3	3
22	3	2	4	4	2	1	3	3	4	3	3	2	1	1	3	1	3	2	4	3
23	3	3	3	3	3	4	3	3	4	4	3	1	1	2	2	2	3	2	3	3
24	3	4	3	4	4	3	3	4	3	4	4	3	3	4	4	4	3	4	4	4
25	3	3	3	3	4	3	3	3	4	3	4	3	4	1	4	3	3	3	4	4
26	3	2	3	2	3	3	3	3	4	3	2	3	2	2	3	3	3	3	2	3
27	4	2	4	3	3	2	3	2	3	1	3	3	3	3	3	3	3	2	3	3
28	4	3	3	3	3	3	3	4	4	4	4	3	3	2	4	4	3	3	4	3
29	3	3	4	3	2	2	3	3	4	4	4	3	2	2	4	3	3	3	4	2
30	3	3	3	2	2	1	2	3	3	1	3	1	2	2	1	1	3	2	1	1
31	3	2	3	2	1	2	2	3	3	3	4	1	2	2	1	1	3	2	1	1
32	3	2	2	1	3	3	4	3	3	2	2	1	1	2	1	1	3	1	2	2
33	3	3	3	2	3	3	4	3	2	1	2	2	1	2	3	3	3	2	3	2
34	3	2	2	2	3	2	3	3	2	1	3	1	2	2	3	3	3	3	3	3
35	3	3	3	2	3	2	3	3	3	1	1	1	1	1	2	1	3	1	1	1
36	3	3	3	3	2	3	3	2	4	3	1	1	1	1	2	1	3	2	4	4
37	3	3	3	4	2	2	3	2	4	2	1	3	1	1	2	1	3	1	4	4
38	2	2	4	1	1	3	2	3	1	1	3	1	1	1	3	1	3	1	1	1
39	3	2	2	1	3	2	2	3	1	1	3	1	1	1	3	1	3	1	2	1
40	4	2	3	2	3	3	2	3	4	4	3	3	3	2	4	4	3	4	4	3
41	3	3	3	2	3	3	2	2	3	2	2	3	1	1	3	3	3	2	4	2
42	4	3	4	3	4	4	3	4	4	4	3	3	3	3	4	4	3	4	4	4
43	3	3	3	2	4	4	3	3	4	3	4	1	2	3	3	3	3	3	4	3
44	3	3	3	2	3	3	3	3	4	1	4	1	3	3	3	3	3	3	3	2
45	3	3	4	3	3	2	3	3	4	3	3	3	3	2	4	3	3	3	3	1
46	4	4	4	4	4	4	4	3	4	4	4	3	4	4	4	4	3	4	4	4
47	4	4	4	3	4	3	3	3	4	3	4	3	3	3	4	3	3	4	4	3
48	4	4	4	4	3	3	3	3	3	1	4	1	2	4	3	3	3	3	3	2
49	2	3	2	2	2	2	3	2	1	1	1	1	1	1	1	1	3	1	2	1
50	3	3	2	2	3	3	3	2	4	4	2	3	2	2	3	4	3	4	4	4

Raw "Pretest/Posttest" Data for the DS Group
From Day One and Day Three Rating Scale Administrations

SUBJECT:	11		12		13		14		15		16		17		18		19		20	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
ITEM: 1	4	3	2	2	4	4	3	3	3	4	4	3	3	1	4	2	2	4	3	2
2	4	3	1	1	1	2	1	2	2	1	3	1	3	2	4	3	1	4	1	1
3	4	4	1	1	1	2	1	3	1	1	2	1	2	3	4	1	1	4	1	1
4	4	3	3	3	4	3	4	3	3	2	4	3	4	3	4	4	1	4	3	3
5	1	4	1	1	1	1	1	3	2	1	2	1	2	3	1	2	1	3	1	1
6	3	3	2	2	3	1	2	3	2	1	4	3	4	3	4	4	2	4	3	1
7	3	3	1	3	1	1	2	3	2	1	3	1	4	4	4	3	2	4	1	2
8	3	3	1	1	3	2	1	4	3	1	4	2	4	3	4	2	1	4	2	1
9	3	3	2	2	4	2	4	3	3	3	4	3	4	2	4	4	2	4	4	2
10	4	3	3	3	3	1	1	3	4	1	3	4	4	4	4	4	1	3	2	1
11	3	3	1	1	1	2	3	4	2	1	2	1	4	3	4	3	1	4	2	2
12	3	3	3	4	3	3	4	4	4	3	4	4	4	3	4	3	2	4	2	4
13	1	4	1	1	1	1	3	4	1	2	2	1	4	3	4	3	1	4	2	2
14	4	3	1	1	2	1	1	3	1	2	2	1	4	1	4	2	1	3	2	2
15	4	3	4	4	4	4	4	3	2	3	4	4	4	3	4	4	2	4	4	4
16	3	3	2	3	2	1	3	3	2	1	3	3	4	3	4	4	1	3	2	1
17	3	3	1	1	3	3	4	4	3	3	4	1	4	2	4	4	1	4	4	2
18	3	3	2	1	3	3	3	4	3	3	3	1	4	2	4	3	1	4	2	1
19	4	3	2	1	4	3	4	4	3	3	3	1	3	2	4	3	2	4	4	3
20	3	4	1	1	1	1	1	4	1	1	2	1	3	2	4	2	1	4	2	1
21	4	3	1	1	2	1	1	3	2	2	4	2	4	2	4	3	2	3	1	2
22	2	3	1	1	3	1	3	3	2	1	4	2	4	3	4	3	2	3	2	1
23	3	3	1	1	1	1	4	3	4	3	4	4	4	3	4	3	2	4	4	2
24	3	3	4	3	4	4	4	3	4	3	4	4	4	3	4	3	2	4	4	3
25	3	3	3	2	4	2	4	3	4	1	4	4	4	3	4	3	1	4	2	2
26	3	3	1	1	4	2	4	3	4	2	3	3	4	2	4	3	1	4	2	2
27	3	3	3	1	3	2	1	3	3	2	3	2	4	4	4	4	1	4	4	1
28	4	3	1	1	4	2	4	4	4	3	3	3	4	3	4	4	2	3	2	2
29	3	3	3	2	3	1	1	3	3	1	4	3	4	1	4	3	1	3	3	1
30	2	3	3	1	2	1	1	3	2	1	3	1	2	1	4	2	2	3	1	2
31	4	3	2	1	2	1	1	3	2	1	3	2	3	1	4	2	2	2	1	2
32	3	3	1	1	1	1	1	3	2	1	2	1	3	2	4	2	1	3	3	1
33	3	3	1	1	4	3	1	3	2	1	2	2	3	2	4	2	1	2	2	1
34	3	3	3	3	3	2	4	3	2	1	2	3	4	2	4	4	1	4	4	3
35	4	3	1	1	3	1	1	3	3	1	2	1	4	2	4	3	2	3	3	2
36	3	3	1	1	3	1	3	3	3	1	2	2	4	3	4	3	1	4	4	2
37	3	3	1	1	2	1	3	3	3	1	3	2	4	3	4	3	1	2	2	2
38	4	3	2	2	1	1	1	2	4	1	1	4	4	1	1	3	1	2	1	1
39	2	3	1	1	1	1	1	2	4	1	2	2	3	1	2	2	1	2	1	1
40	3	3	3	3	2	2	3	3	4	3	4	2	4	3	4	3	1	4	2	3
41	1	3	1	1	1	1	3	3	3	2	4	2	4	2	4	3	1	4	1	1
42	3	3	4	4	4	4	3	3	3	3	4	4	4	4	4	3	1	4	3	3
43	4	3	4	4	4	1	1	3	2	2	2	3	4	3	4	4	1	4	1	3
44	2	3	3	2	2	1	2	3	3	1	3	3	4	3	4	4	1	2	2	1
45	3	3	3	3	3	3	2	3	2	1	3	3	4	2	4	4	1	3	2	2
46	3	3	4	4	4	4	4	4	3	3	4	4	4	3	4	3	2	4	4	4
47	3	3	4	2	4	2	3	3	3	3	4	4	4	3	4	4	2	4	2	2
48	4	3	3	1	4	2	1	3	3	1	4	4	4	3	4	3	1	4	4	2
49	2	4	1	1	3	1	1	2	1	1	3	1	2	1	2	2	1	3	1	1
50	3	3	3	2	3	1	2	3	3	1	4	2	4	2	4	3	1	4	4	2

