INVESTIGATION OF THE CONGRUENCY OF DIMENSIONS OF THE PERCEPTIONS OF PHYSICIANS AND NURSES CONCERNING COMPETENCE OF CLINICAL DIETITIANS

A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

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TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NUTRITION, TEXTILES, AND HUMAN DEVELOPMENT

BY

MARY DELL FORD, B.S.

DENTON, TEXAS

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The Graduate School

Texas Woman's University

Denton, Texas

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We hereby recommend that the Thesis prepared under our supervision by Mary Dell Ford entitled INVESTIGATION OF THE CONGRUENCY OF DIMENSIONS OF THE PERCEPTIONS OF PHYSICIANS AND NURSES CONCERNING COMPETENCE OF CLINICAL DIETITIANS

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To protect individuals we have covered their signatures.

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May you all share in the enrichment I've obtained through your selfless efforts.

Introduction

Butterworth (1979) asked the question, "How can nurses and dietitians work together more efficiently to promote the health and welfare of the hospital patient?" In a study reported by Spangler (1971), dietitians experienced frustration in regard to relationships with other members of the interdisciplinary team such as physicians and nurses. The greatest problems encountered by the interdisciplinary team seem to come from the conflicts regarding professional roles (Ducanis and Golin, 1979). These conflicts result from overlapping responsibilities and competencies. "Misunderstanding among health professionals about each other's educational preparation and roles is a serious barrier to effective teamwork in our fast changing health education and delivery systems" (Soulary and Tanner, 1972). According to Odhner (1970), "breakdowns in the team process are frequent enough to suggest that understanding and improving this process should become a more conscious part of the technology of health professionals." "It would seem that additional information regarding the mutual perceptions of various professionals involved in interdisciplinary teamwork would be helpful in further studying the operation of the team" (Ducanis and Golin, 1979). It is those mutual perceptions of competencies and agreed upon roles that will

contribute to teamwork cohesion.

It is important that the physician, nurse (team members who have the greatest contact with the hospital patient) and the dietitian share a common awareness of the dietitian's competencies so they may more easily reach an agreement on how to utilize her skills in efficient coordination with their own. As the dietitian and interdisciplinary team educator realize the conceptions and misconceptions the physician and nurse have about the dietitian's competence, the information can be used as an educational component aimed at strengthening the congruency of perceptions among members of the interdisciplinary team. This component should be utilized within any of the following three phases of education: "...initial preparation, continuing education, and the exchange of knowledge between professionals" (Ducanis and Golin, 1979).

Problem Statement

The purpose of this study was to determine the perceptions of nurses concerning the competence of the clinical dietitian and to compare those with what the physicians perceived about clinical dietitians' competence. The specific problem investigated was: To what extent is there congruency between dimensions of the perceptions of the clinical dietitians' competence, as held by physicians and nurses?

Historical Perspective

A high incidence of malnutrition in the hospital patient exists (Butterworth, 1974). One of the major contributing factors in the hospital setting is that members of the health care team have not been aggressive enough in evaluating the patient's individual nutritional needs and assuring that he has proper nutriment (Ford, 1979). Butterworth (1974) specifically cites reasons for neglected nutritional care; these include diffusion of responsibility for patient care, lack of communication and interaction between physician and dietitian, and failure to record height and weight.

Each undesirable practice reflects misunderstood roles and inadequate teamwork. Ambiguous roles create performance gaps, duplication, rivalry, confusion and hesitancy to act (Given and Simmons, 1977; Brill, 1979; Holland, Knobel, and Parrish, 1976). These undesirable characteristics increase the potential for low quality work, personal tension and conflict. Communication diminishes, resulting in exclusion of individual professionals from seeking needed guidance and direction from other team members (Given and Simmons, 1977). Vagueness about roles and inappropriate expectations held by one professional about another can cause complications in the smooth functioning of an interdisciplinary team (Given and

Simmons, 1977). This may indeed be the case between dietitians, nurses and physicians.

Ducanis and Golin (1979) studied the perceptions of physicians, nurses, and "own" profession by administering an "Interprofessional Perception Scale" to allied health professionals--including nutritionists. Results indicated that the subjects perceived both physicians and nurses to be well trained and competent, but not understanding or fully utilizing the capabilities of the various allied health professionals. Additionally, many of the allied health professionals did not think that physicians or nurses agreed with or would understand their views on these issues. Such results are not surprising. "Potential misperceptions and misunderstandings are usually greater between than within professions because the professional is not really aware of the specific competencies and roles of members of different professions" (Ducanis and Golin, 1979).

A study of curricula in allied health disciplines conducted by the Faculty Committee for Allied Health Interdisciplinary Education found a general lack of understanding of total allied health capabilities in individual areas of specialization (Verstraete, Scudder, Karner and Meier, 1978). The problem applied equally to faculty and students. In a Ducanis and Golin study (1979) only 34 percent of the

professional schools surveyed actually offered a course for teaching the functions of the health care team. A large proportion of the respondents realized the need for such educational curricula, and 79 percent had considered such a course or unit.

"Shared understanding and acceptance of role definitions by members of the team is predicated to obtain a clear division of labor--a condition for the effectiveness of teamwork" (Nagi, 1975). To facilitate role definitions, job descriptions must be clearly defined (Brill, 1979) "in terms of the particular professional competencies of each team member" (Ducanis and Golin, 1979). In other words, competencies provide the framework for building roles. Competencies are the skills and knowledge required to perform. Once the skills and knowledge of each team member are commonly understood, negotiation of role assignments is much easier. Furthermore, the individual team member becomes more cognizant of the boundaries of his specialty field and functions in a relationship to others' knowledge and skills. He becomes more able and willing to accept and defer to another team member's expertise.

The ideal interdisciplinary patient-care team has developed a joint plan in which each member makes a unique but complementary contribution to needed services. "Joint planning

enables team members to reinforce each other's activities and maximize each other's efforts" (Given and Simmons, 1977). Collaboration must exist between interdisciplinary health-care professionals as a means of eliminating gaps and overlaps in service (Mason and Parascaudola, 1972).

In addition, "When the common bases of functions and the skills and knowledge required to perform those functions are identified, then certain generic educational curricula can be designed to fit them" (Pellegrino, 1977). For years past and present, health professionals have described the need for core curriculum aimed at unification of the health professions, including dietitians, physicians, and nurses. Individual and segregated educational preparation hinders teamwork between the various professionals involved in the delivery of health care (Given and Simmons, 1977). Shared experiences reduce uncertainties and communication barriers and provide common referents so that needed exchange can occur (Given and Simmons, 1977). Therefore, the "Health Field Concept" recommends the development of courses which encourage the joint training of students in the various health disciplines (Holland, Knobel, and Parrish, 1976).

