AN EXAMINATION OF THE RELATIONSHIP BETWEEN CHARACTERISTICS OF EXPANDED FOOD AND NUTRITION PROGRAM PARAPROFESSIONALS AND THEIR EFFECTIVENESS AS CHANGE AGENTS

BY

Marilyn A. Welschenbach

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Approved:

Gabriella Belli, Chair

Jimmie C. Fortune

Daisy L. Stewart

Ann A. Hertzler

Ruby H. Cox

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(ABSTRACT)

The Expanded Food and Nutrition Education Program (EFNEP) is a federal program designed to improve the nutritional status of the population and provide employment for paraprofessional aides from the indigenous target population and an example of a change agency. Diffusion and change literature offer many models and possible personality characteristics that may be associated with effective change agents.

The purpose of the study was to examine characteristics of paraprofessionals employed in the Adult phase of Virginia EFNEP and their relationship to paraprofessional effectiveness and how well they fit the diffusion model. Effectiveness for the paraprofessional was measured as homemaker success (change in nutrient intake and food behavior) and as paraprofessional performance (workload and home visit evaluation). Personality, training, and

demographic characteristics of the 40 paraprofessionals were obtained through a mailed Paraprofessional Questionnaire and the Sixteen Personality Factor (16PF) Test. Demographics, food behavior and knowledge, and nutrient intake for a sample of three homemakers per paraprofessional (N=116) were obtained from EFNEP Family Records. Homophily, the measure of correspondence, was calculated by comparing each paraprofessional with their sample of three homemakers.

Three personality factors (concrete thinking, impulsivity, and self-discipline) along with homophily were correlated with change in food behavior, none with change in nutrient intake, and two (concrete thinking and low tension) along with perfect match homophily were correlated with workload. There were no apparent difference in training. When all factors were analyzed by stepwise multiple regression, homophily along with three of the second-order personality factors were related to change in food behavior. One second order factor, low anxiety along with perfect match, was related to workload.

Implications for practice include: (a) EFNEP paraprofessionals, in part, appear to be fitting the model of change agent effectiveness, in that homophily is influencing the homemakers and (b) low anxiety and low tension appear to be related to effectiveness and could be used in employee selection and future training. Recommendations for future study include: (a) further study

into quantification of homophily and (b) investigation of relationship of characteristics to supervisor view of effectiveness.

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CHAPTER ONE

INTRODUCTION

Cooperative Extension Service (CES) programs receiving resources from both the Commonwealth of Virginia and the United States Federal Government must continuously demonstrate their effectiveness and cost efficiency. During the present period of recession, government revenues have diminished while at the same time the need for services, especially health and human services, has increased. Thus, with reduced resources all programs are constantly being scrutinized to assess their efficiency and continuing need. Decisions at all government levels must constantly be made regarding which programs will be funded and at what levels. The Expanded Food and Nutrition Education Program (EFNEP) is one of many federal, state and local programs designed to improve the nutritional status of the population. The target audience of EFNEP is low-income families with young children and youth (Cox, 1991).

Diffusion of innovation and change literature offer several factors that may be associated with success. One such factor is how closely linked the change agent is to the audience or person in need of change. How well EFNEP fits a proposed diffusion model is one way to examine success.

EFNEP Background

EFNEP was initiated by the United States Department of Agriculture (USDA) in 1968 with an amendment to the 1935 Agricultural Adjustment Act. It was further amended in 1977 and again in 1981. The goal of the act was to encourage low-income individuals and families to engage in nutritionally sound food purchasing and preparation practices. From its conception in 1968, paraprofessional aides, indigenous to the target population, have been recruited to work in EFNEP. The program was expanded in 1970 to specifically provide for employment and training of professionals and paraprofessional aides, to conduct an intensive program with low-income families and youth from low-income communities.

The mission of EFNEP is to teach low-income families and youth to improve their dietary practices and become more effective managers of available resources. The philosophy of EFNEP and features that distinguish EFNEP are: (a) the target audience is low-income families with young children and youth, (b) teaching is conducted by paraprofessionals and/or volunteers trained and supervised by Extension professionals, (c) intensive instruction is delivered to individuals or small groups, and (d) innovative program delivery methods are used to expand clientele participation. (Cox, 1991). Participation in EFNEP should result in:

- Increased knowledge of the essentials of human nutrition.
- Increased ability to select and buy food that satisfies nutritional needs.
- Improved practices in food production, preparation, storage, safety, and sanitation.
- Increased ability to manage food budgets and related resources such as food stamps.

In the 1990 federal fiscal year, 206,657 families participated in the Adult EFNEP phase and 434,823 youth participated in 4-H EFNEP in all 50 of the United States and its territories. There were 2,110.5 full time equivalent paraprofessionals providing direct teaching to families and youth.

Virginia EFNEP Information

At the close of the fiscal year ending September 30, 1992, 5,905 families were served in 24 locations throughout the Commonwealth of Virginia. Sixty-one paraprofessionals, 20 extension agents, and 15 secretaries were employed in EFNEP in Virginia during some part of the 1992 fiscal year. The average caseload of families per paraprofessional was 107. Fifty-one percent of homemaker (2,223) were graduated, and 374 homemakers (6%) dropped out of the program. An improvement in dietary intake of homemakers to approximate the Basic Four pattern (2 milk, 2 meat, 4 fruit/vegetable,

and 4 bread/cereal) was demonstrated with an increase from 6% of homemakers having the recommended pattern at entry into the program to 21% of homemakers having the pattern at exit (Virginia EFNEP, 1992). Fifty-six percent of homemakers had at least one serving from each of the basic four groups at entry while 80% had a serving from each group at exit.

Diffusion Information

The Cooperative Extension Service of the land grant university system is an example of a change agency which transmits information from the researcher to the consumer or client in the field. The professional extension agent is the change agent. Change agents are involved with many tasks in the diffusion process: as a catalyst, solution giver, process helper and resource linker (Havelock, 1973). The role of the paraprofessional in EFNEP may be viewed as a change agent who communicates nutrition information to the homemaker.

Rogers (1983), along with other authors (Argyris, 1970; Lippitt & Lippitt, 1986; and Bennis, Benne, and Chin, 1985), have proposed various diffusion models to describe the communication of innovations. Rogers used the term "change agent" to define the vehicle to transmit information from the change agency to the client. Others have used the terms interventionist, consultant and organizational development

(OD) specialist to describe the vehicle of transmission in the diffusion process.

Rogers (1983) listed factors in change agent success which he labeled "generalizations". Two of the factors were personality factors: (a) change agent success is positively related to empathy with clients, and (b) change agent success is positively related to homophily with the client, that is the degree to which pairs of individuals who interact are similar in certain attributes, such as belief, education, or social status. In all the diffusion studies (Ryan & Gross, 1943; Beal & Rogers, 1957; Havelock, 1969; Rogers, 1983) the change agent was a professional either by training in a specialized field or in the change process itself. The role of a paraprofessional as a change agent is not as clearly defined. Rogers (1983) discussed the use of the paraprofessional in third world country family planning. He speculated that client acceptance and success of the paraprofessional was related to their homophily with the client.

Paraprofessional

Paraprofessionals have been increasingly utilized in health care and education fields. Some examples are, teacher aide or instructional aide in the classroom, nursing assistants and home health aides, nutrition aides and diet technicians in health care settings, and library aides.

Most are non-degree, field specific employees with on-the-job training used to extend the area of coverage for the professional, but at a lower cost. Lower employee salary cost is the most attractive benefit of the use of paraprofessionals. Rogers (1983) proposed that a second advantage of the utilization of paraprofessionals is increased acceptance by the client group. Paraprofessionals recruited from the target client population are more likely to have homophily with the client group and, therefore, would be more effective and have higher success rate.

Statement of the Problem

The Federal Government has mandated that 60% of EFNEP funds be used to employ and support paraprofessionals indigenous to the target population. All government supported programs are being asked to become more efficient in their delivery of service. Some ways for a program to become more efficient are:

(1) To select employees with characteristics which have been demonstrated to have a positive influence on program clients and,

(2) To provide employee training which enhances employee skills in bringing about positive change among program clients.

Before such goals can be accomplished, research is needed to identify specific paraprofessional skills and characteristics that are related to effectiveness. The diffusion literature provides a list of characteristics that are associated with a successful change agent. How well does EFNEP fit the diffusion model as described by Rogers in Diffusion of Innovation (1983). Do the characteristics that are related to success with professionals equally apply to paraprofessionals? Which paraprofessionals are most successful and why? Answers to such questions would assist in improvement of employee selection and training.

Research Questions

The research questions are:

1. What is the relationship between measures of characteristics/skills in paraprofessionals employed by the Virginia EFNEP Program and their effectiveness with clients?
2. Does this relationship differ depending on how effectiveness of the paraprofessional is defined? Effectiveness for the paraprofessional may be considered in terms of:
    a. Paraprofessional performance as measured in terms of quantity--caseload or workload, and

quality--home visit evaluation which represents the supervisor view of performance.

b. Homemaker success as measured by a change in nutrient intake and change in food behavior or application of knowledge.

3. What additional factors are important in defining the effectiveness of the paraprofessional?
4. To what extent or degree are the paraprofessionals homophilious with the homemaker population? How is homophily between the homemaker and paraprofessional related to paraprofessional effectiveness? How well does EFNEP fit the diffusion model?
5. What is the relationship between training of the paraprofessional, both orientation and in-service, and effectiveness with clients?

Definitions

Definition of EFNEP Terms

EFNEP - Expanded Food and Nutrition Education Program.

Program family - family enrolled in EFNEP. Enrollment means the point at which the homemaker agrees to participate in the program and the Family Record Parts A and B are completed and the first 24-hour food recall (Part C) is

taken. Program families are generally characterized by (a) low income level as determined by having an income of less than 125% of federal poverty guidelines at the time of enrollment, (b) young children in the household, and (c) household participation in or eligibility for the Women, Infant, and Children (WIC) Program, food stamps or other public assistance programs.

Technician - the paraprofessional nutrition educator employed and trained by the Cooperative Extension Service (CES) to recruit, enroll and work with low-income families in fulfilling the EFNEP mission. The technician is also known in other states as program assistant or Nutrition Education Assistant (NEA).

Graduation from EFNEP - completion of EFNEP learning activities and/or achievement of improved diet and food practices as assessed by the 24-hour food recall and food behavior checklist. Corresponding terms are graduated family and graduated homemaker.

Definition of Diffusion Terms

Diffusion - the process by which an innovation is communicated through certain channels, over time, among the member of a social system.

Innovation - an idea, practice, or object that is perceived as new by an individual or other unit of adoption.

Homophily - the degree to which pairs of individuals who

interact are similar in certain attributes, such as belief, education, and social status.

Change Agent - an individual who attempts to influence clients in their innovation-decisions in a direction that is deemed desirable by the change agency.

Aide - a change agent who does not have a college degree, but who works under the supervision of a professional and who intensively contacts clients to influence their innovation-decisions.

Indigenous - having similar social background, similar attitudes and values, as well as a familiar pattern of language to facilitate communication with a population group. Indigenous paraprofessionals serve as two-way interpreters by communicating the community service value to the persons in need and communicating the client's situation to the provider. (USDA, Extension Service; 1986).

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The review of literature is focused in two areas: (1) change, diffusion of innovation, and change agents and (2) studies having The Expanded Food and Nutrition Education Program (EFNEP) as their focus. The initial impetus for the present study was Everett Roger's (1983) book, Diffusion of Innovation. This book sparked my curiosity and was the driving force in my literature search. In addition, EFNEP seemed the logical choice as the setting for hypothesis testing with its mandate of changing behavior of homemakers and its use of paraprofessionals to work directly with clientele.

There is a wealth of information on EFNEP with studies and evaluations both at the national and state levels. The latest annotated bibliography provided by the national EFNEP office (Leidenfrost, 1991) contained 22 entries for national evaluation studies and 265 entries of state and individual studies covering 1968 through 1990.

Diffusion of Innovation

Diffusion of innovation has been defined by several

authors and has evolved into many proposed models. Some of the models are defined by; the type of innovation to be diffused and others by the type of receiving client system.

Rogers Model

Rogers (1983) defined diffusion, "as the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). Through this definition, Rogers identified four elements of the diffusion process: innovation, communication, time, and social system. The innovation-decision process consists of five stages: (a) knowledge, (b) persuasion, (c) decision, (d) implementation and (e) confirmation. He further defined the communication channel as the means of getting the message from the source to the receiver (p.209). One variable in the five stages in the innovation-decision process is the effectiveness of different communication channels. He generalized that mass media channels are relatively more important at the knowledge stage and interpersonal channels are relatively more important at the persuasion stage in the innovation-decision process.