Application of the Kolmogorov-Smirnov Test
To Test The Differences Between The Sample Groups
Using Day One Rating Scale Data

RS-Q Groups

Sum Score	f RS	f Q	cf RS	cf Q	K_c
191	0	1	20	20	0
189	0	1	20	19	1
177	1	0	20	18	2
176	1	0	19	18	1
175	1	0	18	18	0
174	0	1	17	18	1
170	0	1	17	17	0
168	0	1	17	16	1
166	1	0	17	15	2
164	1	0	16	15	1
161	0	1	15	15	0
160	1	0	15	14	1
159	0	1	14	14	0
157	1	0	14	13	1
156	1	0	13	13	0
155	0	1	12	13	1
152	0	1	12	12	0
150	1	0	12	11	1
148	0	1	11	11	0
147	1	0	11	10	1
145	0	1	10	10	0
144	2	0	10	9	1
143	2	2	8	9	1
138	0	2	6	7	1
133	1	0	6	5	1
131	1	0	5	5	0
127	0	1	4	5	1
123	2	2	4	4	0
118	0	1	2	2	0
116	0	1	2	1	1
115	2	0	2	0	2

Two-tailed test
$\alpha = .05$
K = 9
largest $K_c = 2$
N = 20

Kolmogorov-Smirnov Test Between Sample Groups
(Continued)

RS-D Groups

Sum Score	f RS	f D	cf RS	cf D	K_C
177	1	0	20	20	0
176	1	0	19	20	1
175	1	0	18	20	2
166	1	0	17	20	3
160	1	1	16	20	4
157	1	1	15	19	4
156	1	2	14	18	4
152	0	1	13	16	3
151	0	3	13	15	2
150	1	0	13	12	1
147	1	0	12	12	0
144	2	0	11	12	1
143	2	0	9	12	3
142	0	1	7	12	5
138	0	1	7	11	4
137	0	2	7	10	3
136	0	1	7	8	1
135	0	1	7	7	0
133	1	0	7	6	1
131	1	0	6	6	0
129	1	0	5	6	1
127	0	1	4	6	2
122	2	0	4	5	1
117	0	2	2	5	3
115	2	0	2	3	1
112	0	1	0	3	3
111	0	1	0	2	2
73	0	1	0	1	1

Two-tailed test
$\alpha = .05$
K = 9
largest K_C = 5
N = 20

Kolmogorov-Smirnov Test Between Sample Groups
(Continued)

RS-DS Groups

Sum Score	f RS	f DS	cf RS	cf DS	K_c
190	0	1	20	20	0
184	0	1	20	19	1
177	1	0	20	18	2
176	1	0	19	18	1
175	1	0	18	18	0
168	0	1	17	18	1
166	1	0	17	17	0
164	1	0	16	17	1
162	0	1	15	17	2
160	1	0	15	16	1
157	1	0	14	16	2
156	1	2	13	16	3
154	0	1	12	14	2
153	0	2	12	13	1
150	1	0	12	11	1
147	1	0	11	11	0
144	2	0	10	11	1
143	2	1	8	11	3
142	0	2	6	10	4
141	0	1	6	8	2
134	0	1	6	7	1
133	1	1	6	6	0
131	1	0	5	5	0
123	2	0	4	5	1
119	0	1	2	5	3
118	0	1	2	4	2
115	2	0	2	3	1
102	0	1	0	3	3
100	0	1	0	2	2
67	0	1	0	1	1

Two-tailed test
$\alpha = .05$
K = 9
largest K_c = 4
N = 20

Kolmogorov-Smirnov Test Between Sample Groups
(Continued)