Because alliance in patient care can be strengthened when based on a mutual understanding of all health occupations, it is wise to identify the skills and knowledge of all

interdisciplinary teammates within this "joint training." Information concerning congruent and noncongruent perceptions of the dietitians' competence, as viewed by the nurse and the physician, can be useful in developing common educational curricula for all three professionals. The information should be used in "joint training" within higher learning institutions and as continuing or inservice educational programs. Subject matter should emphasize controversial perceptions in an effort to increase the congruency of perceptions between the three disciplines. For the power of the interdisciplinary health care team to promote health and well being lies not in each team member's separate perceptions alone, but in the sum of its congruent perceptions.

Hypothesis

The null hypothesis tested in this study was: There is no recognizable difference between the physicians' and nurses' perceptions of the clinical dietitians' competencies. The differences noted were observed and reported intuitively and through charts and tables.

Methods and Procedures

Questionnaire

A questionnaire was developed to assess physicians' perceptions of various competencies of dietitians in a

preliminary study by Carter (1979). The questionnaire was validated using a modified Delphi Technique. In order to estimate the reliability of the questionnaire, results of factor analysis were used. In particular, Cronbach's alpha coefficient--a by product of factor analysis, yields a lower based estimate of reliability (Cronbach, 1953). Five competencies for each of six dimensions of dietetics were included in the questionnaire. These six dimensions were: (1) foodservice systems management; (2) medical knowledge; (3) knowledge of food composition; (4) counseling and education; (5) diet therapy, of the nature commonly considered to be the responsibility of the dietitian; and (6) diet therapy, of the nature commonly considered to be the responsibility of the physician (see Appendix A). Physicians in the Carter Study were given the thirty randomly sequenced competencies and were asked to rank them according to the level of competency expected of clinical dietitians. The current study utilized the same questionnaire (see Appendix B) and procedure to measure the nurses' perception of the competence of the clinical dietitian.

Sampling

The population consisted of all nurses who are members of the Texas Nurses Association, (TNA), District 9. Using

a table of random numbers, a sample of three hundred seventy-one nurses was selected from the 1980 TNA membership list. The total sample was approximately the same size and drawn from the same city area as that used in the Carter Study (1979).

Collection of Data

Upon approval of the Human Subject Review Committee of Texas Woman's University, each subject was mailed the questionnaire with a cover letter (see Appendix B) explaining the study and a self-addressed envelope.

Statistical Analysis and Extraction of Factors

Factor analysis was used to analyze the data obtained through the questionnaire. Statistical programs available in the SPSS library were employed using the Texas Woman's University DEC 2050 system. "Usually the aim of factor analysis is to summarize the interrelationships among the variables in a concise but accurate manner as an aid in conceptualization" (Gorsuch, 1974). Analysis resulted in clustering the questionnaire items into factors representing the dimensions of dietetics perceived by both physicians and nurses. According to Carter (1979):

> The description and interpretation of these dimensions is based on the essence of the competency statements which clustered to constitute the respective factors.

The six theoretical dimensions of dietetics (see Appendix A) devised by Carter (1979) were also considered in describing the factors obtained through factor analysis.

In the Carter Study (1079), the data file was first factor analyzed with no limitations on the number of factors. An output of six factors resulted. However, application of the Scree test produced an optimal number of three factors (Carter, 1979). The same number of factors (3) was adopted in the current study to determine the perceptions of nurses so that those perceptions could be compared to those of the physicians. The raw factor matrix was rotated orthogonally using Kaiser's Varimax.

The minimum acceptable number of usable returns for factor analysis in this study was based on the formula of two times the number of items on the survey instrument plus one. The basis for estimating sample size represents an estimation of "v" means and "v" variances plus one general factor (Baird, 1977).

Visual interpretation was used to compare the two factor structures of the physician and nurse analyses to determine the degree to which the two analyses were related.

Results and Discussion

Responses

Forty-four percent (162) of the usable questionnaires

were returned. Therefore the number of responses exceeded the minimum acceptable number of sixty-one. Additionally, this return exceeded the usable return from physicians in the Carter Study (1979) by six percent.

Description of Factors

The competency statements belonging to Factor I, along with their factor structure coefficients and theoretical factor numbers are presented in Table 1. Factor I includes those dimensions of dietetics generally regarded as the more modern roles of dietitians perceived by nurses. In this study, all competencies identifying medical knowledge loaded highly on Factor I. Load is a measure of saturation on one particular factor (Kerlinger, 1973). Four of five competencies each in both dimensions of diet therapy loaded on the same factor. Therefore, diet therapy of the nature commonly considered by the developers of the questionnaire (Carter, 1979) to be the responsibility of dietitians and physicians was perceived as a modern component. The food-service systems management competency of determining forecasting requirements for food production needs was labeled as a lower modern competency. All competency statements were of univocal nature, i.e., they loaded only on one factor.

Table 1

Factor I: Modern Role of Dietitians

Rank Order of Factor Structure Coefficient	Factor Structure Coefficient	Competency Statement	Theoretical Factor Number
1	.810	14. Knowledge of implications of each stage of liver disease.	2
2	.742	12. Ability to assess nutritional status using anthropometric and biochemical indices.	5
3	.735	20. Knowledge of implications of inborn errors of metabolism.	2
4	.734	25. Knowledge of the pathology of atherosclerosis.	2
5	.702	13. Knowledge of composition and indicated use of total parenteral nutrition.	6
6	.693	27. Ability to determine level of sodium restriction based on patient's medical status.	6
7	.676	26. Knowledge of food and drug interaction.	2
8	.629	4. Knowledge of the etiology, diagnosis, and treatment of malabsorption.	2

Table 1 cont'd

Rank Order of Factor Structure Coefficient	Factor Structure Coefficient	Competency Statement	Theoretical Factor Number
9	.591	28. Knowledge of diet adjustments necessary for patients with cardio-vascular disease.	5
10	.565	11. Knowledge of dietary implications of gastro-intestinal surgery.	6
11	.470	7. Ability to calculate the amount of protein, potassium, sodium, and fluid which should be prescribed for the diets of renal patients.	6
12	.464	23. Determines the basis for forecasting requirements for food production needs.	1
13	.417	1. Knowledge of composition and indicated use of com-mercial tube feeding formulas.	5
14	.412	29. Ability to recognize indications for commercial diet supplement products.	5

The competency statements belonging to Factor II, along with their factor structure coefficients and theo-retical factor numbers are presented in Table 2. Factor II includes those dimensions of dietetics generally regarded as

the more traditional roles of dietitians perceived by nurses. All competencies in the dimension of food composition loaded on Factor II. A foodservice systems management competency item about planning menus exhibited a high factor structure coefficient of .695. One competency each in the dimensions of diet therapy of the nature commonly considered to be the responsibility of the dietitian and diet therapy of the nature commonly considered to be the responsibility of the physician (with the lowest factor structure coefficient of .473) loaded on Factor II. These concerned the determination of nutritional requirements during pregnancy and lactation and the calorie level and carbohydrate distribution for diabetics. All competency statements were of univocal nature.