Ryan and Gross (1943), in their classic diffusion study, which is most often cited, looked at the diffusion of hybrid seed corn into two Iowa communities. Time of acceptance followed a bell-shaped curve and commercial channels were most often cited by the farmers as their

source of information in the initial knowledge stage but neighbors were most important as influences leading to acceptance.

Rogers based his categorization of the innovation-decision process on work done by Copp, Sill and Brown (1958). They used a case history method to interview Pennsylvania dairy farmers to classify the farmers' experiences into five stages as reported later by Rogers (1983).

Beal and Rogers (1957) used the term "professional" change agents to descsribe the communicators of ideas to the ultimate user and secure acceptance. They used the interview process as did the earlier studies with grain and dairy farmers, to obtain sources of information in the various stages in the innovation-decision process. They also found mass media methods to be very effective in the awareness stage but less so in the adoption stage.

Rogers (1983) reviewed over 3000 diffusion publications available in 1981 which encompassed nine separate traditions. The largest number of articles were in the rural sociology tradition followed by communication and education traditions. Rogers described the communicator of the innovation as the change agent. Rogers saw the roles of the change agent: (a) to develop a need for change on the part of clients, (b) to establish an information-exchange

relationship, (c) to diagnose their problems, (d) to create intent to change in the clients, (e) to translate this intent into actions, (f) to stabilize adoption and prevent discontinuances, and (g) to achieve a terminal relationship with the clients.

Havelock Model

Havelock (1969) defined diffusion through a linkage model. He saw dissemination of new ideas as a series of interactions which connected user systems with various resource or applied research systems. He defined information transfer as a two-way communication between the user and the resource system to identify problems which are in need of solution and feedback concerning the utility of the proposed solutions. Havelock (1973) listed three types of diffusion of innovation in education as: (a) problem solving, (b) social interaction and research, and (c) development and diffusion.

Wolf Model

Wolf (1986) defined the Wolf-Welsh Linkage Methodology (WWLM) Sixth Edition, which was designed to address the erratic and unpredictable knowledge diffusion and knowledge utilization practices in organizations. The model was aimed at identification of outcome variables believed to be important to the process of linking knowledge production and needs of knowledge users. The WWLM consists of seven

distinct but inter-related parts with each part having two components. The seven parts are sequential and titled:

- Qualifying for linkage responsibility,
- Targeting an audience for a change initiative,
- Defining knowledge to be adapted or adopted,
- Modifying knowledge selected to accommodate, identified needs of a targeted audience,
- Obtaining commitments from key persons to initiate, and sustain a change undertaking,
- Conceptualizing and implementing a linkage plan, and
- Ascertaining the impact of selected knowledge upon a targeted audience.

The two components were; (a) to clarify the nature of information sought and (b) recommendation aimed at acquiring needed information.

Other Models

Roling, Ascroft and Chege (1976) were critical of the methodology used in previous diffusion studies and felt that suggestions for new directions for future diffusion inquiry were necessary. They directed their comments to the African model, where social equality was an unexamined factor. They felt the diffusion strategies might contribute to widening the gaps between farmers and less-advantaged sub-audiences and create an inequality. They believed the diffusion

strategies would be examined, especially in third world countries, because communication causes gaps (communication effects gaps). A change was needed from using diffusion survey methods to field experimental design methodology. This change in direction would allow development of testing strategies of an exploratory nature, rather than just reaffirming existing practices.

Summary

Many authors have studied and written books on the field of diffusion. The areas of inquiry have been diverse in their terminology with application from education to business and governmental processes. The terms may different but the idea of change and how to predict change is a common thread throughout.

Change Literature

Havelock (1973) defined change as any significant alteration in the status quo which is usually is directed to benefit the client. Bennis, Benne and Chin (1985, pp. 44-45) looked at planned change from a broad historical perspective. They identified four types of intervention strategies: (a) rational-empirical, (b) normative, (c) re-educative, and (d) power-coercive. According to these authors, the land-grant university and Extension Service

utilized the strategy of rational-empirical. Thus, the Extension Service appeared on one end of the spectrum while power-coercive, which is associated with conflict and confrontation, was located on the other end of the spectrum.

Elliott (1983) described a narrower view of change with four models of educational improvement. The four models are described below.

Responsive model

The first model was developed by Goodlad (1975) and was titled the Responsive Model of Education Improvement. Goodlad proposed that two complementary processes are needed for change: An "inner" process was to help the institution work with discrepancies between the ideal and real, and an "outer" process that identifies and utilizes outside resources to solve problems, meet needs and achieve goals. The process steps were: dialogue, decision making, action, and evaluation (DDAE).

Linkage model

A second model, the Linkage Model, was defined by Havelock (1969). He described innovation as a process of linking the knowledge producer to the knowledge users. The strategy in the linkage model includes: building a relationship, diagnosing, acquiring relevant resources, choosing the solution, gaining acceptance, and stabilizing the innovation and generalizing self-renewal.

Organizational development (OD)

A third model, Organizational Development (OD), was described by Schmuck (1985). Schmuck described OD as a systematic program of theory research and practical application in building self-renewal. OD interventions include: (a) communications training, (b) development of norms for problem solving, and (c) changing organizational structures. Schmuck felt that the process consultant must have qualities of trust, rapport, friendship and honesty.

Bennis (1969) saw change in the context of OD. He defined OD as "a response to change, a complex education strategy intended to change the beliefs, attitudes, values and structure of organizations so that they can better adapt to new technologies, markets and challenges and the rate of change itself" (Bennis, 1969). He listed eight characteristics of OD, four of which dealt with change agents. The change agent is: (a) usually external to the client system, (b) in a collaborative relationship with the client system, (c) shares social philosophy with the client system, and (d) shares a set of normative goals.

Organizational development change or technological innovations is strongly liked to the presence of a champion (Howell & Higgins, 1990). They defined the champion as a person who may risk his/her position and prestige to ensure the innovation's success. Howell and Higgins (1990) looked

at the personality characteristics, leadership behaviors and influence tactics of identified champions. They tested the hypothesis that champions will exhibit higher achievement, persistence, innovativeness, persuasiveness, and risk taking than non-champions. They surveyed 88 organizations that had implemented a technological innovation to identify champions. Then they administered personality tests to the champions using three scales from the Jackson Personality Inventory and two scales from the Personality Research Form E. Of the characteristics listed in the hypothesis only risk taking was statistically significant, with achievement and innovativeness approaching significance.

Change agent study model

The last model, The Change Agent Study Model (Berman & McLaughlin, 1978), was developed by the Rand Corporation. Three stages to the change process are initiation, implementation and incorporation, which were defined in educational settings. In this model, change occurs as a response to a problem. The change agent worked in collaboration with the client in mutual adaptation.

Characteristics and Roles of Change Agents

Roles of Change Agents

Ottway

Ottaway (1983) provided a taxonomy of change agents in relation to the change process. Historically the definition of change agent included the word "professional". In a review of 35 articles in the field of diffusion other names were attached to the change process such as consultant, interventionist, and linker. In Ottaway's taxonomy three types of change agents are listed: (a) change generators (including key change agents, demonstrators, and defenders); (b) change implementors (either external or internal); and (c) change adopters. All were based on the work of Lewin (1951). Another term that has been used in the change agent literature, related to organizational change, is change agent research (CAR) which is a registered trademark (Ragab, Moriarty, & Guilmette, 1977).

Havelock

Havelock (1973) defined the change agent as a person who facilitates planned change or planned innovation. He saw the role of the change agent in four areas of education; as a catalyst, solution giver, process helper and resource linker. These roles were designated as such to coordinate with his views of the change process.

Argyris

Argyris (1970) used the term interventionist rather than change agent in the change process. He defined the

role of the interventionist, as one who would enter into an ongoing system of relationships to come between or among persons, groups or objects for the purpose of helping them. He stated three conditions that impacted on the interventionist's competence and effectiveness. The three conditions were linked to interpersonal and technical competence. First, self-acceptance (not self-esteem) and understanding was important. The second condition, confirmation or validation of one's view, meaning that greater or more frequent confirmation leads to greater confidence in one's potential to behave competently, which in turn leads to effective work relationships. Lastly, essentiality, the more essential one feels the greater the commitment becomes. He listed three attitudes which were related to success: acceptance of responsibility, being open to ideas or experimenting with new ideas, and the need to help others.

Characteristics of Change Agents

Barber and Nord (1977) discussed factors that would account for a successful consultant/client relationship. The goal of the relationship was to create a framework for linking research to existing knowledge. They went on to suggested four variables that should be considered in the relationship: consultant style or role, client's motivation, client's cognitive style and the nature of the change

problem. They saw the role of the consultant as that of healer.

Bennis (1969) listed competencies of the change agent which he stated should include a wide range of knowledge including:

1. Diagnostic knowledge cutting across behavioral sciences.
2. Theories and methods of organizational change.
3. Knowledge of sources of help.
4. Orientation to the ethical and evaluative functions of the change agents' role.
5. Skills in listening, observing, identifying and reporting.
6. Abilities to form relationships based on trust with a high degree of behavioral flexibility.
7. The ability to be in tune with his/her own motivations.
8. Sensitive and mature.
9. Act congruently (authentically).
10. Must not be authoritarian or inhuman in manner.

Coleman, Katz, and Menzel (1966) studied impact of pharmaceutical representatives on the introduction and subsequent use of a new drug. They found that the representatives were important as the first source of information in the early stage of diffusion. But, the

decision of whether to use or prescribe the new drug was influenced by the network of physicians. They felt the credibility of the representatives was in question since they were employed by the company which would benefit financially from use of the new drug.

Rogers (1983) and Wolf (1986) listed twelve characteristics or generalizations that impact on change agent success. Change agent success is positively related to the 12 factors listed below: Five of the generalizations marked with an asterisk (*) are characteristics of the change agent.

1. The extent of change agent effort in contacting clients,
2. A client orientation, rather than a change agency orientation, (*)
3. The degree to which the diffusion program is compatible with clients' needs,
4. Empathy with clients, (*)
5. Higher social status among clients.
6. Greater social participation among clients,
7. Higher education among clients,
8. Cosmopoliteness among clients,
9. Homophily with clients, (*)
10. Credibility in the clients' eyes, (*)
11. The extent that he or she works through opinion

leaders, (*) and

12. Increasing clients' ability to evaluate innovations.

Change Agent Success

Various authors have looked at success or effectiveness of change agents, group leaders, and consultants. Some have based their findings on "years of experience in the field", while others based findings on basic research.

Bolman (1976) saw the behavior of the group leader as a critical determinant of what happens in group education. He suggested a composite picture of the effective leader which included the characteristics of: (a) empathy with the participants, (b) trustworthiness, (c) openness to confrontation and the ability to provide feedback,and (d) possession of a theory with which he/she is personally comfortable.

Hamilton study

In a study to predict change agent effectiveness, Hamilton (1988) looked at the following three categories of characteristics of consultants (change agents) which were obtained from the consulting literature: (a) openness and responsiveness to others' needs and concerns, (b) comfort with ambiguity and the ability to make sense of it, and (c) comfort with one-self in relation to others. Using a panel of judges, Hamilton (1988) organized the characteristics

described by various authors into common theme categories. The judges placed 90% of the characteristics into the same categories. The categories were examined in relation to effectiveness of the consultant. The author studied 105 organizational development consultants with the United States Navy. A breakdown of demographic characteristics of the sample was as follows: officers, 34%, enlisted, 63%, and civilians, 3%; women, 17%, men, 83%; some college, 53%, bachelor's degree, 17%, graduate degree, 30%. Two means of measuring effectiveness were ratings by supervisors and ratings by peers. Three personality measures were used including the Myers-Briggs Type Indicator, 16PF, and Personalysis. Statistical analyses indicated a significant relationship between personality factors of the consultants and ratings of a consultant's effectiveness. The factors that were positively related using the Personalysis were areas with mental agility, sensitivity, empathy, and compassion for themselves and others. On the Myers-Briggs Type Indicator, the factor titled "sensing versus intuitive" was strongly related to effectiveness. Sensing was negatively related and intuitiveness positively related to effectiveness. The 16PF indicated that four characteristics were related to effectiveness: (a) venturesome, (b) trusting, (c) relaxed, and (d) imagination.