Q-D Groups

Sum Score	f Q	f D	cf Q	cf D	K_C
191	1	0	20	20	0
189	1	0	19	20	1
174	1	0	18	20	2
170	1	0	17	20	3
168	1	0	16	20	4
161	1	0	15	20	5
160	0	1	14	20	6
159	1	0	14	19	5
157	0	1	13	19	6
156	0	2	13	18	5
155	1	0	13	16	3
152	1	1	12	16	4
151	0	3	11	15	4
148	1	0	11	12	1
145	1	0	10	12	2
143	2	0	9	12	3
142	0	1	7	12	5
138	2	1	7	11	4
137	0	2	5	10	5
136	0	1	5	8	3
135	0	1	5	7	2
127	1	1	5	6	1
123	2	0	4	5	1
118	1	0	2	5	3
117	0	2	1	5	4
117	0	1	1	3	3
116	1	0	1	2	2
111	0	1	0	2	2
73	0	1	0	1	1

Two-tailed test
$\alpha = .05$
K = 9
largest K_C = 6
N = 20

Kolmogorov-Smirnov Test Between Sample Groups
(Continued)

Q-DS Groups

Sum Score	f Q	f DS	cf Q	cf DS	K_c
191	1	0	20	20	0
190	0	1	19	20	1
189	1	0	19	19	0
184	0	1	18	19	1
174	1	0	18	18	0
170	1	0	17	18	1
168	1	1	16	18	2
162	0	1	15	17	2
161	1	0	15	16	1
159	1	0	14	16	2
156	0	2	13	16	3
155	1	0	13	14	1
154	0	1	12	14	2
153	0	2	12	13	1
152	1	0	12	11	1
148	1	0	11	11	0
145	1	0	10	11	1
143	2	1	9	11	2
142	0	2	7	10	3
141	0	1	7	8	1
138	2	0	7	7	0
134	0	1	5	7	2
133	0	1	5	6	1
127	1	0	5	5	0
123	2	0	4	5	1
119	0	1	2	5	3
118	1	1	2	4	2
116	1	0	1	3	2
102	0	1	0	3	3
100	0	1	0	2	2
67	0	1	0	1	1

Two-tailed test
$\alpha = .05$
K = 9
largest K_c = 3
N = 20

Kolmogorov-Smirnov Test Between Sample Groups
(Continued)

D-DS Groups

Sum Score	f D	f DS	cf D	cf DS	K_C
190	1	0	20	20	0
184	1	0	19	20	1
168	1	0	18	20	2
162	1	0	17	20	3
160	0	1	16	20	4
157	0	1	16	19	3
156	2	2	16	18	2
154	1	0	14	16	2
153	2	0	13	16	3
152	0	1	11	16	5
151	0	3	11	15	4
143	1	0	11	12	1
142	2	1	10	12	2
141	1	0	8	11	3
138	0	1	7	11	4
137	0	2	7	10	3
136	0	1	7	8	1
135	0	1	7	7	0
134	1	0	7	6	1
133	1	0	6	6	0
127	0	1	5	6	1
119	0	1	5	5	0
118	0	1	5	4	1
117	2	0	5	3	2
112	1	0	3	3	0
111	1	0	2	3	1
102	0	1	1	3	2
100	0	1	1	2	1
73	1	0	1	1	0
67	0	1	0	1	1

Two-tailed test
$\alpha = .05$
K = 9
largest K_C = 5
N = 20

SUBJECT:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTAL SUM SCORE
ITEM: 1	3	4	3	2	4	3	4	2	2	4	4	3	4	3	4	3	1	2	2	3	60
2	3	4	4	1	4	3	2	2	3	2	2	3	4	3	3	4	4	2	2	3	58
3	3	4	2	1	3	3	2	2	3	1	1	2	3	3	3	4	1	2	2	3	48
4	2	4	4	3	3	3	4	3	2	4	2	3	4	3	3	4	4	3	3	4	65
5	2	3	3	2	3	4	3	1	3	3	1	3	3	3	3	4	1	2	2	3	52
6	3	3	3	3	3	3	4	2	3	4	3	2	3	3	3	3	3	3	3	3	60
7	4	4	4	3	3	3	3	2	3	4	3	3	4	4	4	4	3	3	2	4	67
8	4	3	3	2	3	3	4	1	2	4	1	3	4	2	4	3	3	2	2	3	56
9	3	4	2	2	3	4	4	2	3	4	1	3	4	3	4	4	3	3	2	1	58
10	4	3	4	4	3	3	3	4	3	4	2	3	4	3	4	4	3	3	2	2	65
11	4	4	4	2	3	3	3	2	3	4	1	3	4	4	4	4	1	3	4	4	64
12	4	4	4	4	4	3	4	4	3	4	2	4	4	4	4	4	4	4	4	4	76
13	3	4	3	1	3	2	3	2	3	4	1	3	4	3	3	4	1	3	4	4	58
14	3	4	3	3	3	3	3	4	2	4	2	3	4	3	4	4	1	4	4	4	65
15	4	4	4	4	3	3	4	4	3	4	2	4	4	4	4	4	4	4	4	4	75
16	4	3	2	4	3	2	3	3	3	4	2	3	4	3	3	3	3	3	3	2	60
17	4	3	3	3	3	3	4	3	3	4	2	3	4	3	4	4	3	3	4	3	66
18	2	3	3	1	3	3	4	1	3	4	2	2	3	2	3	3	3	1	3	3	52
19	3	3	4	2	4	3	4	1	3	4	2	3	3	2	3	3	3	1	3	3	57
20	2	4	3	2	4	3	3	2	2	4	2	2	4	2	3	4	3	2	4	3	58
21	3	3	3	2	4	3	3	1	3	4	2	2	3	2	3	4	1	2	4	3	55
22	2	3	3	2	4	3	3	1	3	4	2	2	3	2	3	3	1	2	4	1	51
23	2	3	3	3	4	3	3	1	3	3	3	2	3	2	3	3	1	1	3	4	53
24	4	3	4	4	4	3	4	4	3	4	4	4	4	4	4	4	4	4	4	4	77
25	3	3	3	3	4	3	4	1	3	4	3	3	4	3	4	4	1	4	4	3	64
26	3	3	3	2	4	4	3	2	3	4	1	2	3	3	3	4	1	2	3	4	57
27	4	3	2	2	4	3	3	2	3	4	2	3	4	3	3	4	4	3	2	4	62
28	3	4	3	2	3	3	3	2	3	4	2	3	4	3	3	4	2	2	2	4	59
29	4	4	1	2	3	3	4	1	3	4	2	2	3	2	4	3	4	4	3	2	58
30	1	3	1	1	3	3	2	1	3	3	2	2	3	2	3	3	1	1	2	2	42
31	1	3	1	1	3	3	3	1	3	2	2	2	3	2	3	3	1	1	2	2	42
32	1	3	1	2	3	3	3	1	3	4	1	4	3	2	4	4	3	2	2	3	52
33	3	3	2	3	4	3	4	3	3	4	2	3	3	3	4	3	2	2	3	3	60
34	2	3	4	2	3	3	4	2	3	4	1	4	3	3	4	3	4	2	2	3	59
35	1	2	1	1	3	2	3	2	3	3	2	2	3	1	3	3	4	2	2	2	45
36	2	3	3	2	3	3	4	2	3	3	2	2	3	3	4	3	1	2	2	2	52
37	2	3	3	2	3	3	4	1	2	3	1	2	3	3	4	3	1	2	2	3	50
38	2	2	3	1	3	2	3	3	3	2	1	3	3	3	4	4	1	4	3	4	54
39	2	2	2	1	3	2	3	3	3	1	1	3	3	3	4	4	4	4	2	4	54
40	4	4	4	4	3	3	3	4	3	2	2	4	4	4	4	4	2	4	3	4	69
41	3	3	1	1	3	3	3	1	3	3	1	2	3	3	4	3	1	2	1	4	48
42	4	4	4	4	3	3	4	4	3	4	2	4	4	4	4	4	4	3	3	4	73
43	4	4	3	3	4	3	4	3	3	3	2	3	4	4	4	4	4	3	2	4	68
44	3	4	1	1	4	2	3	2	3	3	2	4	4	3	4	3	4	1	2	2	55
45	3	4	4	4	3	3	3	2	3	4	2	4	4	4	4	4	3	4	4	4	70
46	4	4	4	4	4	3	4	4	3	4	3	4	4	4	4	4	3	4	4	4	76
47	4	4	3	4	4	3	4	3	3	4	3	4	4	4	4	4	2	4	2	4	71
48	2	4	2	3	4	3	4	1	3	4	3	3	4	3	3	3	1	3	2	3	58
49	1	3	1	1	4	2	2	1	2	3	1	3	3	2	3	3	2	1	1	2	41
50	3	4	4	3	4	3	3	4	3	3	3	3	4	4	4	4	1	4	4	3	68