Table 2

Factor II: Traditional Role of Dietitians

Rank Order of Factor Structure Coefficient	Factor Structure Coefficient	Competency Statement	Theoretical Factor Number
1	.711	16. Knowledge of foods which are high sources of potassium.	3
2	.700	15. Plans menus which incorporate principles of good menu planning.	1

Table 2 cont'd

Rank Order of Factor Structure Coefficient	Factor Structure Coefficient	Competency Statement	Theoretical Factor Number
3	.658	24. Knowledge of nutrients likely to be deficient in a vegetarian's diet.	3
4	.652	22. Ability to determine nutritional requirements during pregnancy and lactation.	5
5	.574	6. Ability to analyze menus for the nutritional adequacy and modify them as necessary.	3
6	.558	10. Knowledge of food items to be restricted on a gluten-free diet.	3
7	.489	2. Analyzes previous nutrient intake of individuals for nutritional adequacy as compared to recommended allowances.	3
8	.473	19. Ability to determine calorie level and carbohydrate distribution for diabetic patients.	6

The competency statements belonging to Factor III, along with their factor structure coefficients and theoretical factor numbers, are presented in Table 3. Factor III

includes those dimensions of dietetics generally regarded as those of counseling and education as perceived by nurses. All five competencies in the dimension of counseling and education load on Factor III. Therefore nurses did indeed see a separate component as counseling and educational skills and knowledge. Two competencies in the dimension of foodservice systems management loaded among the lowest three competencies identified in this factor. Again, all competency statements were univocal.

Table 3

Factor III: Counseling and Education

Rank Order of Factor Structure Coefficient	Factor Structure Coefficient	Competency Statement	Theoretical Factor Number
1	.742	17. Skill at conducting group classes for nutrition education.	4
2	.724	30. Knowledge of techniques which may motivate patients to dietary compliance.	4
3	.603	18. Ability to counsel obese patients on behavior modification to promote weight loss.	4
4	.573	8. Ability to include social and cultural factors into diet instruction.	4

Table 3 cont'd

Rank Order of Factor Structure Coefficient	Factor Structure Coefficient	Competency Statement	Theoretical Factor Number
5	.557	9. Develops standardized recipes to provide a consistent basis for quality and quantity control.	1
6	.539	5. Ability to compose diet instruction material.	4
7	.538	21. Plans for ensuring patient satisfaction with foods presented during tray service.	1

In turn, the physicians identified the same three dimensions of dietetics--modern, traditional, and counseling and education, but with heavier emphasis on the traditional factor than the modern. In the case of the physicians, traditional was Factor I and modern was Factor II. For another comparison aspect, the physicians' study did not produce the "factorially pure" data obtained in the nurses' study. Kerlinger (1973) stated, "If a test measures one factor only, it is said to be factorially 'pure.'"

Additionally, while the nurses perceived all five competency statements from the theoretical dimension of

counseling and education, the physicians only perceived one with a factor structure coefficient above .400. In contrast, the physicians appeared to be seeing more foodservice systems management items (viewed as traditional by the investigator) correctly within the traditional factor.

Upon viewing the Table of Means and Standard Deviation (see Appendix C) it is apparent that standard deviation is much greater for physicians than nurses. In other words, it appears that the nurses' perceptions were more congruent within their group of respondents than those of the physicians'. The mean values for nurses' perceptions began and ended higher than those of the physicians'. This indicated that nurses have a higher appreciation of dietitians' skills and knowledge overall.

On the whole, perceptions of dietitians' competencies were very similiar between nurses and physicians. However, some individual competency items warrant attention. For example, nurses perceived considerably greater competence from dietitians than physicians perceived about the following items: 4, 20, 14, 25, and 19. These items all dwell within the theoretical dimensions of medical knowledge and diet therapy, of the nature commonly considered to be the responsibility of the physician. For example, nurses felt dietitians were much more competent at determining calorie

level and carbohydrate distribution for diabetic patients than physicians did. This ambiguity may cause conflicts if the nurse seeks the assistance of the dietitian instead of the physician who feels that particular role is his territory. On the other hand, physicians perceived the dietitians' ability to counsel obese patients on behavior modification to promote weight loss at a much higher level than did the nurses.

Summary and Conclusions

The results of this study indicate that nurses and physicians both recognize the same three dimensions of dietetics practice--traditional, modern, and counseling and education. This could be due to the close collaborative dealings the physician and nurse encounter while providing health services. However, the nurses' perceptions of the three dimensions of dietetic practice are more clean and distinct. The nursing respondents' perceptions of dietitians is more congruent within itself.

Although congruency of perceptions exists within the three factors which Carter (1979) labeled traditional, modern, and counseling and education, Factor I in the current study may be more appropriately labeled "Physiological Factors." Indeed, the majority of competency statements loading on this factor include a component of physiological knowledge. More

specifically, understanding of the body and disease processes and diet in relationship to these processes is identified. Factor II may be more appropriately labeled "Food and Nutrient Composition." Competency statements loading on this factor identify an understanding of food sources in relationship to nutritional requirements.

It is an encouraging result that these two interdisciplinary team members (nurses and physicians) perceive similiar competencies in dietetics. Their shared understanding promotes the efficiency of their teamwork in promoting the patient's health and well-being.

However, inadequacies between nurse and physician relationships have been widely noted (Soulary and Tanner, 1972). Some more specific discrepancies persist in their perceptions of dietitians' competence, especially in the theoretical dimension of medical knowledge. These specific perceptions should receive extra attention when used as a basis for educational programs aimed at promoting congruent perceptions of competencies between team members.

Implications for Further Study

Information concerning the congruency of perceptions about professional competence is indeed useful in studying the interdisciplinary team and in discovering ways to strengthen its collaborative efforts. Therefore, similiar

surveys should be performed in the future. They should measure the interprofessional perceptions of the competence of all members of the health care team.

However, questionnaires utilized should be developed with improvements on the one utilized in the Carter (1979) and the current study. Caution should be taken to delineate key words which clue the subject in to a profession's area of expertise. For instance, the word "diet" or "food" in a questionnaire item could cause a subject ranking dietary skills to place a higher rating of competence with that particular item. Additionally, questionnaires should be worded to exclude terms nonfamiliar to the surveyed persons. For instance, nurses in the current study had questions as to the term "anthropometric." This may have caused a lower ranking of competence perceived by those surveyed.

Once stronger survey instruments are developed, the knowledge obtained through their use could be used as an improved evaluative basis for education aimed at strengthening congruent perceptions between all members of the interdisciplinary team.