Wolf Study

Wolf (1986) proposed four qualifications which he believed were related to successful performance of linkage agents. The qualifications of a successful linkage agent were:

1. Has successfully linked some aspect of knowledge production with some aspect of knowledge utilization within an institutional setting at least once, preferably twice.

2. Professional background and demographic characteristics of the typical member of a targeted audience are reasonably compatible.

3. Either has been trained to do some aspects of the following work or is accustomed to contracting with specialists for work desired.

4. Understands basic elements of individual and group motivation and is able to apply such know-how routinely.

Wolf listed three attributes he believed were related to successful linkage agent performance. The attributes were: (a) the ability to devote considerable time to linkage task, (b) dependability, a person who can be counted upon to deliver promised services on time, and (c) a listener, a person who listens well and communicates effectively.

Cooper study

Cooper (1977) used the 16PF to examine the

characteristics of trainees and an adaptation of the Personal Description Questionnaire (PDQ) to assess trainees' perception of trainer style in order to study the adverse and growthful effects in experimental small-group training programs. The results of the 16PF test were step-wise regressed separately on groups of participants who were designated as either helped or hurt by the training.

Cooper found that there was a strong relationship between the trainer's behavior and personality and the effect on the trainees. In the regression analysis of "hurt trainees" category, the trainer styles which were significant were "withdrawn" and "closed and incongruent". The trainer styles that entered in the regression equation in the "helped trainees" category were "apprehensive or guilt-prone" and "relaxed". Lastly, the equation for the "helped but not hurt trainee" category had trainer personalities of "experimenting" and "relaxed" and trainer style of "relaxed/tranquil". He concluded that the success or failure of group training seems strongly linked to the personality and style of the group trainer.

Summary

Many researchers have looked at personality factors in relation to success. All the studies that were reviewed either stated or implied that the change agent was a professional. Rogers (1983) mentioned "paraprofessionals"

but stated homophily was the factor with the greatest impact on their effectiveness.

Expanded Food and Nutrition Education Program

EFNEP was originally funded in 1968 with a $10 million grant with the federal Extension Service in cooperation with State Cooperative Extension Services. The United States Department of Agriculture (USDA) defines a paraprofessional as,

> " The paid staff member who receives direction from professionals and is employed to assist or extend their efforts through direct contact with clientele in the conduct of educational programs. The position is usually restricted to individuals who have not completed or do not have a baccalaureate degree. Most often the individual is indigenous to the target audience" (USDA, 1977, p.ii).

The federal Extension Service published what it considered to be quality ranking factors in the selection of nutrition paraprofessionals (USDA, Extension Service, 1986). The factors considered to be the most important are: (a) learn and apply what is taught, (b) read and understand the materials that will be used, (c) accept directions and suggestions from the supervisor, (d) communicate orally, (e)

share learning with others, (f) keep records and make reports, (g) keep all clients' information confidential, and (h) work with people who may have different standards.

National EFNEP Evaluations

Joy (1986) studied various teaching methods used by paraprofessionals in California EFNEP. The relationship between teaching methods and success of the homemakers as measured by increased food knowledge and improved nutrition intake was examined. When compared to individual one-on-one teaching, group taught homemakers had similar knowledge changes and statistically significant improvement in change in dietary recall. Those taught in groups had higher intakes of milk and fruit/vegetables than did the homemakers taught by one-on-one method. The retention rate was slightly better (about 3%) by the one-to-one homemakers than the group taught homemakers. The results demonstrated that group teaching was as effective as one-to-one teaching for EFNEP homemakers. Other states undertook evaluations to assess the effectiveness of nutrition education delivery systems (Brink, M., Tenney, M., Deegan, P. and Ritchey, N., 1985; Jackson, R., 1986; Randall, M. and Light, R. G. 1984). All concluded that group teaching was at least as effective as one-to-one and was more efficient.

Ross (1986) studied the issue of why adult women dropped out of EFNEP in Wyoming. Since the Wyoming drop-out

rate of 51% at that time was well above the national average (24%), information was needed to remedy the situation. Ross studied 123 homemakers enrolled from June 1984 through October 1984 to examine demographic differences between those remaining with the program, those graduating, and those dropping out. She found that the average time prior to drop out was six months and concluded that the program should be geared to teach all needed lessons within a six month period. A note at the end of the paper stated that the Wyoming EFNEP had redesigned the program according to the study findings and that drop-out rates had been reduced to 30%. Ross concluded that the participants usually did not feel they had dropped out, but had received what they needed from the program.

The California EFNEP was evaluated in 1985 (Block, Laughlin, DelTredici, and Omelich, 1985). The demographics of Nutrition Education Assistants (NEAs) were analyzed through a questionnaire. The analysis showed that ethnic composition of the NEAs was almost identical to that of the participants: white 19.9%, black 20.5%, hispanic 53.6%, American Indian 1.3%, and Asian 4.6%. Age and level of education of the NEAs were not similar to that of the participants. The average age of the NEAs was 46.3 years. Sixteen percent of the group had less than a high school education while half had completed one year of college. The

authors also looked at NEA and participant characteristics and program components as determinants of change using a multiple regression analysis. They concluded that participant characteristics did not predict improvement. The number and length of visits affected gain in knowledge and practices while content and method did not predict statistical improvement.

Chipman and Kendall (1989) discussed the characteristics of EFNEP homemakers nationwide. In 1987 homemakers were from minority/ethic backgrounds and had very low incomes with 94% being below the poverty level. Food stamps were used by 66% of the homemakers and 30% were enrolled in the Special Supplemental Food Program for Women, Infants and Children (WIC). However the federal reports of 1986 and 1987 revealed that homemakers were less isolated, more sophisticated and better educated, and thus were more discriminating than earlier program participants. They used the term "new poor" which they described as caucasian, better educated, more affluent, having a family structure with two adults in the home and fewer children, and dropping out of the program about half as frequently as the traditional EFNEP homemaker.

Triplett (1972) studied the relationship of selected characteristics of paraprofessional aides in the Kansas Cooperative Extension Service and success. He used five

measures to obtain information on personality characteristics of 59 EFNEP paraprofessionals with a taped interview technique. The measures included the Guilford-Zimmerman Temperament Survey, Wrightsman Philosophy of Life Attitude Survey, Self-Esteem Scale developed by Rosenberg, and Self-Acceptance Scale of the California Psychological Inventory. Success of the paraprofessionals was dichotomized from information provided by a questionnaire given to the aide's supervisors and rating of paraprofessional performance. He found that two of the twenty-one variables, education and emotional stability, were significant at the 0.05 level.

Davie, Butler, Williams and Meiners (1973) studied personality and demographic characteristics of EFNEP aides and homemakers. They looked at personal motivation of both aides and homemakers and its relationship to success. Homemakers were categorized as successful or unsuccessful based on: (a) a change on their food recall, and (b) an aide ranking of the homemaker motivation. Aides were categorized by supervisory agent and co-worker ranking in relation to other aides. McClelland's Need for Achievement was used as the measure of both aide and homemaker motivation. The authors found no relationship between motivation and success of the homemaker.

Virginia EFNEP

The Virginia EFNEP Policy and Procedure Manual (Cox, 1991) lists attributes or personality characteristics of a successful Nutrition Technician in the following categories: communication skills, attitude, listening and counseling skills, socio-economic background, education and skills, family situation, image, and trustworthy and responsible.

Torisky (1987) studied retained dietary improvement in EFNEP homemakers, perceived program benefits, and family factors which were believed to be associated with dietary change. She found that high family support for EFNEP was related to higher diet scores at program completion and follow-up.

The Virginia EFNEP orientation and training program is outlined in the Virginia EFNEP Policy and Procedure Manual. Initial training for the paraprofessional covers nutrition and nutrition-related areas along with skills to bring about changed behavior. Recommended topics include information on:

1. Objectives and the expected results of EFNEP and the scope within which the program is conducted, including the philosophy and goals of the Virginia Cooperative Extension Service.
2. Appropriate audiences.
3. Recruitment, home visit techniques, group

techniques and teaching methods to be used with the EFNEP audiences.

4. Procedures for record keeping and use of computer printouts to assess progress of clientele and improve program effectiveness.

4. Agency and community resources available to EFNEP clientele and referral procedures.

5. Introduction to other extension programs available for referral of EFNEP clientele.

6. Ways for paraprofessionals to identify and recruit volunteers.

7. Ideas on training and motivation of volunteers.

Summary

Through investigation, group teaching has been found to be the most effective teaching in EFNEP. Both paraprofessional characteristics and homemaker demographics have been studied in relation to homemaker success. One study found no relationship and another study found education and emotional stability related to supervisor view of success in the paraprofessional. A Virginia study found family support to be the most influential in homemaker retention of dietary improvement.

CHAPTER THREE

METHOD

The general purpose of this study was to examine the relationship between personality characteristics and effectiveness of paraprofessionals with the Adult Expanded Food and Nutrition Education Program (EFNEP) in the Commonwealth of Virginia. Secondly, to obtain information to guide selection and training of paraprofessionals.

Subjects

All EFNEP paraprofessionals (52) employed as of September 1, 1992 in the Adult phase of the Virginia EFNEP Program were surveyed. No sampling was utilized and no effort was made to contact former EFNEP paraprofessionals. During the fiscal year beginning October 1, 1991 and ending September 30, 1992, there were 61 paraprofessionals employed for some part of the year in 20 cities and counties in Virginia (Virginia EFNEP, 1992). Locations of EFNEP units are listed in Appendix A. The EFNEP paraprofessionals in Virginia served a diverse multi-cultural client population who lived in a broad spectrum of situations from isolated rural communities in the western part of Virginia to the

large inner-city communities of northern Virginia, metropolitan Washington, D. C.

Description of Data

Table 3.1 contains a summary of variables, measures and data collection instruments which were used in the study. The table is divided into two sections, describing measures and instruments for the paraprofessional and homemaker.

Paraprofessional Performance

Data on the performance of 40 paraprofessionals who participated in the study was obtained through two measures, workload and home visit evaluation.

Workload

A Nutrition Teacher Aide (NTA) Report was generated at the end of the 1992 federal fiscal year (see Appendix B) using the Virginia EFNEP computer program. This report listed by paraprofessional identification number (aide number) the name of each homemaker, date of enrollment, type and number of instructions and ending date. The caseload of homemakers taught by the paraprofessional was used as the measure of quantity of work. Workload was based on the number of homemakers enrolled by the paraprofessional during the year with an adjustment for location (rural or urban). Thus, a combination of caseload of homemakers, plus a code

Table 3.1

Summary of Variables, Instruments, and Measure Descriptions

Variable/Measure	Instruments	Measure Description
I. Paraprofessional		
A. Performance		
Workload	NTA Workload Report	Caseload of homemakers with adjustment for urban or rural
Home Visit Evaluation	Home Visit Evaluation Form	Sum of responses to 12 items with possible values from 12-60
B. Characteristics		
Demographic	Paraprofessional Questionnaire	Responses to questions
Personality	16 PF Personality Test	Responses to questions
C. Training	Paraprofessional Questionnaire	Responses to questions
II. Homemaker		
A. Success		
Nutrient Intake Change	Family Record Part C	Exit Nutrient Adequacy Score (NAR) minus entry NAR score
Changed Food Behavior	Family Record Part B	Sum of needed lessons at exit minus sum needed at entry
B. Demographics	Family Record Part A	Responses to questions

which distinguished urban and rural paraprofessionals, was used to measure the paraprofessional workload or quantity of work performed. Each paraprofessional's caseload was then compared with the state caseload averages as determined by the State EFNEP Coordinator in summary statements as follows:

0 = Unacceptable (urban <80 and rural <60),

1 = Lowest acceptable, (Urban >or= 80 but <110 and Rural >or= 60 but <80),

2 = Medium acceptable, (Urban >or= 110 but <140 and Rural <or= 80 but <100), and

3 = Commendable, (Urban >or= 140 and Rural >or=100).

The justification of the caseload number was based on the national average caseload of 113 homemakers. The program philosophy was that Virginia "should be within a reasonable range of the national average (Cox, 1991). The designations of rural EFNEP units versus urban EFNEP units are listed in Appendix C.