Raw "Test" Data for the RS Group
and Total Sum Scores

SUBJECT:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTAL SUM OF PLACEMENT
ITEM: 1	7	7	6	8	7	9	8	5	3	7	8	6	5	7	6	7	9	6	9	5	135
2	3	6	3	7	4	3	5	9	5	6	5	5	2	2	4	4	4	1	1	4	83
3	2	5	1	8	3	3	4	8	5	4	4	5	2	1	5	2	2	2	2	4	72
4	8	6	6	5	7	7	6	7	5	8	5	9	7	8	4	7	7	5	6	5	128
5	3	5	3	9	3	3	5	7	5	1	4	5	2	1	4	4	2	2	1	5	74
6	7	5	3	7	6	8	6	3	5	9	4	5	6	8	5	5	7	5	6	4	114
7	7	4	3	8	5	4	6	2	1	7	3	5	4	7	5	6	5	5	2	3	92
8	5	4	4	5	3	3	7	6	6	1	3	5	6	7	4	4	5	5	6	6	95
9	6	5	6	4	7	5	7	5	4	4	3	9	5	6	1	5	7	5	5	6	105
10	2	3	4	5	3	5	5	5	5	6	3	5	3	7	7	8	5	7	2	3	93
11	3	4	7	5	4	6	4	4	4	3	4	4	6	7	7	2	3	4	2	5	88
12	7	5	7	6	8	9	2	5	8	7	8	7	9	9	7	9	7	7	3	7	137
13	2	4	4	4	2	4	4	5	4	3	4	4	5	2	6	2	2	4	3	5	73
14	3	5	4	6	1	2	5	4	1	3	2	4	6	8	4	2	4	2	3	4	73
15	9	6	7	7	8	6	5	4	9	6	7	8	7	3	8	6	8	8	8	7	137
16	4	4	4	9	5	2	9	5	6	5	4	4	5	4	8	8	4	8	6	3	107
17	4	6	6	6	7	6	6	4	4	8	5	5	5	8	6	6	6	7	7	7	119
18	5	5	7	6	8	4	1	5	3	7	5	4	5	3	1	6	7	7	8	4	101
19	4	4	6	6	6	8	6	6	3	6	7	5	5	4	2	5	5	5	7	5	105
20	5	4	2	7	2	5	4	7	2	8	4	4	4	7	2	5	3	4	3	5	87
21	5	3	4	8	3	5	4	3	4	4	7	4	5	5	8	4	4	5	6	4	95
22	5	3	5	6	5	2	6	6	7	5	5	6	7	2	4	3	3	7	7	5	99
23	4	3	4	5	4	4	4	1	6	5	6	6	7	2	6	4	5	9	7	4	96
24	9	8	6	5	8	8	9	4	8	6	9	6	7	9	8	9	8	8	7	6	148
25	6	7	7	5	6	5	2	6	7	5	8	4	4	4	6	6	6	5	4	7	110
26	6	2	4	5	5	7	7	8	6	2	5	3	3	4	9	6	5	5	7	5	104
27	8	3	6	5	6	6	5	2	4	2	6	6	3	3	5	6	5	5	6	6	98
28	5	8	8	6	3	7	5	3	6	3	6	6	5	4	7	7	7	7	6	7	116
29	5	9	2	2	7	6	6	9	7	9	4	7	7	6	7	8	3	4	5	8	121
30	4	2	5	1	5	6	4	8	3	4	1	3	1	4	2	1	2	2	4	3	65
31	3	1	5	1	5	3	3	7	3	5	2	3	1	4	2	1	3	3	4	3	62
32	1	6	5	4	5	5	3	6	2	2	3	3	3	4	3	4	4	4	3	6	76
33	5	5	5	4	7	4	8	5	2	6	5	3	6	5	5	5	4	3	3	3	93
34	7	5	5	4	6	4	8	5	2	4	5	6	4	5	4	3	4	4	6	4	95
35	2	2	2	4	4	3	3	4	3	4	2	3	4	3	7	3	4	6	4	2	69
36	4	7	5	4	6	5	3	2	5	3	6	2	4	3	5	3	6	6	9	5	93
37	6	6	5	4	6	5	5	3	5	4	5	7	4	6	3	3	6	6	8	2	99
38	5	5	2	3	1	1	3	1	5	5	3	2	3	3	5	5	1	3	4	2	62
39	5	2	1	2	2	4	3	6	4	5	2	2	2	5	5	3	1	1	4	2	61
40	6	7	5	3	5	6	6	2	8	5	6	8	8	5	5	7	6	4	5	9	117
41	6	3	6	3	4	5	2	3	5	6	6	2	5	5	3	4	5	6	8	8	95
42	7	8	8	3	9	7	7	4	8	7	9	7	8	5	3	6	8	8	5	8	135
43	4	7	8	3	4	2	5	6	7	2	7	8	6	6	3	7	8	6	4	6	109
44	3	4	7	2	4	4	7	2	6	4	6	6	4	5	6	7	3	3	5	6	94
45	4	8	8	2	6	7	7	7	6	8	6	7	6	5	6	8	6	4	4	1	116
46	6	9	9	3	9	8	8	8	9	7	8	7	8	6	9	5	9	9	5	8	150
47	8	7	9	7	5	7	5	5	7	3	5	8	8	6	6	5	6	6	5	6	125
48	8	6	5	8	4	5	1	6	6	5	7	1	6	6	5	5	5	6	5	6	104
49	1	1	3	7	2	1	2	7	4	6	1	1	3	6	3	4	5	3	5	1	66
50	6	6	3	5	5	6	4	4	7	5	7	5	9	5	4	5	6	3	5	9	109