APPENDIX A

DIMENSION 1: Food Service Systems Management

COMPETENCIES:

	YES	NO
1. Plans menus which incorporate principles of good menu planning.	___	___
2. Plans for ensuring patient satisfaction with foods presented during tray service.	___	___
3. Determines the basis for forecasting requirements for food production needs.	___	___
4. Develops food purchasing specifications which insure quality and quantity control.	___	___
5. Develops standardized recipes to provide a consistent basis for quality and quantity control.	___	___

DIMENSION 2: Medical Knowledge

COMPETENCIES:

	YES	NO
1. Knowledge of implications of each stage of liver disease.	___	___
2. Knowledge of the etiology, diagnosis, and treatment of malabsorption.	___	___
3. Knowledge of implications of inborn errors of metabolism.	___	___
4. Knowledge of the etiology of atherosclerosis.	___	___
5. Knowledge of food and drug interaction.	___	___

DIMENSION 3: Knowledge of Food Composition

COMPETENCIES:

	YES	NO
1. Knowledge of foods which are high sources of potassium.	___	___
2. Knowledge of nutrients likely to be deficient in a vegetarian's diet.	___	___
3. Analyzes previous nutrient intake of individuals for nutritional adequacy as compared to recommended allowances.	___	___
4. Ability to analyze menus for their nutritional adequacy and modify them as necessary.	___	___
5. Knowledge of food items to be restricted on a gluten-free diet.	___	___

DIMENSION 4: Counseling and Education

COMPETENCIES:

	YES	NO
1. Skill at conducting group classes for nutrition education.	___	___
2. Ability to counsel obese patients on behavior modification to promote weight loss.	___	___
3. Knowledge of techniques which may motivate patients to dietary compliance.	___	___
4. Ability to compose diet instruction materials.	___	___
5. Ability to include social and cultural factors into diet instruction.	___	___

DIMENSION 5: Diet Therapy, of the Nature Commonly Considered to be the Responsibility of the Dietitian

COMPETENCIES:

	YES	NO
1. Ability to recognize indications for commercial diet supplement products.	___	___
2. Knowledge of diet adjustments necessary for patients with cardiovascular disease.	___	___
3. Ability to determine nutritional requirements during pregnancy and lactation.	___	___
4. Ability to assess nutritional status using anthropometric and biochemical indices.	___	___
5. Knowledge of composition and indicated use of commercial tube feeding formulas.	___	___

DIMENSION 6: Diet Therapy, of the Nature Commonly Considered to be the Responsibility of the Physician.

COMPETENCIES:

	YES	NO
1. Ability to calculate the amount of protein, potassium, sodium, and fluid which should be prescribed for the diets of renal patients.	___	___
2. Knowledge of composition and indicated use of total parenteral nutrition.	___	___
3. Knowledge of dietary implications of gastrointestinal surgery.	___	___
4. Ability to determine level of sodium restriction based on pateint's medical status.	___	___
5. Ability to determine calorie level and carbohydrate distribution for diabetic patients.	___	___

APPENDIX B

October 22, 1980

Dear Nurse:

I need your help! I am a candidate for a M.S. in Nutrition at Texas Woman's University. For my research I am attempting to assess whether congruency exists between the perceptions of clinical dietitians' competencies as held by physicians and nurses.

I would greatly appreciate it if you would complete the brief, thirty item questionnaire enclosed. The questionnaire asks you to rank the thirty items according to the level of competency you expect of dietitians. Please realize that your name is not required on your returned questionnaire. However, in case of inadequate return, a code list will be utilized for return follow-up. The list will be placed in a locked file in the Department of Nutrition office and destroyed upon completion of this study.

The statement below is required to comply with the Human Subjects Review Committee of Texas Woman's University:

> No medical service or compensation is provided to subjects by the university as a result of injury from participation in research. I UNDERSTAND THAT MY RETURN OF THIS QUESTIONNAIRE CONSTITUTES MY INFORMED CONSENT TO ACT AS A SUBJECT IN THIS RESEARCH.

If you have had little or no experience working with dietitians, I still need your opinion. I will be happy to answer any questions by phone - 667-7720. The results of this survey are contingent on your help. A stamped, self-addressed envelope is enclosed for return. Your response is greatly appreciated.

Sincerely,

Mary Dell Ford

Mary Dell Ford

Note: Improper release of this data is a potential risk.

Approved:

Shirley C. Baird

Shirley C. Baird, Ed.D., R.D.
Chairman Thesis Committee
Assistant Professor
Department of Nutrition
Texas Woman's University - Houston Center

Questionnaire*

On a scale of 1 to 5 rate the following according to the level of competency you expect of dietitians.

	No Competence				Highly Competent
1. Knowledge of composition and indicated use of commercial tube feeding formulas.	1	2	3	4	5
2. Analyzes previous nutrient intake of individuals for nutritional adequacy as compared to recommended allowances.	1	2	3	4	5
3. Develops food purchasing specifications which insure quality and quantity control.	1	2	3	4	5
4. Knowledge of the etiology, diagnosis, and treatment of malabsorption.	1	2	3	4	5
5. Ability to compose diet instruction material.	1	2	3	4	5
6. Ability to analyze menus for their nutritional adequacy and modify them as necessary.	1	2	3	4	5
7. Ability to calculate the amount of protein, potassium, sodium, and fluid which should be prescribed for the diets of renal patients.	1	2	3	4	5
8. Ability to include social and cultural factors into diet instruction.	1	2	3	4	5
9. Develops standardized recipes to provide a consistant basis for quality and quantity control.	1	2	3	4	5

*Developed by Carter, V.L. A survey of the perceptions of clinical dietitians held by harris county physicians. Unpublished master's thesis, Texas Woman's University, 1979.

		No Competence				Highly Competent
10.	Knowledge of food items to be restricted on a gluten-free diet.	1	2	3	4	5
11.	Knowledge of dietary implications of gastro-intestinal surgery.	1	2	3	4	5
12.	Ability to assess nutritional status using anthropometric and biochemical indices.	1	2	3	4	5
13.	Knowledge of composition and indicated use of total parenteral nutrition.	1	2	3	4	5
14.	Knowledge of implications of each stage of liver disease.	1	2	3	4	5
15.	Plans menus which incorporate principles of good menu planning.	1	2	3	4	5
16.	Knowledge of foods which are high sources of potassium.	1	2	3	4	5
17.	Skill at conducting group classes for nutrition education.	1	2	3	4	5
18.	Ability to counsel obese patients on behavior modification to promote wieght loss.	1	2	3	4	5
19.	Ability to determine calorie level and carbohydrate distr-bution for diabetic patients.	1	2	3	4	5
20.	Knowledge of implications of inborn errors of metabolism.	1	2	3	4	5
21.	Plans for ensuring patient satisfaction with foods pre-sented during tray service.	1	2	3	4	5

		No Competence				Highly Competent
22.	Ability to determine nutritional requirements during pregnancy and lactation.	1	2	3	4	5
23.	Determines the basis for forecasting requirements for food production needs.	1	2	3	4	5
24.	Knowledge of nutrients likely to be dificient in a vegetarian's diet.	1	2	3	4	5
25.	Knowledge of the pathology of atherosclerosis.	1	2	3	4	5
26.	Knowledge of food and drug interaction.	1	2	3	4	5
27.	Ability to determine level of sodium restriction based on patient's medical status.	1	2	3	4	5
28.	Knowledge of diet adjustments necessary for patients with cardiovascular disease.	1	2	3	4	5
29.	Ability to recognize indications for commercial diet supplement products.	1	2	3	4	5
30.	Knowledge of techniques which may motivate patients to dietary compliance.	1	2	3	4	5