Home visitation evaluation

Information from all EFNEP supervisory agents who supervised EFNEP paraprofessionals was requested. There were 15 supervisory extension agents, each partly paid through EFNEP, during the 1991-1992 federal fiscal year (Virginia EFNEP, 1992). The EFNEP supervising agent made home visits with each paraprofessional at least one time per

year. A Home Visit Evaluation Form (see Appendix D) was completed by the supervisory agent for the paraprofessional. The agent rated the paraprofessional on 12 items on topics such as the appropriateness and quality of the lesson taught. Each item was rated on a five-point scale in which possible response values were from 1=poor, no relation, much wrong information, never or not at all, to 5=excellent, entirely related, completely correct or very well. A total score was obtained by summing all the items, with possible values from 12 to 60. The scale used at the time of this study by EFNEP for evaluating the paraprofessional performance was excellent performance = 53-60; very good = 45-52; good performance - needs some practice = 38-44; fair performance - needs more practice = 30-37; poor performance - needs much guidance and practice = below 30. For this study the total score from the Home Visit Evaluation Form for each paraprofessional was to be used as the measure for paraprofessional performance for quality of work.

Paraprofessional characteristics

Demographic information

Demographic information on six characteristics was obtained for 40 paraprofessionals using the Paraprofessional Questionnaire created for this study (Appendix E). The following demographic variables were examined: (a) place of

residence, (b) racial/ethnic background, (c) monthly income, (d) gender, (e) family composition, and (f) highest grade of formal schooling. See questionnaire in Appendix E for specific categories.

Place of residence had five possible choices. The designations were chosen to match the categories which were used by EFNEP for the homemakers. The total income for family rounded to the nearest dollar for the preceding month was used as the measure of family income. The information on income was collected in the same manner as on the homemaker. Family composition was based on the following characteristics: presence of children and status of the paraprofessional as single or married. Educational level was measured using four categories of highest grade completed. The categories for the paraprofessional for education differed slightly from the homemaker by having only one category of less than high school and adding more categories above the high school level including college level.

Personality characteristics

The Sixteen Personality Factor Questionnaire (16PF) (Cattell, R. and Institute for Personality and Ability Testing, Inc., 1978) was used to collect data on personality characteristics of 40 EFNEP paraprofessionals. Of the five forms available, Form C was selected to minimize time

required of the paraprofessionals. Forms A and B take a minimum of one hour to complete while the other two forms (C and D) each take approximately 30 minutes. Mitchell (1985) cites over 1500 applications of the 16PF and Lanyon and Goodstein (1982) state that the 16PF is second only to the Minnesota Multiphasic Personality Inventory (MMPI) in its use in scientific literature. The 16PF has been used in many settings, including nutrition behavior.

The 16PF assesses a total of 16 indices of human personality which Cattell describes as source traits. A profile of the subject's personality can be constructed based on 16 factors (see Table 3.2). Also available are scores on five global second order factors. The 16PF Questionnaire was reviewed by Wholeben (1985) who felt that the 16PF measures personality attributes and behavioral styles of normal, rather than pathological populations, unlike other personality tests. The test-retest reliabilities were reported with correlations ranging from .67 to .86 for various scales. Discriminant or convergent validity were not reported. Many of the 16 factors can be matched with characteristics that have been found to be related to success in other studies (see Appendix F for comparable characteristics and references).

Paraprofessional Training

Four areas of training for the paraprofessional were

Table 3.2

Summary of Personality Factors in 16PF (A-I)

Personality Factor	Definition	
	Low Value	High Value
A Warmth	Detached, critical, cool, impersonal	Outgoing, participating, interested in people
B Intelligence	Concrete-thinking	Abstract thinking, bright
C Emotional Stability	Emotionally less stable, easily upset, changeable	Mature, faces reality, calm patient
E Dominance	Mild, accommodating, easily led, conforming	Aggressive, authoritative, competitive, stubborn
F Impulsivity	Prudent, serious, taciturn	Impulsively, lively, enthusiastic, heedless
G Conformity	Disregards rules, feels few obligations	Persevering, proper, moralistic, rule-bound
H Boldness	Restrained, threat-sensitive, timid	Socially bold, inhibited, spontaneous
I Sensitivity	Self-reliant, realistic, no-nonsense	Intuitive, unrealistic, sensitive

Table 3.2 Cont.

Summary of Personality Factors in 16PF (I-Q4)

Personality Factor	Definition	
	Low Value	High Value
L Suspiciousness	Adaptable, free of jealousy, easy to get along with	Hard to fool, skeptical, questioning
M Imagination	Careful, conventional, regulated by external realities	Careless of practical matters, unconventional, absent minded
N Shrewdness	Natural, genuine, unpretentious	Calculating, socially alert, insightful
O Insecurity	Self-assured, confident, secure, self-satisfied	Self-reproaching, worrying, troubled
Q1 Radicalism	Respecting established ideas, tolerant of traditional difficulties	Liberal, analytical, likes innovation
Q2 Self-sufficiency	A joiner and sound follower	Prefers own decisions, resourceful
Q3 Self-discipline	Careless of protocol, follows own urges	Socially precise, following self-image, compulsive
Q4 Tension	Tranquil, torpid, unfrustrated	Frustrated, driven, restless, overwrought

explored using the Paraprofessional Questionnaire (Appendix E). The areas were: (a) attendance at training, (b) rating of training, (c) topics from the training that the paraprofessionals felt were helpful in performing their jobs, and (d) application of the information received.

Orientation and In-service Training

Orientation and in-service training information were collected through responses to questions on the Paraprofessional Questionnaire. Attendance (in days) at orientation was defined as training obtained during the first six months of employment. In-service (in number of sessions) was defined as any training provided after six months of employment. No attempt was made to analyze for content, which was determined by individual EFNEP supervisors. Guidelines for length of time and topics to include for training are outlined in the Virginia EFNEP Policy and Procedure Manual (Cox, 1991). The attendance variables (see Appendix E) were divided into six categories ranging from no training to more than 30 days of orientation and more than 35 sessions of in-service training. A session of in-service training could vary from one hour to one day.

The paraprofessionals were asked to separately rate orientation and in-service with a five-point Likert scale. The rating scales consisted of the following values: 0 = not adequate at all, 1 = somewhat inadequate, 2 = somewhat

adequate, 3 = mostly adequate, and 4 = totally adequate.

Two open-ended questions on the same questionnaire were used to assess what the paraprofessionals felt they had learned from orientation and in-service training that was helpful in performing their jobs. The paraprofessionals were asked to list two topics each for orientation and in-service training. These were content analyzed to determine the most useful set of topics.

Application of Training

Paraprofessional application of good nutrition principles as they had been taught and were currently teaching homemakers in EFNEP lessons was assessed by asking the paraprofessionals to rate themselves, family members, and other paraprofessionals. A four-point Likert scale was used to rate how often nutrition principles were practiced, using the following values: 1=not at all, 2=some of the time, 3=most of the time, and 4=all the time.

Homemaker Data

A sum of 116 homemakers were drawn by randomly sampling, using a table of random numbers, three (3) homemakers from the enrollment list of the current year of each paraprofessional. Only homemakers who had graduated from the program from October 1, 1991 through September 30, 1992, were included. The Family Record Parts A, B, and C (see Appendices G, H, and I) were completed on each

homemaker by the paraprofessional during the period October 1, 1991 through September 30, 1992. The Family Record Parts A, B, and C were in place statewide in Virginia as of October 1, 1991 and created through a grant by Cornell University.

Nutrient intake data

Family Record Part C, 24-hour food recall, along with the computerized analysis, assessed each homemaker's nutrient intake based on the food intake for a 24-hour period. The nutrient analysis was done using the Cornell EFNEP Computer Program. A computer generated diagnostic report (see Appendix J) placed foods into appropriate food groups and calculated the nutrient intake for the 24-hour period for iron, calcium, Vitamin A, and Vitamin C. These nutrients were identified by Chipman and Kendall (1989) as being inadequate in EFNEP homemaker diets. Once the calculations were done they were compared with the appropriate 1989 Recommended Dietary Allowances (RDA) (National Research Council, 1989) to obtain a Nutrient Adequacy Ratio (NAR) Score (see Appendix K). The NAR scoring method was described by Johnson, Nitzke, and VandeBerg (1974). Two diagnostic reports were considered for each homemaker with the first being done upon entry into the program and the second done on exit from the program.

The goal of graduation and successful completion of the

program was an improved food intake and achievement of a nutrient intake close to the RDAs. The most critical recalls were the initial or entry report and the final or exit recall before graduation, but other recalls were done throughout participation in the program. A positive change toward meeting the RDAs for identified nutrients was used as a success measure. The entry NAR score was subtracted from the exit NAR score to obtain a food recall change score with possible values from -1.00 to +1.00. The difference from the initial score to the exit score was used as the measure of nutrient intake change.

The food recall method is only as reliable as the person reporting the intake. There is a risk of atypical or nonrepresentative food intake for a given day. The recall method is reliable when the sample is large enough (e.g. greater than 50) to "smooth out" distortion created by atypical individual data (Karvetti & Knuts, 1985). In the present study two recalls per homemaker were obtained, thus creating a sample of 232 food recalls. Non-reliabiliy of the recalls should not be an issue in this study.

Food behavior and knowledge data

Family Record Part B (Appendix H) was a measure of food behavior and application of nutrition knowledge. It was composed of 16 questions and four additional questions which required completion in special situations such as pregnancy.

The four supplemental questions had three possible response values, not applicable (NA), yes, or no. The special supplemental questions were not included in this study because they apply only in select circumstances. Each question was linked to an EFNEP lesson topic and was rated on a four-point scale from 1 to 4. The possible response values for items 1 to 11 were: almost never = 1, sometimes = 2, often = 3, or almost always = 4. Questions 12 to 16 had multiple choice answers with four possible responses answers but only one being the correct answer. For items 12 to 16 the scoring was based on the number correct with possible values of 0 to 5. The homemaker's responses to 16 items on the food behavior checklist were translated into various statements on the Diagnostic Report which indicated whether current nutrition knowledge and application were good or whether lessons should be taught to the homemaker. The criteria for graduation or completion of the program was to reduce the number of needed lessons (see Appendix J). The number of lessons needed on the exit assessment was subtracted from the number of lessons needed on the initial assessment and the difference was used as the measure of changed food behavior and knowledge. A high number represented a large increase in knowledge and application.

Demographic information

Demographic information was collected on the selected

homemakers using the Family Record Part A (Appendix G). The following demographic variables were examined: (a) place of residence, (b) racial/ethnic background, (c) monthly income, (d) gender, (e) family composition, and (f) highest grade of formal schooling. The demographic variables and categories (except education) for the homemaker were the same as that for the paraprofessional. Paraprofessional education categories were different because it was expected that their education level would be higher than that of homemakers.

Procedures

Paraprofessional Data

A list of paraprofessionals employed as of September 1, 1992, including their current work locations, was obtained from the Virginia State EFNEP coordinator. The identified paraprofessionals were briefed on study objectives and procedures by electronic message from the State EFNEP coordinator through the supervising agent. Written informed consent was obtained using regular mail (see Appendix L). The investigator mailed all other instruments to the Unit EFNEP Supervisor who instructed paraprofessionals on completing the forms.

Workload

The local EFNEP offices submitted year-end reports and

data diskettes to the State EFNEP office at the end of September, 1992. NTA Reports (Appendix B) covering the period October 1, 1991 through September 30, 1992 were obtained from the Virginia EFNEP coordinator, along with diskettes containing program assessment data.

Home visit evaluation

Home visit evaluations for each paraprofessional (see Appendix D) were requested from each unit EFNEP supervisor. Supervisors were instructed to go on two or three home visits during a day with each paraprofessional to complete Home Visit Evaluation Forms. Scores on all visits were averaged together and the supervisor submitted one form that reflected overall scores for each paraprofessional. All identifying notations were removed from the evaluations prior to submission for the study and a new paraprofessional identification number was given. The new paraprofessional identification number was a combination of the EFNEP local office number and the old paraprofessional identification number.

Demographic and training information

The Paraprofessional Questionnaire (see Appendix E) was used to collect demographic and training information from the paraprofessionals. Survey questions were carefully reviewed by the Virginia State EFNEP coordinator and university faculty for clarity and ease of responding. The

questionnaire was pilot tested with a former EFNEP paraprofessional. Sets of instruments to be completed by paraprofessionals (Paraprofessional Questionnaire and 16PF Personality Test) were mailed to the Unit EFNEP Supervisor, who then distributed the instruments to paraprofessionals in a group setting. Written instructions were provided both to the supervisors and to the paraprofessionals (Appendix M).

Personality information

The 16PF Personality Test Form C was mailed to the EFNEP supervisors for distribution and was self-administered by all paraprofessionals who worked in the Adult EFNEP in Virginia from September 1, 1992 to September 15, 1992. It was delivered and administered at their work locations as described previously. A postage-paid envelope was provided to each paraprofessional to confidentially mail items to the researcher.