Raw "Test" Data for the Q Group
and Total Sum of Placement Values

SUBJECT:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	MEDIAN
ITEM: 1	3	4	3	4	4	4	1	4	3	2	4	2	3	4	2	4	4	3	3	3	3
2	2	3	3	3	1	3	1	3	1	2	1	3	2	3	3	1	2	3	3	1	2
3	2	2	1	3	1	1	2	1	1	1	1	1	1	1	1	3	3	1	1	1	1
4	3	4	3	3	4	4	3	4	2	2	4	3	4	4	4	3	4	4	4	3	4
5	2	3	3	2	1	1	1	1	1	1	2	1	1	1	1	3	4	2	4	1	1
6	4	3	2	4	4	4	3	2	3	3	3	2	4	3	4	3	4	2	4	3	3
7	4	2	1	4	1	4	1	3	3	2	3	2	4	4	4	3	2	4	3	4	3
8	4	2	4	1	1	4	2	2	1	3	1	1	4	3	3	3	4	4	3	4	3
9	3	4	2	4	4	4	3	2	1	2	2	2	4	2	2	2	4	2	4	4	2.5
10	2	3	2	1	4	4	3	3	4	1	4	4	3	3	3	3	2	4	2	4	3
11	4	3	1	3	4	4	2	3	1	1	1	2	4	4	3	3	3	1	4	3	3
12	3	4	3	4	4	4	3	3	4	3	4	1	4	4	4	3	4	3	3	4	4
13	2	4	2	3	3	2	2	1	1	1	1	1	3	3	1	2	4	3	2	2	2
14	2	4	4	3	2	2	2	1	3	1	1	1	2	4	3	1	4	3	3	2	2
15	3	4	4	3	3	4	4	4	2	3	4	4	3	4	4	4	4	4	3	4	4
16	4	2	3	4	3	4	3	4	2	2	2	4	2	3	2	4	3	1	3	4	3
17	4	4	4	3	3	3	3	2	3	3	3	4	4	4	4	3	4	4	3	4	3.5
18	2	4	1	3	4	3	2	2	3	1	1	3	3	3	3	3	4	4	3	2	3
19	2	2	3	4	4	3	1	2	3	1	4	2	3	3	3	3	4	4	3	2	3
20	3	2	2	1	4	3	1	1	1	1	2	2	3	3	1	3	3	4	3	2	2
21	4	2	3	3	4	2	2	3	2	1	2	4	3	4	2	3	3	4	2	4	3
22	3	4	3	3	4	2	4	1	2	1	2	3	3	3	1	3	3	4	2	4	3
23	4	2	4	3	3	1	3	4	2	1	1	4	3	4	4	3	3	4	3	4	3
24	3	3	4	3	3	4	4	4	3	2	4	4	4	4	4	4	4	4	4	4	4
25	4	3	4	3	4	1	2	4	2	4	4	4	4	4	4	4	4	4	4	3	4
26	3	4	1	3	4	3	2	3	2	3	2	1	3	3	3	3	3	4	3	4	3
27	4	3	3	2	4	3	1	3	4	2	3	3	3	4	3	3	3	4	3	4	3
28	4	3	3	4	4	3	1	4	4	2	4	3	2	3	2	3	3	4	3	4	3
29	4	3	4	3	4	3	1	4	4	1	4	4	4	4	3	3	2	4	4	4	4
30	3	3	3	1	1	2	1	2	4	1	1	1	1	2	2	1	1	1	2	4	1.5
31	3	1	3	1	1	2	1	2	2	1	1	1	1	1	2	1	4	1	3	4	1
32	3	3	2	3	4	3	2	2	4	1	1	1	1	1	3	1	3	1	3	2	2
33	2	1	2	3	4	3	3	3	3	1	2	2	2	4	3	1	3	1	4	2	2.5
34	2	3	3	3	3	3	3	2	2	3	1	2	4	3	3	3	3	2	3	3	3
35	3	3	3	2	3	1	2	2	3	1	1	1	4	3	1	3	3	1	1	2	2
36	4	3	4	1	3	1	3	3	4	2	1	2	1	3	2	3	4	2	1	1	2.5
37	4	3	3	4	1	3	4	4	4	1	1	2	2	3	2	3	4	4	3	1	3
38	2	1	1	1	2	2	2	1	2	1	2	3	1	3	2	1	1	2	3	3	2
39	2	1	1	1	2	2	2	2	2	1	1	3	1	4	2	1	1	1	2	1	1.5
40	3	4	3	4	3	2	3	3	1	1	1	3	2	3	1	3	3	1	1	1	3
41	3	3	4	3	3	2	4	3	3	1	3	3	2	3	1	3	4	4	4	1	3
42	4	4	4	3	4	3	4	4	3	1	3	4	3	4	4	4	4	4	4	4	4
43	2	4	4	3	3	3	4	3	3	1	2	2	3	4	1	4	4	1	3	3	3
44	3	2	4	3	3	3	3	3	4	1	3	3	3	4	3	1	2	2	3	2	3
45	3	2	4	3	3	4	1	4	3	1	3	3	3	3	3	2	1	2	4	3	3
46	4	3	4	3	4	4	4	4	3	1	4	4	4	4	4	4	4	4	4	4	4
47	4	3	4	3	4	3	3	4	3	1	4	3	4	4	4	4	3	4	4	4	4
48	4	3	3	4	3	4	3	4	2	2	4	1	3	3	3	3	4	4	4	1	3
49	1	1	4	3	1	1	1	2	4	2	1	1	3	1	2	1	2	1	1	1	1
50	4	2	4	3	3	1	2	4	3	1	1	3	3	3	1	3	4	4	2	1	3