APPENDIX C

TABLE OF MEANS AND STANDARD DEVIATION

Nurses			Physicians		
Questionnaire Item Number	Std. Dev.	Mean	Mean	Std. Dev.	Questionnaire Item Number
16	.285	4.926	4.768	.603	18
6	.291	4.907	4.725	.665	16
15	.420	4.815	4.683	.738	6
19	.475	4.796	4.641	.747	5
10	.479	4.790	4.592	.835	15
5	.505	4.765	4.535	.897	10
22	.588	4.673	4.387	.882	2
24	.611	4.624	4.352	.969	17
2	.707	4.494	4.338	1.017	30
7	.836	4.494	4.303	.938	1
11	.733	4.475	4.268	.922	9
28	.689	4.469	4.232	.935	21
1	.749	4.469	4.176	1.027	24
30	.812	4.451	4.141	1.082	3
17	.769	4.407	4.134	1.087	22
8	.742	4.395	4.092	1.017	8
21	.871	4.272	4.085	1.200	7
29	.791	4.167	4.078	1.143	19
9	.862	4.142	4.014	1.011	11
4	.872	4.099	3.937	1.040	29
3	.986	4.056	3.901	1.087	28
18	1.041	4.056	3.641	1.175	13
26	.988	4.006	3.535	1.253	26
13	.988	3.895	3.500	1.325	27
20	.927	3.870	3.239	1.197	4
12	.964	3.858	3.232	1.224	12
27	1.152	3.840	3.120	1.402	23
14	1.038	3.679	3.070	1.183	20
25	1.021	3.673	2.944	1.141	14
23	1.039	3.562	2.578	1.312	25

APPENDIX D

```
 RUN MDF.OUT
?File not found
@DIR

   PS:<HNFS.DUER>
 AADATA.DAT.1
   .OUT.4
 ANDERSON.DIRECTO^C
^C
^C
@CC^C
^C
@CLOGOUT
?Unrecognized command - Does not match switch or keyword
@LOGOUT
 <HNFS.DUER> Over permanent storage allocation by 8 page(s),
Killed Job 39, User HNFS.DUER, Account NFS-HOUSTON, TTY 50,
  at 13-Dec-80 15:04:36,  Used 0:00:03 in 0:02:44

 Texas Woman's University, TOPS-20 Monitor 4(3247)
 System shutdown scheduled for 15-Dec-80 06:00:00,
 Up again at 15-Dec-80 09:00:00
@LGOUU\IN
?Unrecognized command - Does not match switch or keysord
@LOGIN HCMI.KWOTTS
 Job 39 on TTY50 13-Dec-80 15:05:27
We read to say that we have read,
 End of LOGIN.CMD.2
@TER WIDTH 132
@TYPE MDF.OUT

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Default SPACE allocation:     Allows for:        98 Transformations
WORKSPACE      17920 words                      394 RECODE values + LAG variables
TRANSPACE       2560 words                     1576 IF/COMPUTE operations

                  RUN NAME      FACTOR ANALYSIS
                  VARIABLE LIST VAR01 TO VAR30
                  INPUT MEDIUM  MDF.DAT
                  N OF CASES    ESTIMATED 162
                  INPUT FORMAT  FIXED(4X,30F1.0)

According to your INPUT FORMAT, variables are to be read as follows:

Variable  Record    Columns  Print Format

VAR01          1    5 -  5  (0)
VAR02          1    6 -  6  (0)
VAR03          1    7 -  7  (0)
VAR04          1    8 -  8  (0)
VAR05          1    9 -  9  (0)
VAR06          1   10 - 10  (0)
VAR07          1   11 - 11  (0)
VAR08          1   12 - 12  (0)
VAR09          1   13 - 13  (0)
VAR10          1   14 - 14  (0)
VAR11          1   15 - 15  (0)
VAR12          1   16 - 16  (0)
VAR13          1   17 - 17  (0)
VAR14          1   18 - 18  (0)
VAR15          1   19 - 19  (0)
VAR16          1   20 - 20  (0)
VAR17          1   21 - 21  (0)
VAR18          1   22 - 22  (0)
```

```
VAR19          1   23 -  23  (0)
VAR20          1   24 -  24  (0)
VAR21          1   25 -  25  (0)
VAR22          1   26 -  26  (0)
VAR23          1   27 -  27  (0)
VAR24          1   28 -  28  (0)
VAR25          1   29 -  29  (0)
VAR26          1   30 -  30  (0)
VAR27          1   31 -  31  (0)
VAR28          1   32 -  32  (0)
VAR29          1   33 -  33  (0)
VAR30          1   34 -  34  (0)

The INPUT FORMAT provides for  30 variables and  1 record(s) per case.

                    FACTOR          VARIABLES=VAR01 TO VAR30/TYPE=PA1/
                                    NFACTORS=3
                                    ROTATE=VARIMAX/
                    OPTIONS         5,6,7,8
                    STATISTICS      1,2,3,4,5,6,7


***** FACTOR problem requires   4068 words WORKSPACE *****
```

```
FACTOR ANALYSIS                                    25-Nov-80       Page  2

  1. Variable list

Variables:        Labels:

VAR01
VAR02
VAR03
VAR04
VAR05
VAR06
VAR07
VAR08
VAR09
VAR10
VAR11
VAR12
VAR13
VAR14
VAR15
VAR16
VAR17
VAR18
VAR19
VAR20
VAR21
VAR22
VAR23
VAR24
VAR25
VAR26
VAR27
VAR28
VAR29
VAR30
```

VAR30

READ INPUT DATA

[SPSEOF After reading 162 cases from subfile NONAME , end-of-file was encountered on INPUT MEDIUM]

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File NONAME (Creation date = 25-Nov-80)

Variable	Mean	Standard dev	Cases
VAR01	4.4691	0.7491	162
VAR02	4.4938	0.7071	162
VAR03	4.0556	0.9859	162
VAR04	4.0988	0.8720	162
VAR05	4.7654	0.5052	162
VAR06	4.9074	0.2908	162
VAR07	4.4938	0.8359	162
VAR08	4.3951	0.7423	162
VAR09	4.1420	0.8624	162
VAR10	4.7901	0.4785	162
VAR11	4.4753	0.7326	162
VAR12	3.8580	0.9644	162
VAR13	3.8951	0.9882	162
VAR14	3.6790	1.0375	162
VAR15	4.8148	0.4203	162
VAR16	4.9259	0.2854	162
VAR17	4.4074	0.7686	162
VAR18	4.0556	1.0411	162
VAR19	4.7963	0.4747	162
VAR20	3.8704	0.9268	162
VAR21	4.2716	0.8707	162
VAR22	4.6728	0.5880	162
VAR23	3.5617	1.0392	162
VAR24	4.6235	0.6106	162
VAR25	3.6728	1.0205	162
VAR26	4.0062	0.9875	162
VAR27	3.8395	1.1524	162
VAR28	4.4691	0.6886	162
VAR29	4.1667	0.7901	162
VAR30	4.4506	0.8118	162