Homemaker Data

Information on homemakers who graduated from the program during the period October 1, 1991 through September 30, 1992 was obtained from the State EFNEP Coordinator. A random sample of three homemakers was selected from each paraprofessional's list of graduated homemakers. Information on the sampled homemakers was retrieved from computer data diskettes.

Nutrient intake change

The change in nutrient intake was calculated by comparing the entry and exit Nutrient Adequacy Ratio (NAR) scores. The NAR at entry was subtracted from the NAR Score at exit to obtain a NAR change score. The difference in the scores for food intake was used as the measure of change in nutrient intake.

Changed food behavior and application of knowledge

Each pair of homemaker records (entry and exit) was compared and the difference between the number of lessons needed at entry and exit was calculated. No change in knowledge was represented by a score of 0 and a score of 16 represented the largest change in food behavior or application of knowledge.

Demographic information

Family Record Part A contained information on date of enrollment and ending or graduation date which was used to verify homemakers' eligibility for the study. Only "graduated" homemakers were included in the study. Each homemaker's data were matched with data on paraprofessionals working with them, using a four digit homemaker identification number and a two digit paraprofessional number. Diagnostic Reports (see Appendix J) for each sampled homemaker were printed using data diskettes supplied to the State EFNEP office. The Diagnostic Reports included

a summary of homemaker status of food and nutrient intake based on information from Family Record, (Parts A, B, and C; Appendices G, H, and I) collected at enrollment and exit or graduation from EFNEP. Manual matching by family identification number and comparison of the homemaker records was done.

Data Analysis

Preliminary Calculations

Four preliminary calculations were done: (a) the calculation of workload for each paraprofessional, (b) the change in nutrient intake for sampled individual homemakers, (c) the change in food behavior score for selected individual homemakers, and (d) a comparison of demographics for homophily for each paraprofessional.

Workload

Paraprofessionals were placed into four workload groups based on the number of homemakers assigned to work with the paraprofessional and a factor for location in a rural or urban program. The groups were coded based on four caseload categories: 0 = unacceptable, 1 = lowest acceptable, 2 = medium acceptable, and 3 = commendable.

Change in nutrient intake

Two scores were obtained using the Diagnostic reports

with the NAR Scores for each homemaker. The first score was from the entry report and the second score was from the exit report. The entry score was subtracted from the exit score to obtain a nutrient intake change score.

Change in food behavior and knowledge

The food behavior score was obtained using the entry and exit Family Record Part B, Food Behavior Knowledge Checklist, of sampled homemakers. Responses to the items on the Food Behavior and Knowledge Checklist were used to identify lessons needed by a homemaker at entry and exit form EFNEP. The exit number of lessons needed was subtracted from the entry number of lessons needed. The difference in the numbers was the food behavior change score.

Homophily

To establish a measure of homophily for each paraprofessional, a scale was developed to rate the homophily factor between each paraprofessional and the sample of homemakers assigned to work with them. The demographics of each paraprofessional were compared for possible matches or mismatches with the demographics of the sample of three homemakers in their respective caseload. Each paraprofessional was individually compared with their group of homemakers on six indicators.

Prior to matching, three of the indicators,

racial/ethnic background, income, and education level, required recoding. Racial/ethnic background was collapsed into two categories of black and others. Income was dichotomized to $1396 or below and above $1396. The $1396 figure was chosen because it represented the eligibility figure above which a homemaker family of four would not be eligible to participate in EFNEP. Education level was collapsed to three categories for both paraprofessionals and homemakers (less than high school, high school or GED, and more than high school). The two categories of less than a high school education were combined for the homemaker. The two categories of more than high school education were combined for the paraprofessional. The other three indicators were: (a) place of residence with five categories, (b) gender, (c) presence of children. An homophily score of 18 corresponded to a perfect match on all six indicators with all three homemakers and a score of zero corresponded to non-matches on all six indicators for each homemaker.

Preliminary Analysis

Dependent variables

A preliminary analysis was to be done on the four dependent measures of paraprofessional effectiveness: two measures of paraprofessional performance (workload and home visit evaluation), and two measures of homemaker success

(nutrient intake change and change in food behavior). The paraprofessional home visit evaluation was not able to be analyzed because of a low response rate from the supervisors. Thought was given to combining the two homemaker-based success variables but the measurement scales of the two were incompatible. The three dependent variables were considered separately in subsequent analyses.

Independent variables

The independent variables included the homophily variable, the 16 factors from the 16PF Personality Test, and training variables. Descriptive statistics of the 16 personality factors were examined to select those factors which were highly correlated with the effectiveness measures and least correlated with each other. A correlation analysis of the personality factors and effectiveness measures was done. The five second-stratum measures constructed based on factor loadings from each of the 16 profile aspects of human behavior described by Cattell, Eber, and Tatsuoka (1991) were: (F1) extraversion, (F2) anxiety, (F3) tough poise, (F4) independence, and (F5) superego/control.

Both factor analysis and principal component analysis were done on both the original 16 personality factors and the five second order factors in attempts to reduce the number of factors used in further analysis.

The four areas of investigation for training were: (a) attendance at orientation and in-service, (b) rating of orientation and in-service training, (c) helpful training topics, and (d) application of training. A correlation analysis was done on the four variables (two for attendance and two for rating) with the dependent effectiveness variables. The training topics were grouped by similar themes separately for orientation and in-service and frequencies done. Simple descriptive statistics were done on application of training questions.

Analysis

Correlations between the dependent and independent variables were done prior to the final multiple regression analyses. The independent variables that were used in the regression analyses were selected by results of the preliminary calculations and preliminary analyses.

The three paraprofessional effectiveness measures were regressed on the second order personality factors (F1 through F5), the two attendance at training variables, and homophily score. In addition, two principal components of the second order personality factors were also analyzed separately with homophily.

CHAPTER FOUR

RESULTS

This chapter describes the Virginia Adult Expanded Food and Nutrition Education Program (EFNEP) paraprofessional population and presents the results of the survey questionnaire and personality test along with homemaker data. The results are organized into four sections: basic descriptive statistics of both paraprofessionals and homemakers, other paraprofessional and homemaker variables, initial effectiveness measure analyses, and predictors of paraprofessional effectiveness. The Statistical Package for the Social Sciences (SPSS-X, 1988) was used to analyze all data.

Subjects

Information was elicited from all Virginia Adult EFNEP paraprofessionals employed as of September 1, 1992. The list of EFNEP units who received information is contained in Appendix C. Replies were received from 40 of 52 individual paraprofessionals for a response rate of 77%. Paraprofessionals from 15 of 20 EFNEP units responded for a unit response rate of 75%. Of the EFNEP units responding,

eight were urban and seven were rural, compared to two urban and three rural non-responding units. At approximately the same time as the distribution of the study packets several EFNEP units were informed by the State EFNEP Office of changes in program administration. Of the five units not responding, two were informed that their Adult EFNEP Units were being abolished. Of the remaining three, one unit was involved with another research project and had insufficient time to provide information, another did not have homemaker data available due to a computer problem, and the third was without a paraprofessional at the time of the study due to a resignation. The non-responding units were located throughout Virginia, one from northern Virginia, one from the south-east Virginia, one from south-west Virginia, and the remaining two were located in central Virginia.

The sample of homemakers was selected from a computerized caseload list of EFNEP families in the 15 participating units as of September 30, 1992. A random sample of three homemakers per paraprofessional, who had graduated from EFNEP and had an exit food intake score, was selected. In two cases three homemakers were not available because less than three homemakers had graduated, one paraprofessional had only two homemakers and another had no graduates, resulting in N = 116 rather than 120.

Demographic Information

Table 4.1 contains demographic information on the paraprofessionals and a subset of the homemakers with whom they worked.

Paraprofessional

The paraprofessionals lived in a variety of communities throughout Virginia with the largest percentage (37.5) living in central cities followed by 22.5% living in small towns under 10,000 people. All the paraprofessionals were female and the majority (87.5%) were either married or divorced/widowed with children (92%) and black (73%). Ninety-five percent of the paraprofessionals had graduated from high school and 62% had some college. Monthly family income ranged from $514 to $7000 (mean = $2285) per paraprofessional with 20% (n=8) of the paraprofessionals not responding to this question.

Homemaker

Like the paraprofessionals, the largest percentage (43.1%) lived in central cities with other values of the homemakers roughly parallel to that of the paraprofessionals. All but three of the homemakers were female (97.4%). The main differences between the homemakers and paraprofessionals were in income and education level, both generally lower for the homemakers than for the

Table 4.1

Paraprofessional and Homemaker
Demographic Characteristics

Variable	Paraprofessional N (40)	%	Homemaker N (116)	%
Place of Residence				
Farm	4	10.0	4	3.4
Small town	9	22.5	34	29.3
Large town	7	17.5	15	12.9
Suburb	5	12.5	13	11.2
Central city	15	37.5	50	43.1
Race				
White	10	25.0	26	22.4
Black	29	72.5	86	74.1
Hispanic	0	0	3	2.6
Am. Indian	0	0	0	0
Asian	1	2.5	1	0.8
Gender				
Male	0	0	3	2.6
Female	40	100.0	113	97.4
Education level				
8th or less			9	7.6
9-11th	2	5.0	41	35.3
12th or GED	13	32.5	49	42.2
Some college	20	50.0	17	14.7
Bachelor Degree	5	12.5		
Children				
No	3	7.9	3	2.5
Yes	35	92.1	113	97.4
Income (Monthly)	(N = 32)			
$1396 and below	9	28.1	110	94.8
above $1396	23	71.9	6	5.2

paraprofessionals. The monthly homemaker or family mean income was $464 with all but two homemakers' income falling between $154 and $747. There was an almost even split between those homemakers who had graduated from high school (42%) and those who had not (43%), with only 15% graduating from high school and having some college. The average age of the homemakers was 27.0 with a minimum of 16 and maximum of 41 years. Marital status for the homemakers was not available.

Homophily

To get a clearer picture of homophily, or correspondence between the paraprofessionals and the set of homemakers whom they taught, Table 4.2 provides a breakdown of the number of exact matches between them on six demographic variables. The levels for these variables are as given in Table 4.1, except for race (which was dichotomized into black/other).

Over 80% of the paraprofessionals exactly matched their three homemakers on gender and presence of children (35 and 33 matches respectively). Place of residence and race followed, with 68% and 63% perfect matches. As was apparent from the overall percentages, income and education level were the most mismatched variables. In 24 cases (63%), the paraprofessional was not in the same income bracket as any of her homemakers, with only nine cases of a perfect match

Table 4.2

Comparison of Matches in Demographic Variables

(N = 38 Paraprofessionals)

Variable	Number of Paraprofessional exactly matching Homemakers			
	0 Matches	1 Matches	2 Matches	3 Matches
Place of residence	7	0	5	26 (68.4%)
Race	3	3	8	24 (63.1%)
Gender	0	0	3	35 (92.1%)
Education level	14	16	5	3 (7.9%)
Children	3	0	2	33 (86.8%)
Income	24	4	1	9 (23.7%)

in income with all three homemakers. Educational level was the most mismatched variable, with 30 paraprofessionals (80%) not matching any homemakers or only one homemaker.

An overall homophily score was computed by counting the number of matches across the homemakers on each variable (for a complete detailing of how this was done, see Appendix P). The resulting score could range from zero to 18. Zero represented a paraprofessional who did not match any of the three homemakers on any of the six variables, and 18 represented a paraprofessional who matched all three homemakers on all six variables. The homophily scores ranged from seven to 18 with a mean of 12.8 and a standard deviation of 3.1.

To further examine homophily, the paraprofessionals and homemakers were compared on a subset of three demographic variables, place of residence, race, and gender, as described above. This subset of three variables was chosen because it was felt they represented the cultural empathy aspects, and except for children, had the highest percentages of perfect matches (68%, 63%, and 92%, respectively). Those paraprofessionals who matched perfectly on all three variables with all three homemakers (N=14) were compared with the group that had some mismatches (N=25).

Paraprofessional Personality Information

Information on personality factors of the paraprofessionals was collected via the Sixteen PF Personality Test. Table 4.3 contains paraprofessional composite information for each factor of this test. The observed mean for each factor was compared using a t-test with the published mean (Cattell, Eber, and Tatsuoka, 1991 pp. 24-31).