Round One Raw "Test" Data for the D Group
and Median Values

SUBJECT:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	MEDIAN
ITEM: 1	3	3	4	3	4	4	1	3	3	3	4	1	4	4	4	2	4	2	3	2	3
2	2	2	3	2	2	3	1	2	2	1	1	2	1	3	2	1	2	3	1	1	2
3	2	2	4	1	1	3	1	1	1	1	1	1	1	2	1	1	2	3	1	1	1
4	4	4	4	4	4	4	4	4	4	2	3	3	4	4	4	3	3	3	4	4	4
5	1	2	1	2	1	3	1	1	2	1	1	1	1	2	1	1	2	3	1	1	1
6	4	3	3	3	4	3	2	3	4	2	3	4	4	3	3	3	2	4	2	3	3
7	4	3	1	3	2	3	1	3	2	3	2	4	4	3	3	3	2	4	2	4	3
8	3	1	4	3	1	3	2	3	3	1	2	1	4	3	3	3	3	4	4	4	3
9	4	1	3	3	4	4	4	3	3	1	3	4	4	4	4	3	3	3	3	3	3
10	2	2	1	3	4	2	3	3	3	1	4	4	3	3	3	3	2	4	3	4	3
11	4	3	3	3	4	3	3	3	3	2	1	1	3	3	3	3	3	3	2	3	3
12	4	4	4	4	4	4	3	4	4	2	3	3	4	4	3	4	4	3	4	3	4
13	2	2	4	2	2	3	2	2	2	1	1	1	1	3	1	1	2	2	2	1	2
14	1	1	4	2	2	1	2	1	2	1	1	1	4	2	2	3	2	3	3	3	2
15	4	4	4	4	4	4	4	4	4	3	4	3	4	3	4	4	4	3	4	4	4
16	3	2	2	3	4	4	4	3	3	2	1	4	3	3	3	3	3	3	3	3	3
17	4	3	3	3	3	3	2	3	4	3	3	2	2	4	3	1	3	4	2	1	3
18	3	3	4	3	4	2	2	3	3	2	1	1	4	4	3	3	3	2	2	1	3
19	4	4	4	3	4	2	1	3	3	1	3	1	4	3	3	3	3	3	3	1	3
20	2	3	4	3	3	3	1	2	2	1	1	1	2	2	2	1	2	3	1	1	2
21	3	2	4	3	4	3	3	2	3	1	2	2	3	3	2	3	3	2	1	4	3
22	3	2	4	3	2	2	4	2	3	1	3	4	3	3	2	3	3	3	1	2	3
23	3	2	4	3	1	2	4	3	3	2	2	4	3	3	2	3	3	3	2	3	3
24	4	4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	3	4	4	4
25	4	3	4	4	2	3	2	4	4	3	4	4	4	4	4	4	4	4	4	2	4
26	3	1	3	3	3	3	2	3	4	1	3	1	4	3	4	3	3	3	3	3	3
27	4	3	4	3	3	4	1	3	3	1	3	4	3	3	4	3	3	4	3	4	3
28	4	2	3	3	4	2	1	3	3	3	3	3	3	3	4	3	3	4	3	3	3
29	4	4	4	4	4	3	1	4	4	1	3	2	2	3	4	4	3	3	3	4	3.5
30	2	4	2	2	1	2	1	1	1	1	1	1	1	2	1	2	1	2	1	4	1
31	1	4	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	4	1
32	2	2	3	2	4	4	2	2	2	1	1	1	1	2	2	2	2	2	1	2	2
33	2	2	3	3	4	3	3	2	3	1	2	4	3	2	1	3	2	3	3	3	3
34	3	1	3	3	3	2	2	3	3	2	2	4	3	3	3	3	3	3	3	3	3
35	3	2	2	2	1	2	2	1	2	3	1	1	1	2	1	1	1	3	1	1	1.5
36	3	2	3	3	1	3	3	2	2	2	1	3	1	2	2	2	2	4	1	1	2
37	3	1	2	3	2	2	4	3	3	2	1	4	2	3	2	3	3	4	2	1	2.5
38	2	1	1	3	2	2	1	1	2	1	2	2	3	2	1	2	2	1	2	2	2
39	2	1	1	2	2	1	2	1	2	1	1	2	2	3	1	2	2	2	1	2	2
40	3	2	4	3	3	2	3	3	3	1	1	3	3	3	3	3	3	4	2	1	3
41	3	2	4	3	1	3	3	3	3	1	3	3	1	3	3	3	3	2	1	1	3
42	4	4	4	4	4	3	4	4	4	2	4	3	4	4	4	4	4	3	4	2	4
43	3	3	3	4	3	2	3	3	4	1	3	2	2	4	3	3	3	3	3	2	3
44	4	1	4	3	3	3	3	2	4	1	2	2	4	3	2	3	3	4	3	2	3
45	3	2	3	4	4	3	1	4	3	1	3	1	4	3	2	3	3	3	3	3	3
46	4	4	4	4	4	3	4	4	4	3	4	3	4	4	4	4	4	4	4	3	4
47	4	3	3	4	4	4	4	4	4	3	4	3	4	4	3	3	4	4	4	2	4
48	3	2	4	3	4	2	3	3	3	1	3	4	3	4	3	3	3	3	2	2	3
49	2	4	1	2	1	1	1	1	2	1	1	1	1	2	1	2	1	2	1	1	1
50	3	3	4	3	2	3	2	3	3	1	1	3	3	3	3	2	3	4	2	1	3