FACTOR ANALYSIS 25-Nov-80 Page 4
File NONAME (Creation date = 25-Nov-80)

Correlation coefficients:

	VAR01	VAR02	VAR03	VAR04	VAR05	VAR06	VAR07	VAR08	VAR09
VAR01	1.00000	0.39247	0.36817	0.28045	0.12847	0.22919	0.08401	0.20078	0.22316
VAR02	0.39247	1.00000	0.33461	0.25294	0.08287	0.28421	0.21537	0.20585	0.24082
VAR03	0.36817	0.33461	1.00000	0.19587	0.16351	0.23472	0.13985	0.27535	0.56047

VAR04	0.28045	0.25284	0.19587	1.00000	0.10932	0.13428	0.29909	0.26560	0.22077	0.
VAR05	0.12847	0.08287	0.16351	0.10932	1.00000	0.44323	0.17306	0.24866	0.17672	0.
VAR06	0.22919	0.28421	0.23472	0.13428	0.44323	1.00000	0.21486	0.31442	0.22615	0.
VAR07	0.08401	0.21537	0.13985	0.29909	0.17306	0.21486	1.00000	0.07402	0.06585	0.
VAR08	0.20078	0.20585	0.27535	0.26560	0.24866	0.31442	0.07402	1.00000	0.42608	0.
VAR09	0.22316	0.24082	0.56047	0.22077	0.17672	0.22615	0.06585	0.42608	1.00000	0.
VAR10	0.39768	0.21644	0.28818	0.27327	0.20619	0.35053	0.07438	0.19990	0.26833	1.
VAR11	0.31552	0.17957	0.24700	0.48028	0.23601	0.20790	0.23304	0.37213	0.20713	0.
VAR12	0.41089	0.44959	0.40683	0.51164	0.03321	0.13003	0.31867	0.35648	0.25591	0.
VAR13	0.38576	0.25241	0.33753	0.31485	0.19923	0.11729	0.33383	0.40403	0.27998	0
VAR14	0.36278	0.23435	0.27257	0.51584	0.16357	0.12735	0.31998	0.36729	0.15538	0
VAR15	0.17900	0.28871	0.30975	0.13494	0.37919	0.46869	0.13815	0.23593	0.31288	0
VAR16	0.19263	0.24398	0.21340	0.17935	0.39575	0.51568	0.10223	0.19765	0.27015	0
VAR17	0.14064	0.09609	0.24863	0.09714	0.39163	0.25323	0.05228	0.33667	0.41821	0
VAR18	0.02212	0.20719	0.25113	0.36338	0.27294	0.16073	0.15385	0.26880	0.34399	0
VAR19	0.14815	0.20904	0.17032	0.28900	0.21393	0.17751	0.36467	0.07116	0.17730	0
VAR20	0.34760	0.26891	0.33422	0.47710	0.21326	0.23178	0.39585	0.47216	0.22523	0
VAR21	0.32720	0.30541	0.36580	0.20988	0.34345	0.29624	009620	0.30385	0.36194	0.
VAR22	0.25192	0.36114	0.27798	0.24513	0.17916	0.22135	0.29285	0.16989	0.19017	0
VAR23	0.22586	0.28791	0.51493	0.21256	0.13423	0.15264	0.25784	0.33050	0.37480	0
VAR24	0.37501	0.31826	0.36511	0.16360	0.23541	0.36215	0.15970	0.31652	0.30267	0
VAR25	0.31578	0.22530	0.38858	0.57400	0.18757	0.10660	0.27796	0.26188	0.18015	C
VAR26	0.29834	0.24469	0.33139	0.35995	0.21459	0.17507	0.24460	0.28475	0.18860	C
VAR27	0.22446	0.25794	0.39602	0.34345	0.16965	0.10367	0.36648	0.21253	0.21681	C
VAR28	0.38947	0.33765	0.36391	0.37749	0.33616	0.24932	0.31799	0.25487	0.23230	C
VAR29	0.28685	0.26313	0.38672	0.36363	0.26974	0.28390	0.13794	0.30006	0.31147	C
VAR30	0.22218	0.19424	0.28670	0.29648	0.41080	0.28312	0.08193	0.46547	0.32503	C

	VAR11	VAR12	VAR13	VAR14	VAR15	VAR16	VAR17	VAR18	VAR19	
VAR01	0.31552	0.41089	0.38576	0.36278	0.17900	0.19263	0.14064	0.02212	0.14815	(
VAR02	0.17957	0.44959	0.25241	0.23435	0.28871	0.24398	0.09609	0.20719	0.20904	(
VAR03	0.24700	0.40683	0.33753	0.27257	0.30975	0.21340	0.24863	0.25113	0.17032	(
VAR04	0.48028	0.51164	0.31485	0.51584	0.13494	0.17935	0.09714	0.36338	0.28900	
VAR05	0.23601	0.03321	0.19923	0.16357	0.37919	0.39575	0.39163	0.27294	0.21393	
VAR06	0.20790	0.13003	0.11729	0.12735	0.46869	0.51568	0.25323	0.16073	0.17751	
VAR07	0.23304	0.31867	0.33383	0.31998	0.13815	0.10223	0.05228	0.15385	0.36467	
VAR08	0.37213	0.35648	0.40403	0.36729	0.23593	0.19765	0.33667	0.26880	0.07116	
VAR09	0.20713	0.25591	0.27998	0.15538	0.31288	0.27015	0.41821	0.34399	0.17730	
VAR10	0.48125	0.23114	0.25525	0.18874	0.26878	0.47676	0.23393	0.21057	0.27547	
VAR11	1.00000	0.48295	0.45543	0.48800	0.18677	0.22889	0.21654	0.35608	0.35161	
VAR12	0.48295	1.00000	0.51872	0.56873	0.21055	0.11953	0.09528	0.21206	0.30277	
VAR13	0.45543	0.51872	1.00000	0.62728	0.10246	0.14847	0.06482	0.21701	0.17925	
VAR14	0.48800	0.56873	0.62728	1.00000	0.11922	0.10800	0.09491	0.30988	0.21953	
VAR15	0.18677	0.21055	0.10246	0.11922	1.00000	0.60988	0.27343	0.27915	0.33897	
VAR16	0.22889	0.11953	0.14847	0.10800	0.60988	1.00000	0.25172	0.26482	0.25473	
VAR17	0.21654	0.09528	0.06482	0.09491	0.27343	0.25172	1.00000	0.53818	0.12674	
VAR18	0.35608	0.21206	0.21701	0.30988	0.27915	0.26482	0.53818	1.00000	0.37496	
VAR19	0.35161	0.30277	0.17925	0.21953	0.33897	0.25473	0.12674	0.37496	1.00000	
VAR20	0.45727	0.56305	0.55476	0.67995	0.17717	0.12787	0.26644	0.40021	0.23610	
VAR21	0.25403	0.30511	0.15606	0.24150	0.44379	0.30646	0.39979	0.34642	0.25493	
VAR22	0.29116	0.31191	0.21849	0.27478	0.43190	0.40993	0.22805	0.35457	0.47187	
VAR23	0.23453	0.43332	0.41460	0.33532	0.26806	0.16212	0.24048	0.30394	0.24599	
VAR24	0.31927	0.29891	0.17086	0.15117	0.45263	0.40925	0.28919	0.19921	0.24802	
VAR25	0.42533	0.47635	0.42154	0.60417	0.17645	0.15088	0.18683	0.37969	0.31035	
VAR26	0.41664	0.44444	0.47169	0.59000	0.19731	0.11184	0.13579	0.30779	0.29421	
VAR27	0.39992	0.45441	0.44326	0.51248	0.18189	0.07694	0.29050	0.42163	0.39403	
VAR28	0.39248	0.43762	0.43790	0.45550	0.30202	0.24115	0.21167	0.38795	0.35118	
VAR29	0.33446	0.38993	0.35667	0.29298	0.16833	0.22039	0.26593	0.41909	0.19046	
VAR30	0.33737	0.20123	0.33804	0.32028	0.26427	0.27903	0.41071	0.52138	0.17521	