The paraprofessionals as a group were significantly different ($p<.05$) from the general population who have been tested on eight of the 16 factors. On two factors the paraprofessionals scored higher than the published means and are described below:

Factor	Definition of the Personality Factor
G	Persevering, proper, moralistic, rule-bound
Q3	Socially precise, following self-image, compulsive

The significant factors where the paraprofessionals scored lower than the published mean are described as follows:

Factor	Definition of the Personality Factor
B	Concrete-thinking
F	Prudent, serious, taciturn
I	Self-reliant, realistic, no-nonsense

Table 4.3

Composite Paraprofessional Scores on 16 PF

Factor	Label	Observed Mean (Std.Dev.)	+ or -	Published Mean (Std.Dev.)
A	Warmth	8.67 (2.10)		8.75 (2.18)
B	Intelligence	3.77 * (1.51)	-	4.31 (1.63)
C	Emotionally Stability	7.51 (2.44)		7.25 (2.42)
E	Dominance	4.74 (1.98)		4.99 (2.29)
F	Impulsivity	5.90 * (2.02)	-	6.9 (2.2)
G	Conformity	8.90 * (1.60)	+	7.44 (2.52)
H	Boldness	6.51 (2.82)		6.73 (2.67)
I	Sensitivity	6.33 * (1.78)	-	7.46 (2.28)
L	Suspicious	5.10 (1.97)		5.33 (1.97)
M	Imagination	4.80 * (1.67)	-	5.88 (2.37)
N	Shrewdness	4.80 (1.92)		4.8 (2.05)
O	Insecurity	5.31 * (2.44)	-	6.79 (2.58)
Q1	Radicalism	6.59 (2.19)		6.65 (2.37)
Q2	Self-Sufficiency	4.33 (1.84)		3.89 (2.28)
Q3	Self-Discipline	8.36 * (2.22)	+	7.71 (2.13)
Q4	Tension	4.85 * (2.46)	-	6.09 (2.45)

** = p<.01
* = p<.05

+ = scored higher than published mean
- = scored lower than published mean

Factor	Definition of the Personality Factor
M	Careful, conventional, regulated by external realities
O	Self-assured, confident, secured, self-satisfied
Q4	Tranquil, torpid, unfrustrated

The other scores fell in the middle of the continuum between low and high scores and were not significantly different from the general population.

Paraprofessional Training

Orientation and in-service training

Seven questions on the Paraprofessional Questionnaire concerned paraprofessional orientation and in-service training while an EFNEP paraprofessional. Attendance and adequacy ratings are in Table 4.4. Attendance at orientation varied widely. Twenty-two percent had attended 1 to 5 days orientation, while another 22% had attended more than 30 days. The attendance at in-service training was less varied with 75% having attended 16 to 35 sessions.

Seventy-five percent of the paraprofessionals rated their EFNEP orientation as either mostly adequate or totally adequate. In-service training was rated by 77.5% of the paraprofessionals as either mostly adequate or totally

Table 4.4

Paraprofessional
Orientation and In-service Training

Attendance
N = 40

Variable Category	N	%
Orientation Attendance		
None	0	0
1-10 Days	12	30
11-20 Days	11	27.5
21-more than 30 Days	17	42.5
In-Service Attendance		
None	0	0
1-15 Sessions	10	25
16-25 Sessions	16	40
26-35 Sessions	14	35
More than 35 Sessions	0	0

Rating
N = 40

Category	Orientation		In-service	
	N	%	N	%
Inadequate	10	25.0	7	17.5
Mostly adequate	16	40.0	21	52.5
Totally adequate	14	35.0	10	25.0

adequate. The "inadequate" category is a merging of three possible responses: not adequate, somewhat inadequate, and somewhat adequate. Only one paraprofessional gave both orientation and in-service the lowest "not adequate" rating.

The relationship between attendance at and rating of training was examined through correlations (Table 4.5). Orientation attendance was not correlated with any of the other three training variables. In-service attendance was positively correlated with in-service rating ($r=.47$) and orientation rating ($r=.42$). The highest correlation was between the two training ratings ($r=.70$ and $p<.01$). This result was not surprising when the skewed distribution of the rating variables is taken into account. Those paraprofessionals with less than three years of employment were compared to those with more than three years and no apparent differences were found.

Training topics

The topics from the orientation and in-service training that the paraprofessionals felt were most helpful in performing their job duties are listed in Table 4.6 along with the frequencies. The topics mentioned most often as being helpful from orientation were; EFNEP policies (N=11), involving clients (N=10), and nutrition information (N=10). Nutrition information was the most frequent response from in-service training (N=25).

Table 4.5

Training Variable Correlations

N = 40

Variable	1	2	3	4
1. Attendance Orientation	1.00			
2. Attendance In-service	.27	1.00		
3. Rating Orientation	.20	.42 **	1.00	
4. Rating In-service	.07	.47 **	.70 **	1.00

** p = <.01

Table 4.6

Orientation and In-service Topics

Orientation Topic	Frequency
EFNEP policies, how to do reports	11
How to involve clients, share ideas	10
Nutrition information	10
Meal planning, food preparation	8
How to contact new families	8
How to accept who people are, working with low income families	7
How to show concern, respect honesty	5
Public speaking	4
Learn nutrition materials to use	4
How to sell myself as a person, self esteem	3
Other	2
In-service Topics	**Frequency**
Nutrition information	25
Food safety, food preservation, canning	9
Menu planning, meal preparation	8
Self-defense, personal safety	5
Nutrition education materials	4
Reading labels	3
Making use of other social service agencies	3
Counselling techniques	2
Public speaking	2
EFNEP recruiting techniques	2
Other	2

Application of nutrition information

Responses to the questions pertaining to application of nutrition information by themselves, their family members, and other paraprofessionals is contained in Table 4.7. Ninety-five percent of the paraprofessionals reported that they themselves followed EFNEP taught nutrition principles, most or all of the time. In addition, they reported that they felt 85% of other paraprofessionals followed EFNEP taught nutrition principles most or all of the time. It appears the paraprofessionals are "practicing what they preach", according to their perceptions.

Other Paraprofessional Variables

Years of service

One quarter (10) of the paraprofessionals had been working with EFNEP more than 15 years with 58% (23) working more than five years. Only two paraprofessionals had worked less than 12 months (see Table 4.8). This group of paraprofessionals was an experienced group.

Workload

Quantity of work for individual paraprofessionals was measured by their caseload of homemakers and number of instructions for the year. The average paraprofessional caseload was 102 with a range from 20 to 148 homemakers.

Table 4.7

Paraprofessional Use of Nutrition Information
N = 40

Category	By Themselves		By Family Members		By Other Paraprofes-sionals	
	N	%	N	%	N	%
Not at all	1	2.5	1	2.5	0	0
Some of the time	1	2.5	9	22.5	6	15.0
Most of the time	30	75.0	25	62.5	28	70.0
All of the time	8	20.0	5	12.5	6	15.0

Table 4.8

Years of Service with EFNEP
N = 40

Category	N	%
Less than 1 year	2	5.0
13 months to 3 years	8	20.0
3 - 5 years	7	17.5
6 - 10 years	12	30.0
11 - 15 years	1	2.5
More than 15 years	10	25.0

The average number of instructions was 705 with a range from 47 to 1771 instructions. Caseload, along with the designation of the EFNEP unit as either rural or urban (see Appendix C), was used to calculate workload rating. Sixty-three percent (25) of the paraprofessionals worked at urban units while 37% (15) worked at rural units.

Table 4.9 contains information on the computed paraprofessional workload variable which represented a measure of performance for the paraprofessional. Sixty percent (24) of the paraprofessionals were in the categories of medium acceptable or commendable with 17.5% (7) in the unacceptable category.

Work visit evaluation

Several attempts were made to obtain the supervisor evaluation of the paraprofessional without success. Only 15 of 40 were received (37.5% return). Thus, the performance measure for the paraprofessional, as viewed by the supervisor, was not used in this study. Of those evaluations received the average score was 49.0 with a standard deviation of 7.9.

Homemaker Information

Food behavior and knowledge

The food behavior change scores were obtained utilizing

Table 4.9

Paraprofessional Workload

(based on homemaker caseload)

N = 40

Unit Designation		Rating	N	%
Urban	Rural			
Less than 80	Less than 60	Unacceptable	7	17.5
80 to less than 110	60 to less than 80	Lowest Acceptable	9	22.5
110 to less than 140	80 to less than 100	Medium Acceptable	15	37.5
140 or more	100 or more	Commendable	9	22.5

information from Family Record Part B (Appendix H) and represented the number of nutrition education lessons completed by the homemaker out of a possible 16 lessons. Table 4.10 contains information concerning the change in food behavior and knowledge by the homemakers from entry to EFNEP to exit or graduation from EFNEP. The mean entry score was 9.4 (lessons needed), while the exit score was 1.4 (lessons still needed), for a mean change score of 8.0 (lessons completed) out of a possible 16. Thus, the homemakers had, on average, completed almost eight lessons and demonstrated adequate knowledge and practice on the exit assessment. Out of 16 possible lessons, they lacked only 1.4 lessons of mastering all the lessons.

Nutrient intake

Nutrient data for the homemakers was obtained from Family Record Part C (Appendix I). Nutrient analyses were performed using the Enhanced EFNEP Record and Reporting System developed by Cornell Cooperative Extension Service, May 1991. The method described previously to assess nutrient intake, the Nutrient Adequacy Ratio (NAR) score, was applied to the homemaker nutrient analysis information. Table 4.10 contains the NAR scores for entry, exit and difference. The mean NAR score rose from 56.3% at entry to 82.4% at exit, with a mean difference of 26.1%. The graduated homemakers, on average, were 26.1% closer to

Table 4.10

Homemaker Success Measures

Descriptives

N = 116

Measure	Mean (Std. Dev.)	Range
Food Behavior		
Pre (entry)	9.4 (3.4)	1.7 - 15.0
Post (exit)	1.4 (1.4)	0 - 5.7
Change	8.0 (3.7)	1.3 - 14.3
Nutrient Intake		
Pre (entry)	56.3 (15.3)	15.3 - 77.0
Post (exit)	82.4 (13.6)	48.2 - 100.0
Change	26.1 (22.2)	-23.9 - 69.0

reaching the goal of a dietary intake of 100% of the Recommended Dietary Allowances for iron, calcium, Vitamin A, and Vitamin C.

Summary of Paraprofessional and Homemaker Information

Paraprofessional and homemaker demographic variables were examined to develop a homophily score that represented their "likeness". Paraprofessional work related variables were used to compute a workload variable as a measure of performance of the paraprofessional for quantity of work. In addition, information on training was obtained to examine its impact on effectiveness. Homemaker data concerning food behavior and nutrient intake was used to compute success measures of homemakers in nutrition knowledge and change in food intake.

Initial Effectiveness Measure Analyses

Dependent Variables

Relationships between effectiveness measures

In preparation for the final decision of which variables and/or factors to use in further analyses, several preliminary analyses were performed on the dependent variables. The dependent variables were: (a) workload, (b)

change in food behavior, and (c) change in nutrient intake. The relationships between these effectiveness measures were correlated with each other, but only moderately so (see Table 4.11). The strongest relationship (r=.45) was between change in food behavior and change in nutrient intake ($p<.01$). The relationships between paraprofessional performance (workload) and change in homemaker's food behavior (r=.36) and change in nutrient intake (r=.32) were significant at $p<.05$. Change in nutrient intake and change in food behavior are homemaker based success measures while workload is a paraprofessional based performance measure. Thus, even though the measures were related, they might have different sets of variables that influence them. Separate regressions and correlations were run to examine the influence of the independent variables separately for each dependent variables.

Independent Variables

The independent variables were: (a) homophily, (b) attendance at and ratings of orientation and in-service training, and (c) 16 personality factors. Due to the small subject size (n=40) a smaller sub-set of factors was needed in order to effectively use regression analyses. Correlations were therefore considered (see Table 4.12).