Round Two Raw "Test" Data for the D Group
and Median Values

SUBJECT:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTAL SUM SCORE
ITEM: 1	3	4	4	4	4	4	2	4	3	4	3	3	3	4	1	2	4	3	3	2	64
2	3	2	3	2	1	3	1	1	2	1	1	2	2	3	4	1	2	2	1	1	38
3	2	2	1	2	1	2	1	2	1	1	1	1	2	2	3	1	2	1	1	1	30
4	4	4	4	4	4	4	3	4	4	3	2	4	4	4	4	3	3	3	4	4	73
5	2	2	2	2	1	3	1	1	1	1	1	1	2	2	3	1	2	1	1	1	31
6	4	4	4	4	4	2	4	4	3	3	3	4	3	3	2	3	3	3	3	3	66
7	4	3	1	3	4	2	4	4	3	2	3	3	2	3	4	3	2	4	2	4	60
8	3	3	4	3	3	4	1	2	3	1	1	2	3	3	4	3	3	3	3	4	56
9	4	3	4	4	4	2	4	4	3	3	1	3	4	3	3	3	3	3	3	4	65
10	2	2	2	2	4	1	4	4	3	4	1	4	3	3	2	3	2	3	3	4	56
11	3	3	2	3	2	3	1	3	3	1	1	2	3	3	2	3	3	3	2	3	49
12	4	4	4	4	4	4	3	4	4	4	2	4	4	4	4	4	4	4	3	3	75
13	2	2	2	3	2	3	1	1	2	1	1	1	2	2	1	1	2	2	1	1	33
14	2	3	1	3	2	2	2	1	3	1	1	1	2	2	1	3	2	3	1	2	38
15	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	3	78
16	3	3	2	3	4	1	4	4	2	2	1	3	2	3	2	3	3	3	3	3	54
17	4	4	4	4	3	4	3	2	3	3	3	3	4	3	3	1	3	3	3	1	61
18	3	4	4	4	3	4	2	2	4	1	1	3	4	4	2	3	3	3	3	1	58
19	3	4	4	4	4	3	2	2	4	4	1	3	4	4	2	3	3	3	3	1	61
20	4	3	3	3	2	4	1	1	2	1	1	1	2	2	1	1	2	1	1	1	37
21	3	3	3	3	3	2	1	3	3	2	1	2	2	2	2	1	3	2	1	4	46
22	4	3	3	2	3	1	1	3	3	3	1	2	2	2	2	3	3	3	1	2	47
23	3	2	3	2	3	1	2	4	3	2	2	4	3	2	3	3	3	3	3	4	55
24	4	4	4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	4	4	78
25	4	4	3	4	4	2	1	4	4	3	2	4	1	4	3	4	4	4	3	2	64
26	3	4	4	4	4	4	4	2	3	2	1	3	4	3	4	3	3	3	3	3	64
27	4	4	4	3	3	3	4	4	3	3	2	3	4	3	4	3	3	4	3	4	68
28	4	4	4	3	4	2	2	3	3	3	2	4	3	3	3	3	3	3	2	3	61
29	4	4	4	4	2	2	1	2	3	3	1	4	4	3	3	4	3	2	3	4	60
30	2	3	2	1	1	1	1	1	1	1	1	1	2	2	2	1	1	2	1	4	31
31	1	1	2	2	1	2	1	1	2	1	1	1	2	2	2	1	1	3	1	4	32
32	3	2	1	2	2	4	1	2	2	1	1	1	2	2	2	1	2	3	1	2	37
33	3	2	1	3	4	3	2	3	3	2	1	2	3	3	3	3	3	2	3	3	52
34	4	2	2	3	4	2	4	4	3	3	1	2	3	3	4	3	3	2	3	3	58
35	3	1	2	2	1	3	1	2	1	1	2	1	1	2	2	1	2	2	1	1	32
36	4	2	2	3	1	2	1	3	2	1	2	2	1	2	3	2	2	3	1	1	40
37	2	3	1	3	3	1	1	2	2	3	1	4	2	2	1	1	2	3	1	2	40
38	3	3	2	3	2	2	2	3	2	1	1	2	1	2	2	3	2	3	1	1	41
39	3	3	1	2	4	1	1	2	2	1	1	3	2	3	1	2	3	3	1	2	41
40	4	4	3	4	4	2	2	3	3	2	1	3	3	3	2	3	3	4	3	1	57
41	4	4	3	3	3	2	1	4	3	3	1	3	2	2	2	3	3	3	2	1	52
42	4	4	4	4	4	4	4	3	4	4	2	4	4	4	4	4	4	4	4	2	75
43	4	4	4	4	4	2	2	2	4	3	1	2	4	3	3	3	3	3	3	3	61
44	4	4	4	4	4	4	4	3	3	3	1	3	4	3	4	3	3	3	3	2	66
45	4	4	3	4	4	1	4	3	3	3	1	4	4	3	2	3	3	3	3	3	62
46	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	3	4	78
47	4	4	4	4	4	3	3	4	4	3	2	4	3	4	4	3	4	3	3	2	69
48	3	3	3	4	4	2	3	4	2	2	1	4	3	3	2	3	3	3	3	1	56
49	2	4	1	1	1	2	1	1	1	1	1	1	1	2	2	1	1	1	1	1	27
50	4	4	4	4	3	2	3	4	4	1	1	3	3	3	4	3	3	3	3	1	60