	VAR21	VAR22	VAR23	VAR24	VAR25	VAR26	VAR27	VAR28	VAR29

	VAR21	VAR22	VAR23	VAR24	VAR25	VAR26	VAR27	VAR28	VAR29
VAR01	0.32720	0.25192	0.22586	0.37501	0.31578	0.29834	0.22446	0.38947	0.28685
VAR02	0.30541	0.36114	0.28791	0.31826	0.22530	0.24469	0.25794	0.33765	0.26313
VAR03	0.36580	0.27798	0.51493	0.36511	0.38858	0.33139	0.39602	0.36391	0.38672
VAR04	0.20988	0.24513	0.21256	0.16360	0.57400	0.35995	0.34345	0.37749	0.36363
VAR05	0.34345	0.17916	0.13423	0.23541	0.18757	0.21459	0.16965	0.33616	0.26974
VAR06	0.29624	0.22135	0.15264	0.36215	0.10660	0.17507	0.10367	0.24932	0.28390
VAR07	0.09620	0.29285	0.25784	0.15970	0.27796	0.24460	0.36648	0.31799	0.13794
VAR08	0.30385	0.16989	0.33050	0.31652	0.26188	0.28475	0.21253	0.25487	0.30006
VAR09	0.36194	0.19017	0.37480	0.30267	0.18015	0.18860	0.21681	0.23230	0.31147
VAR10	0.34639	0.32842	0.20108	0.45060	0.24011	0.18679	0.19759	0.35721	0.29025
VAR11	0.25403	0.29116	0.23453	0.31927	0.42533	0.41664	0.39992	0.39248	0.33446
VAR12	0.30511	0.31191	0.43332	0.29891	0.47635	0.44444	0.45441	0.43762	0.38993
VAR13	0.15606	0.21849	0.41460	0.17086	0.42154	0.47169	0.44326	0.43790	0.35667
VAR14	0.24150	0.27478	0.33532	0.15117	0.60417	0.59000	0.51248	0.45550	0.29298
VAR15	0.44379	0.43190	0.26806	0.45263	0.17645	0.19731	0.18189	0.30202	0.16833
VAR16	0.30646	0.40993	0.16212	0.40925	0.15088	0.11184	0.07694	0.24115	0.22039
VAR17	0.39979	0.22805	0.24048	0.28919	0.18683	0.13579	0.20050	0.21167	0.26593
VAR18	0.34642	0.35457	0.30394	0.19921	0.37969	0.30779	0.42163	0.38795	0.41909
VAR19	0.25493	0.47187	0.24599	0.24802	0.31035	0.29421	0.39403	0.35118	0.19046
VAR20	0.33641	0.27504	0.35983	0.29736	0.53283	0.56421	0.52125	0.47546	0.39445
VAR21	1.00000	0.27171	0.29712	0.34543	0.38026	0.43872	0.32846	0.40773	0.34913
VAR22	0.27171	1.00000	0.34328	0.46784	0.26563	0.19606	0.32535	0.45813	0.33203
VAR23	0.29712	0.34328	1.00000	0.35496	0.41449	0.32948	0.43877	0.34985	0.42992
VAR24	0.34543	0.46784	0.35496	1.00000	0.28950	0.22020	0.27547	0.46703	0.38838
VAR25	0.38026	0.26563	0.41449	0.28950	1.00000	0.60606	0.59941	0.54680	0.38390
VAR26	0.43872	0.19606	0.32948	0.22020	0.60606	1.00000	0.50300	0.52549	0.27731
VAR27	0.32846	0.32535	0.43877	0.27547	0.59941	0.50300	1.00000	0.58072	0.37064
VAR28	0.40773	0.45813	0.34985	0.46703	0.54680	0.52549	0.58072	1.00000	0.47187
VAR29	0.34913	0.33203	0.42992	0.38838	0.38390	0.27731	0.37064	0.47187	1.00000
VAR30	0.49362	0.20667	0.26499	0.24418	0.36650	0.46914	0.29023	0.37502	0.34701

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File NOMAME (Creation date = 25-Nov-80)

Variable	Est Communality	Factor	Eigenvalue	% of var	Cum %
VAR01	1.00000	1	9.82501	32.8	32.8
VAR02	1.00000	2	2.77339	9.2	42.0
VAR03	1.00000	3	1.72668	5.8	47.8
VAR04	1.00000	4	1.54915	5.2	52.9
VAR05	1.00000	5	1.36587	4.6	57.5
VAR06	1.00000	6	1.10584	3.7	61.2
VAR07	1.00000	7	1.05446	3.5	64.7
VAR08	1.00000	8	0.90347	3	.
				0	67.7
VAR09	1.00000	9	0.83689	2.8	70.5
VAR10	1.00000	10	0.75577	2.5	73.0
VAR11	1.00000	11	0.74645	2.5	75.5
VAR12	1.00000	12	0.68111	2.3	77.7
VAR13	1.00000	13	0.61407	2.0	79.8
VAR14	1.00000	14	0.57873	1.9	81.7
VAR15	1.00000	15	0.53964	1.8	83.5
VAR16	1.00000	16	0.52923	1.8	85.3
VAR17	1.00000	17	0.47269	1.6	86.9
VAR18	1.00000	18	0.46973	1.6	88.4

VAR18	1.00000	18	0.46973	1.6	88.4
VAR19	1.00000	19	0.42010	1.4	89.8
VAR20	1.00000	20	0.39390	1.3	91.1
VAR21	1.00000	21	0.37308	1.2	92.4
VAR22	1.00000	22	0.34755	1.2	93.5
VAR23	1.00000	23	0.32748	1.1	94.6
VAR24	1.00000	24	0.30677	1.0	95.7
VAR25	1.00000	25	0.27304	0.9	96.6
VAR26	1.00000	26	0.24626	0.8	97.4
VAR27	1.00000	27	0.23853	0.8	98.2
VAR28	1.00000	28	0.19093	0.6	98.8
VAR29	1.00000	29	0.18512	0.6	99.4
VAR30	1.00000	30	0.16906	0.6	100.0