Homophily

Homophily was positively correlated with change in food

Table 4.11

Means and Correlations for
Paraprofessional Effectiveness Measures

N = 38

Measure	Mean (Std. Dev)	Correlations		
		1	2	3
1. Change in Food Behavior	8.0 (3.7)	1.00		
2. Change in Nutrient Intake	26.0 (22.1)	.45 **	1.00	
3 Paraprofessional Workload	1.7 (1.0)	.36 *	.32 *	1.00

** = p<.01 * = p<.05

Table 4.12

Correlations Between Homophily, Training, Personality Factors and Effectiveness Measures

Variable	Food Behavior	Nutrient Intake	Workload
Homophily	.33 *	.15	.12
Homophily (Match)	.22	.16	.36 *
Training Orientation	.19	-.31	-.05
In-service	.14	.14	-.11
Personality factors			
A	.25	.13	-.14
B	-.36 *	-.22	-.52 **
C	.21	.10	.06
E	.04	-.09	.11
F	.42 *	.08	.14
G	-.04	.18	.08
H	.18	-.10	.01
I	-.09	-.29	-.02
L	.11	-.22	-.05
M	-.00	.03	.22
N	-.22	.06	-.21
O	-.10	-.22	-.27
Q1	-.10	-.03	-.02
Q2	-.25	-.32	-.15
Q3	-.42 **	-.12	.02
Q4	-.19	.15	-.39 *

** = $p<.01$ * = $p<.05$

behavior (r=.33) but was not significantly correlated with either paraprofessional workload or homemaker change in nutrient intake. As was noted earlier, a second method of homophily calculation was determined by examining the relationship or correspondence between those paraprofessionals who perfectly matched all three homemakers on a subset of three variables, place of residence, gender, and race. Homophily when examined by the second method (labelled Match in Table 4.12), was significantly correlated (r=.36) with paraprofessional workload but was not correlated with either of the two homemaker success measures as expected. It appears the subset of three variables, place of residence, sex, and gender were important in influencing the variability in paraprofessional workload but did not make a difference in homemaker success of change in nutrient intake or food behavior. Since the paraprofessionals were responsible for recruiting their caseload of homemakers, homophily appears to be a factor in the recruitment of homemakers.

Training

The training variables were not significantly correlated with any of the effectiveness measures. It made no difference when attempts were made to collapse the number of categories in an effort to approach normal distribution for all four training variables.

Personality factors

Four of the 16 factors were found to be moderately correlated with at least one of the dependent measures (see Table 4.12). Factors B (concrete thinking), F (enthusiastic), and Q3 (self-discipline) were correlated with change in food behavior. Factors B (concrete thinking) and Q4 (low tension) were correlated with paraprofessional workload. None were correlated with change in nutrient intake. Only one factor, Factor B, was related to more than one measure. All four factors (B, F, Q3, and Q4) were among the group of eight factors which were previously found to be significantly different from the general population who had been tested on the 16 PF.

A factor analysis was done on the observed personality factor scores. Due to the small sample size the computed factors were not stable. The results of the factor analysis were: (a) not related to publisher established second-order factors, (b) not related to prior research, and (c) not directly interpretable for further analysis. Thus, using the results from the factor analysis would not have served any purpose in further analysis since there could be no practical application of the results. A principal component analysis was also done on the original 16 PF factors with results similar to that of the factor analysis.

The second-order factors established by the 16 PF test

publisher were therefore correlated with the dependent variables. The second-order factors were: (F1) extraversion, (F2) anxiety, (F3) tough poise, (F4) independence, and (F5) superego/control. A more in-depth description is contained in Appendix O. Only two of the second-order factors were significantly correlated to the effectiveness measures. Extraversion (Factor 1) was positively related to change in food behavior ($r=.39$) at $p<.01$ and Anxiety (Factor 2) was negatively related to workload ($r=-.38$) at $p<.05$. The complete matrix is contained in Appendix O. The more extroverted the paraprofessional, the greater the change in food behavior score for the homemakers. And, the less anxious the paraprofessional, the higher the paraprofessional performance or workload. This is consistent with what was found when the individual personality factors were examined.

A principal component analysis was done on the second order factors. Two components were identified which accounted for 74% of the variance in the second order factors. Second order factors, F2, F3, and F5, reduced to Principal Component 1 (PC1) and factors, F1 and F4, reduced to Principal Component 2 (PC2). PC1 may be interpreted as internally related characteristics, such as feeling, while PC2 may be associated with external or more interactive behaviors.

Predictors of Paraprofessional Effectiveness

Prior to using regression analyses, the assumptions of normality, constant variance, linearity, and independence were checked through plots of the variables and examination of the residuals with histograms and scatterplots. As discussed previously, each dependent variable was analyzed separately. The second order factors, along with homophily, were entered into stepwise multiple regression equations with each of the dependent variables. Other multivariate analyses could not be utilized due to the small sample size.

Change in nutrient intake

The five second order factors, along with the homophily score, were entered into a multiple regression equation with change in nutrient intake. The result was a non-significant R-square value and non-significant beta weights for the all the independent variables. This was not surprising given the results from the correlation analysis. Factors other than those being examined in this study were influencing the change in nutrient intake.

Change in food behavior and knowledge

The five second order personality factors, along with the homophily score, were entered into a stepwise multiple regression equation with change in food behavior. Three of the second order factors, F1, F5, and F2, along with

homophily entered the model, which resulted in an R-square=.47 ($p<.00$) (see Table 4.13). This may be interpreted that paraprofessionals, who are extroverted (F1), are similar to their caseload of homemakers, and have low need for control (F5) and low anxiety (F2), would be related to homemakers having larger change scores on the measure of food behavior and knowledge.

Paraprofessional performance (workload)

In the last stepwise multiple regression equation with workload as the dependent variable, homophily, when measured on the 0 to 18 score, was not significant. Of the second order personality factors, only F2 was significant (see Table 4.13). Again, as with change in food behavior, a low value of F2 (low anxiety) was a predictor of an effective paraprofessional as measured by workload.

Alternate method

A second method of analysis was done in an attempt to differentiate the paraprofessionals. The principal components of the second order factors, PC1 and PC2, along with the homophily which was calculated on the subset of three variables (Match), were entered into regression equations to predict the three effectiveness measures. Only change in food behavior resulted in a significant but low R-square=.20 and a significant beta weight for PC2. All other combinations were not significant. Twenty percent of the

Table 4.13

Significant Predictors from Stepwise Multiple Regression Analysis

Dependent Variable	R	Beta	R-square	Change R-square	p value
Change in Nutrient Intake	None Significant				
Change in Food Behavior					
F1	.39	.39	.15	.15	.02
Homophily	.53	.36	.28	.13	.00
F5	.63	-.35	.40	.12	.00
F2	.69	-.35	.47	.07	.00
Workload					
F2	.38	-.38	.14	.16	.02

F1 = Extraversion F2 = Anxiety F5 = Control

variance in change in food behavior was explained by levels of PC2. PC2, an outgoing or interactive behavior factor, was comprised of second order factors, F1 (extraversion) and F4 (independence). The more outgoing and independent the paraprofessional, the higher the value for homemaker gain in food behavior and knowledge.

Homophily

A final analysis was done to look at differences between those paraprofessionals who were a perfect match with their sample caseload of homemakers (N=15) and those with less than a perfect match (N=24). First, a t-test was done to compare the two groups of paraprofessionals on their PC1 and PC2 scores. Neither were significant. Second, the dichotomized match/mismatch variable (MATCH), PC1, and PC2 were entered into separate regression equations to predict the three effectiveness measures. Only paraprofessional performance based on workload resulted in a significant but low R-square=.22, with Match producing the only significant beta.

Given the low R-square, 78% of the variance is left unexplained. Although significant, it is not explaining a great deal. A perfect match does not appear to make a difference in the effectiveness measures.

Summary

The measure of homophily, along with three of the

second order personality factors, were related to change in food behavior and knowledge. Training was not related to of the dependent measures of effectiveness, even when re-grouping to smaller number of categories was attempted. Homophily, when examine through a perfect match/mismatch method, was related to workload, as was the second order factor of low anxiety.

It appears that the paraprofessional characteristics and training did not affect the change in nutrient intake but did affect change in food behavior and knowledge. Factors other than the paraprofessional characteristics were apparently influencing the decision of the homemakers of what to eat.

The EFNEP paraprofessionals, in part, appear to be fitting the model of change agent success, in that homophily is influencing the homemakers at the knowledge stage but not at the decision stage. As suggested by Torisky (1987), other factors such as family support might be important.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The questions addressed in this study arose from the need of the Expanded Food and Nutrition Education Program (EFNEP), as other federal programs, to demonstrate its continued effectiveness in the delivery of services to families with improved employee selection and training. Several characteristics or skills had been shown or generalized to be related to professional change agent success. How these characteristics or skills were related to the paraprofessionals employed by the Virginia Adult EFNEP was investigated.

Summary and Conclusions

Subjects

The paraprofessionals from the Adult EFNEP in Virginia were the subject group. Demographic variables, personality factors, training information, and work related variables were elicited by mail through a questionnaire and the Sixteen PF Personality Test. Information was received from 40 out of 52 possible paraprofessionals for a paraprofessional response rate of 77%. Paraprofessionals

from 15 of the 20 Virginia EFNEP units responded, for an EFNEP unit response rate of 75%. Of those EFNEP units not responding (five), an examination of characteristics of location and unit designation was done to check for differences and none were found.

Homemakers

A sample of three homemakers, who had graduated from EFNEP between October 1, 1991 and September 30, 1992, was randomly selected for each paraprofessional. Demographic information on seven variables, an entry and exit food behavior and knowledge score, and information from entry and exit 24-hour food recalls was obtained from EFNEP Family Records Parts A, B, and C via the State EFNEP coordinator and was utilized in the study. Calculated variables of change in food behavior and change in nutrient intake were the two measures of homemaker-based paraprofessional effectiveness. The mean nutrient intake change was 26.1% and the mean change in food behavior was eight lessons completed. The homemakers had increased their nutrition knowledge by completing an average of eight lessons and implemented that knowledge through improved nutrient intake by meeting or more closely meeting the Recommended Dietary Allowances (RDA) by 26.1 percent. As expected, change in nutrient intake was moderately correlated (r=.45) with change in food behavior.

Workload

The paraprofessional-based effectiveness measure was workload, which was based on caseload information, EFNEP unit designation of rural or urban, and state program caseload expectations. Workload was moderately related to the homemaker-based effectiveness measures, change in nutrient intake (r=.32) and change in food behavior (r=.36). The supervisor view of effectiveness, home visit evaluation, was not available due to a low (37.5%) response rate. This was disappointing since supervisor view of effectiveness was the recommendation for further research from Hamilton (1988).

Homophily

Variables

The paraprofessionals were homophilious with their caseload of homemakers, especially on the variables of place of residence, race, gender, and presence of children, with over 60% of the paraprofessionals matching all three homemakers. The most disparate variables between the two groups were income and education level. One of the mismatched variables, a higher monthly income, was inherent in the paraprofessional's employment status with EFNEP just as the homemakers who were enrolled in EFNEP were inherent not to be employed and had time to attend the EFNEP lessons. The second mismatched variable, education, was a factor in

EFNEP employment selection. According to the state coordinator, in recent years an attempt was made to recruit and select paraprofessionals who were high school graduates from the target population. One of the goals of EFNEP is to reach as many homemakers as possible with emphasis most recently to group teaching. It was thought that paraprofessionals with a high school education would have more communication skills to provide the group teaching but still not the technical nutrition related skills and would come to the job with less training required.

Score

An homophily score or "likeness" between the paraprofessional and their three selected homemakers was calculated by matching six demographic variables. Homophily scores ranged from seven to 18 with a mean of 12.8 and standard deviation of 3.1. Homophily had a low positive correlation with change in food behavior ($r=.33$) but was not correlated with change in nutrient intake.

The change in food behavior represented the knowledge stage of the homemakers innovation-decision process in the model of diffusion described by Ryan and Gross (1943), while change in nutrient intake represented the decision stage. This may be interpreted that the change agents were responsible for disseminating the information but friends/family were more important in the decision to adopt.

Thus, it appears that the paraprofessionals, acting as change agents, were more effective when they were more "like" the homemakers that they taught and influenced the innovation-decision at the knowledge stage.

A second method of examining homophily was done by grouping according to perfect match on the subset of three variables deemed to represent cultural empathy (i.e. residence, race, and gender). Twenty-two percent of the variability in workload was explained by the perfect match grouping. Each paraprofessional recruited his/her own caseload of homemakers. Thus, the more "like" or the more culturally empathetic they are with their potential homemakers the more likely they are to recruit, retain and graduate them.

Paraprofessional characteristics

Depending on how effectiveness was measured, it appears that different characteristics were important. Three of the 16 personality factors (concrete thinking, seriousness, and self-discipline) were positively correlated with change in food behavior. Two factors (concrete thinking and tranquility) were positively correlated with workload, and none were correlated with change in nutrient intake.