Round Three Raw "Test" Data for the D Group
and Total Sum Scores

RANK	1	2	3	4	5	6	7	8
ITEM 4			11	111	11	111	~~1111~~ 11	111
12	111	1111	~~1111~~ 1	1	111	1	1	1
15	1	~~111~~	111	~~111~~	~~111~~	1		
24	~~1111~~ 1	~~111~~	111	111	1		1	
27		1		11	1	111	1111	~~1111~~ 1111
42			111	11	~~1111~~ 111	~~1111~~ 1	1	
46	~~1111~~ 1111	111	111	11		11	1	
47		11		11		1111	~~111~~	~~1111~~ 11
	8	7	6	5	4	3	2	1

Item Number	Weighted Value
4	61
12	111
15	109
24	130
27	47
42	80
46	129
47	53

Round Four Raw "Test" Data for the D Group
and Weighted Values

Card Number	Round 1	Round 2	Round 3	Round 4
1	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	X
2	𝍸𝍸𝍸𝍸			
3	𝍸𝍸𝍸𝍸𝍸			
4	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	11111111	
5	1111			
6	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸		
7	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	11		
8	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	1111	
9	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸		
10	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸			
11	𝍸𝍸𝍸𝍸𝍸𝍸			
12	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	X
13	𝍸𝍸𝍸𝍸𝍸			
14	𝍸𝍸𝍸			
15	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	X
16	𝍸𝍸𝍸𝍸𝍸𝍸			
17	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸1111	
18	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸		
19	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸1111	
20	𝍸𝍸𝍸𝍸𝍸			
21	𝍸𝍸𝍸𝍸𝍸			
22	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	1111		
23	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸			
24	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸.	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	X
25	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	
26	𝍸𝍸𝍸𝍸𝍸𝍸𝍸			
27	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸			
28	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸1111		
29	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸		
30	𝍸𝍸𝍸𝍸			
31	1111			
32	𝍸𝍸𝍸			
33	𝍸𝍸𝍸111			
34	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸			
35	𝍸𝍸𝍸𝍸𝍸			
36	𝍸𝍸𝍸1111			
37	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸			
38	111			
39	1111			
40	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸11	
41	𝍸𝍸𝍸1111			
42	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸	X
43	𝍸𝍸𝍸𝍸𝍸𝍸𝍸1111	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸11	
44	𝍸𝍸𝍸𝍸𝍸𝍸𝍸			
45	𝍸𝍸𝍸𝍸𝍸𝍸𝍸111	𝍸𝍸𝍸𝍸𝍸𝍸𝍸11	𝍸𝍸𝍸𝍸𝍸𝍸𝍸111	X
46	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸111	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸111	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	X
47	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸𝍸	𝍸𝍸𝍸𝍸𝍸𝍸𝍸11	X
48	𝍸𝍸𝍸𝍸𝍸𝍸𝍸1111	𝍸𝍸𝍸1111		
49	1111			
50	𝍸𝍸𝍸𝍸𝍸𝍸𝍸111	𝍸𝍸𝍸𝍸𝍸𝍸𝍸111	𝍸𝍸𝍸1111	

Raw "Test" Data for the DS Group

RANK	1	2	3	4	5	6	7	8
ITEM 1	11	1	11	~~1111~~	1	11	1111	111
12		~~1111~~	~~1111~~ 1	1	11	~~1111~~	1	
15	1	111	11	~~1111~~	~~1111~~	11	1	1
24	11	~~1111~~ 1	11	111	11	11	1	11
42	11		1111	111	~~1111~~	~~1111~~	1	
45		1	11		111	11	11	~~1111~~ ~~1111~~
46	~~1111~~ ~~1111~~ 11	11	1	1	1	1	11	
47	1	11	1	11	1	1	~~1111~~ 111	1111

Item Number	Weighted Value
1	81
12	101
15	95
24	103
42	92
45	51
46	132
47	65

Round Four Raw "Test" Data for the DS Group
and Weighted Values

Calculations for Chi-Square Contingency Table

to Test the Difference in Items Per Content Category Between the

Priority Lists of the Four Sample Groups and All Groups Combined

	$f \div N_c$				$\Sigma(f \div N_c)$	$\frac{\Sigma(f \div N_c)}{n_r}$
	RS	Q	D	DS		
I	0.000	0.125	0.500	0.00	0.625	.208
II	3.125	4.500	3.125	4.50	15.250	.693
III	1.125	0.125	0.125	0.50	1.875	.267

$$\Sigma \frac{\Sigma(f \div N_c)}{n_r} = 1.168$$

$$-1$$

$$\text{X } N = .168$$

$$\text{X } 32$$

$$\chi^2 = 5.376$$

$$p < .50$$

Level of Significance: $p \leq .05$
Degrees of freedom = 6

Raw Data and Intermediate Calculations for the Absolute Units Change From Day One to Day Three Administration of the Written Rating Scale For the Four Sample Groups

RS Group	Q Group	D Group	DS Group
10	9	16	16
14	9	23	20
15	12	25	29
16	17	29	29
17	19	30	29
18	20	33	30
18	21	34	30
20	21	35	32
22	24	37	37
23	24	40	43
25	24	43	45
25	28	44	47
25	31	44	47
26	32	45	49
26	33	45	54
27	37	46	55
32	38	57	56
39	44	59	64
44	50	61	65
52	57	66	108
ΣX 494	420	812	885
N 20	20	20	20
$\bar{X}$ 24.7	21	40.6	44.25
$\Sigma(X-\bar{X})^2$ 2066.2	3197	3316.8	7884.75
s 108.7	168.3	174.6	415.0
SD 10.4	13.0	13.2	20.4

APPROVAL SHEET

The thesis submitted by Carol A. Patsdaughter has been read and approved by the following Committee:

Dr. Marilyn M. Bunt, Director
Associate Professor and Chairperson
Psychiatric-Community Health Nursing, Loyola

Dr. Ardelina Baldonado
Assistant Professor
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Dr. Dorothy Lanuza
Associate Professor
Medical-Surgical Nursing, Loyola

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Science in Nursing.

April 20, 1983
Date

Marilyn M. Bunt, Ph.D.
Director's Signature