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File NONAME (Creation date = 25-Nov-80)

Factor matrix using principal factor no iterations

	Factor 1	Factor 2	Factor 3
VAR01	0.51410	-0.03816	0.24478
VAR02	0.48786	0.05927	0.33379
VAR03	0.59034	0.07767	-0.01901
VAR04	0.57468	-0.30649	0.03755
VAR05	0.42658	0.39806	-0.21151
VAR06	0.43979	0.49027	0.10888
VAR07	0.40372	-0.22541	0.30400
VAR08	0.53889	0.06520	-0.37195
VAR01	0.49836	0.27542	-0.25766
VAR10	0.51853	0.28391	0.21276
VAR11	0.63215	-0.15483	0.01584
VAR12	0.66289	-0.36126	0.19619
VAR13	0.61704	-0.37569	-0.03271
VAR14	0.65724	-0.49216	-0.04720
VAR15	0.49369	0.54441	0.20668
VAR16	0.45118	0.5i+rtJ	
		VAR17	0.43404 0.40755 -0.46822
VAR18	0.57707	0.11581	-0.35900
VAR19	0.48424	0.04487	0.32489
VAR20	0.72033	-0.32663	-0.13993
VAR21	0.60020	0.27124	-0.17045
VAR22	0.55619	0.20165	0.40492
VAR23	0.58806	-0.05661	-0.00540
VAR24	0.57171	0.34738	0.26882
VAR25	0.68887	-0.34945	-0.05532
VAR26	0.64899	-0.31602	-0.13571
VAR27	0.65745	-0.31622	0.00973
VAR28	0.72454	-0.08408	0.12564
VAR29	0.60978	0.03327	-0.08916
VAR30	0.59758	0.15023	-0.48501

Variable	Communality
VAR01	0.32567
VAR02	0.35294
VAR03	0.35490

VAR01	0.32567
VAR02	0.35294
VAR03	0.35490
VAR04	0.42561
VAR05	0.38516
VAR06	0.44563
VAR07	0.30622
VAR08	0.43300
VAR09	0.39061
VAR10	0.39474
VAR11	0.42384
VAR12	0.60842
VAR13	0.52295
VAR14	0.67641
VAR15	0.58283
VAR16	0.59914
VAR17	0.57372
VAR18	0.47531
VAR19	0.34206
VAR20	0.64514
VAR21	0.46287
VAR22	0.51396
VAR23	0.34905
VAR24	0.51979
VAR25	0.59971
VAR26	0.53947
VAR27	0.53233
VAR28	0.54781
VAR29	0.38089
VAR30	0.61491

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Varimax rotated factor matrix

	Factor 1	Factor 2	Factor 3
VAR01	0.41660	0.38718	0.04697
VAR02	0.33746	0.48886	0.00823
VAR03	0.37246	0.32283	0.33460
VAR04	0.62895	0.12582	0.11914
VAR05	0.01967	0.30689	0.53906
VAR06	-0.00994	0.57379	0.34103
VAR07	0.46966	0.26115	-0.13206
VAR08	0.31724	0.06308	0.57305
VAR09	0.15228	0.24031	0.55648
VAR10	0.19643	0.55799	0.21165
VAR11	0.56485	0.22913	0.22864
VAR12	0.74229	0.23898	0.01768
VAR13	0.70180	0.06068	0.16355
VAR14	0.80970	0.00263	0.14416
VAR15	-0.00073	0.69499	0.31595
VAR16	-0.05949	0.71124	0.29957
VAR17	-0.00075	0.15090	0.74226
VAR18	0.31113	0.11988	0.60344
VAR19	0.34406	0.47290	0.00707
VAR20	0.73481	0.07114	0.31643
VAR21	0.23540	0.34393	0.53774
VAR22	0.29457	0.65181	0.04833
VAR23	0.46396	0.25156	0.26553

VAR21	0.23540	0.34393	0.53774
VAR22	0.29457	0.65181	0.04833
VAR23	0.46396	0.25156	0.26553
VAR24	0.19558	0.65745	0.22202
VAR25	0.73407	0.09677	0.22692
VAR26	0.67623	0.04511	0.28311
VAR27	0.69343	0.14276	0.17637
VAR28	0.59142	0.38668	0.22025
VAR29	0.41172	0.26110	0.37842
VAR30	0.29287	0.06905	0.72413

Transformation matrix

	Factor 1	Factor 2	Factor 3
Factor 1	0.72362	0.49026	0.48583
Factor 2	-0.68609	0.58763	0.42892
Factor 3	0.07521	0.64369	-0.76158

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Factor score coefficients

	Factor 1	Factor 2	Factor 3
VAR01	0.05797	0.10882	-0.08845
VAR02	0.03581	0.16134	-0.11393
VAR03	0.02344	0.03883	0.04959
VAR04	0.11978	-0.02226	-0.03555
VAR05	-0.07627	0.02678	0.17595
VAR06	-0.08415	0.16641	0.04955
VAR07	0.09874	0.08571	-0.14898
VAR08	0.00736	-0.09796	0.20079
VAR09	-0.04265	-0.01283	0.18088
VAR10	-0.02278	0.16534	-0.02429
VAR11	0.08555	0.00465	0.00033
VAR12	0.14674	0.02967	-0.10963
VAR13	0.13696	-0.06101	-0.01316
VAR14	0.16810	-0.08908	-0.02280
VAR15	-0.08931	0.21703	0.01745
VAR16	-0.10224	0.23089	0.01380
VAR17	-0.08925	-0.06654	0.29101
VAR18	-0.00178	-0.08050	0.20479
VAR19	0.03872	0.15479	-0.11241
VAR20	0.12776	-0.08543	0.04682
VAR21	-0.03032	0.02388	0.14681
VAR22	0.00872	0.22143	-0.11991
VAR23	0.05708	0.01534	0.02271
VAR24	-0.03212	0.20235	-0.03658
VAR25	0.13477	-0.06029	0.00442
VAR26	0.12006	-0.08517	r'Bk
			VAR27 0.12707 -0.03057 -0.02069
VAR28	0.07964	0.06518	-0.03259
VAR29	0.03280	0.00424	0.07462
VAR30	-0.01428	-0.11916	0.26670

VAR28	0.07964	0.06518	-0.03259
VAR29	0.03280	0.00424	0.07462
VAR30	-0.01428	-0.11916	0.26670

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CPU time required: 3.91 seconds.

FINISH

@LOGOUT
Killed Job 39, User HCMI.KNOTTS, Account GRANT-KNOTTS, TTY 50,
at 13-Dec-80 15:30:47, Used 0:00:02 in 0:25:19

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