The small sample size made analysis of the personality factors challenging. Various analysis techniques were attempted to reduce the number of factors with limited

success. Factor analysis, second order publisher produced factors, and principal components of the second order factors were analyzed with the dependent measures. The paraprofessional personality characteristics were not easily examined.

Almost half (47%) of the variability in change in homemakers' food behavior was being accounted for by three second order personality factors and homophily. The picture of an effective paraprofessional was an outgoing, practical person, with low anxiety, and one that was able to meet the homemakers on their terms. A small portion of variability (14%) in workload was accounted for by one second order personality factor. The picture of this effective paraprofessional was also one with low anxiety. None of the characteristics were significantly related to change in nutrient intake.

Hamilton (1988) found four factors (venturesome, trusting, relaxed, and imagination) related to consultant success. One of the four, relaxed, was also found to be related to effectiveness in this study.

What a person chooses to eat, even with knowledge of correct food choices, is a very personal one. It appears EFNEP was making a difference in both food behavior-knowledge and change in nutrient intake but the variability in the change of nutrient intake was not being explained by

paraprofessional personality factors.

Training

Orientation and in-service

Neither attendance at orientation nor attendance at in-service, was related to effectiveness. There was a wide variation in attendance of both orientation and in-service and the two were not related. The paraprofessionals were much more consistent in how they rated both trainings, which was relatively high. However, there was no apparent relationship between the training variables and effectiveness measures. One problem might have been the number of categories used for the attendance variables combined with the small sample size. It might have been better analyzed by asking the questions with a continuous variable. Another problem was that the supervisor view of effectiveness was not available. It would be expected that training might be related to a supervisor-based measure since the supervisor generally was the person providing the training and determines the content and amount of training.

Training topics

Ten topics each from orientation and in-service training emerged as having the most utility for the paraprofessionals. The topics most often given as helpful in performing their job duties were EFNEP policies, how to involve clients, and nutrition information from orientation

and, overwhelmingly, nutrition information from in-service training. Many of the topics listed by the paraprofessionals were among those listed with orientation and in-service guidelines from the EFNEP Policy and Procedure Manual (Cox, 1991).

Application of training

With respect to their own application of nutrition information, 95% of the paraprofessionals reported that they followed EFNEP taught nutrition practices most to all the time. They also believed that 85% of other paraprofessionals followed EFNEP taught nutrition principles most to all of the time. It appears that the paraprofessionals and their families were putting into practice what they had learned in EFNEP, according to their perceptions.

Summary

Torisky (1987) showed retention of dietary improvement by the homemakers from six to 36 months after leaving the program. She found family support the only family measure that was related to diet even as it extended beyond graduation from EFNEP. For the measure of change in nutrient intake, paraprofessional characteristics were not related in this study and confirms information previously found by Torisky (1987). I would speculate that the influence of family support might be important not only to

post-graduation retention but also in the homemakers' initial innovation-decision process. If the characteristics of the paraprofessional were influencing the knowledge but not the decision stage, then family support might make the initial difference of whether to adopt or not.

Were the paraprofessionals more like the professionals? This was an experienced group of paraprofessionals with more than 50% having worked more than five years. Rogers (1983) discussed changes in the paraprofessional with increasing years of service. He noted a transference from orientation and empathy with clients to orientation and empathy with the change organization, and less socialization with the clients. This might be occurring in this group of paraprofessionals.

How well EFNEP fits the diffusion model can not be directly answered. But, homophily was an influential factor along with one second order personality factor (low anxiety) being related to change in food behavior. In addition, a perfect match was related to workload and explained 22% of the variability in workload. The EFNEP paraprofessionals, as predicted by Rogers (1983), who were more homophilious with their homemaker caseload were more effective.

Recommendations

Future research and methodological issues

Further attempts should be taken to obtain the supervisor view of effectiveness. Rather than use existing information, consideration should be given to having the supervisor rate the employee separately for the study.

Further attempts to increase the response rate would have limited success since two of the units were being eliminated and another did not have any homemaker information due to a computer problem. A larger sample size would have allowed for multi-variate regression technique to be used. The only way this could be accomplished would be to include other states and compatibility of homemaker information could be an issue.

Homophily was a difficult concept to quantify. Which variables to consider as well as how to compare the two groups, needs further exploration. Income was especially challenging by virtue of EFNEP employment for the paraprofessional. Consideration should be given in the case of the paraprofessional, to compare family income minus the paraprofessional's salary or use family income prior to EFNEP employment. Other measures of cultural differences should be explored and incorporated into subsequent investigations.

Lastly, different methodologies may have been more effective in examining the research questions. A comparative multi-attribute case study which could provide an in depth analysis across all homemakers for one or two effective and one or two non-effective paraprofessionals would be one method.

Implications for EFNEP

Future focus on training can be gleaned from information provided by the paraprofessionals of what they felt was helpful. The focus for orientation should be, EFNEP policies and reports, communication and interpersonal skills with the homemakers, followed by nutrition information. Overwhelmingly, nutrition information was the response of topic most helpful from in-service training and where the focus should directed. But, food safety, food preservation and meal planning were also mentioned frequently. Future research might finds ways to measure orientation and empathy for the paraprofessionals to the change agency and to the clients, to examine this issue further.

The paraprofessional characteristics identified in this study as being related to effectiveness could be used in employee selection. The paraprofessional must be able to recruit within his/her community, translate nutrition information into terms acceptable to the homemakers and

bring about identified changes in behavior. A paraprofessional who is practical, outgoing, and has a low anxiety is more likely to be able to accomplish the required tasks and should be considered in the selection process.

REFERENCES

Argyris, C. (1970). Intervention theory and method: A behavioral science view. Reading MA: Addison-Wesley Publishing Co.

Barber, W. H. & Nord, W. (1977). Transactions between consultants and clients: A taxonomy. Group and Organizational Studies, 2, 198-216.

Beal, G. M. & Rogers, E. V. (1957). Informational sources in the adoption of new fabrics. Journal of Home Economics, 49, 630-634.

Bennis, W. G. (1969). Organizational development: It's nature, origins, and prospects. Reading MA: Addison-Wesley Publishing Co.

Bennis, W. G., Benne, K. D., & Chin, R. (1985). The planning of change (4th Ed.). New York, NY: CBS College Publishing.

Berman, P. & McLaughlin, M. W. (1978). Federal programs supporting educational change, Vol, VIII, Implementing and sustaining innovations. Santa Monica CA: The Rand Corp.

Block, A., Laughlin, S., Del Tredici, A., & Omelich, C. (1985). California EFNEP evaluation study. (Available from United States Department of Agriculture, National Agricultural Library).

Bloxom, B. M. (1978). Review of Sixteen Personality Factor Questionnaire. In Buros, O. K., The eight mental measurement yearbook. (pp. 1077-1078). Highland Park, NJ: The Gryphon Press.

Bolman, L. (1976). Group leader effectiveness. In Cooper, C. L. (Ed.). Developing social skills in managers. (pp. 37-51). New York, NY: John Wiley & Sons.

Brink, M., Tenney, M., Deegan, P., and Ritchey, N. (1985). New York State EFNEP/Food Stamp Pilot Project - An alternative teaching method: One-to-one plus group lessons supplemented with phone calls. (Available from Extension Service, U.S. Department of Agriculture)

Cattell, R., Eber, and Tatsuoka, K. (1991). 16PF handbook. (Available from Institute for Personality and Ability Testing, Inc. Champaign, IL).

Cattell, R. & Institute for Personality and Ability Testing, Inc. (1978). 16PF. (Available from Institute for Personality and Ability Testing, Inc. Champaign, IL).

Celuch, K. & Evans, R. H. (1987). Innovativeness and confidence in information processing: Revisited. Psychological Reports, 60, 301-302.

Chipman, H. & Kendall, P. A. (1989). Twenty years of EFNEP: changes and challenges. Journal of Nutrition Education, 21, 265-269.

Coleman, J. S., Katz, E., & Menzel, H. (1966). Medical innovation: A diffusion study. Indianapolis, IN: Bobbs-Merril Co. Inc.

Conone, R. M. (1992). EFNEP: Reaching out to families in poverty. Journal of Home Economics,84(4), 38-41.

Coonerty, S. M. (1991). Change in the change agents: Growth in the capacity to heal. In R. C. Curtis & G. Stricker (Eds.), How people change inside and outside therapy (pp.81-95). New York, NY: Plenum Press.

Cooper, C. L. (1977). Adverse and growthful effects of experiential learning groups: The role of the trainer, participant, and group characteristics. Human Relations, 30(12), 1103-1129.

Copp, J. H., Sill, M. L., & Brown E. J. (1958). The function of information sources in the farm practice adoption process. Rural Sociology, 23, 146-157.

Cox, R. (1991). Virginia EFNEP policy and procedure manual. (Available from Virginia EFNEP Office, Blacksburg, VA).

Davie, L. E., Butler, R. O., Williams, B., & Meiners, S. (1973). A study of certain personality, skill, and demographic characteristics of the Expanded Food and Nutrition Educational Program aides and homemakers. (Available from Unites States Department of Agriculture, National Agricultural Library).

Elliott, S. M. (1983). A Communication-Based Theory of Instruction. Chico, CA: Center for Information and Communication Studies, California State University. (ERIC Document Reproduction Service No. ED 234 894)

Goodlad, J. I. (1975). The dynamics of educational change: Toward responsive schools. New York, NY: McGraw-Hill.

Hamilton, E. E. (1988). The facilitation of organizational change: An empirical study of factors predicting change agents' effectiveness. The Journal of Applied Behavioral Science, 24(1), 37-59.

Havelock, R. G. (1969). Planning for innovation through dissemination and utilization of knowledge. Ann Arbor, MI: Center of Utilization of Scientific Knowledge, The University of Michigan.

Havelock, R. G. (1973). The change agents guide to innovation in education. Englewood, NJ: Educational Technology Publications.

Hertzler, A. A. & Frary, R. B. (1989). Effect of instruction and family attributes on iron intake of Expanded Food and Nutrition Education Program homemakers. Topics in Clinical Nutrition, 4(1), 27-35.

Howell, J. M. & Higgins, C. A. (1990). Champions of technological innovation. Administrative Science Quarterly, 35, 317-341.

Jackson, R. W. (1986). Cost efficiency and effectiveness of two nutrition education methods for Food Stamp recipients. (Available from Extension Service, United States Department of Agriculture).

Johnson, N., Nitzke, S., and Vandeberg, D. L. (1974). A reporting system for nutrient adequacy. Home Economics Researach Journal, 2, 210-221.

Joy, A. M. (1986). The California EFNEP/Food Stamp study on group teaching. (Available from Extension Service, United States Department of Agriculture).

Kahn, R. L. (1974). Organizational development: Some problems and proposals. The Journal of Applied Behavioral Science, 10, 485-502.

Karvetti, R. & Knuts, L. (1986). Validity of 24-hour recall. Journal of American Dietetic Association, 85, 1437-1442.

King, J. C., Cohenour, S. H., Corruccini, C. G., and Schneeman, P. (1978). Evaluation and modification of the basic four food guide. Journal of Nutrition Education, 10, 27-29.

Lanyon, R. I. & Goodstein, L. D. (1982). Personality assessment (2nd Ed.). New York, NY: Wiley & Sons.

Leidenfrost, N. B. (1991). The expanded food and nutrition education program annotated bibliography 1968-1988. (Available from Extension Service, United States Department of Agriculture).

Lewin, K. (1951). Field theory in social science. New York, NY: Harper and Row Publishers.

Lippitt, G. & Lippitt, R. (1986). The consulting process in action 2nd Ed. San Diego, CA: University Assoc. Inc.

Maddi, S. R., (1980). Personality theories (4th ed.). Homewood, IL: The Dorsey Press.

Mitchell, J. V. (1985). The ninth mental measurement yearbook. (Available from Buros Institute of Mental Measurement of Univ. of Nebraska-Lincoln.

National Research Council. (1989). Recommended Dietary Allowances Tenth Revised Edition. Washington, DC: National Academy of Sciences.

Niehoff, R. (1964). Theravada buddhism: A vehicle for technical change. Human Organization, 23, 108-112.

Ottaway, R. N. (1983). The change agent; A taxonomy in relation to the change process. Human Relations, 36, 361-392.

Plovnick, M. S., Fry, R. E., & Burke, W. W. (1982). Organization Development. Boston, MA: Little, Brown and Co.

Ragab, A. M., Moriarty, R. J. & Guilmette, A. M. (1977). Change agent research and organizational change. Group and Organizational Studies, 2, 216-227.

Randall, M. and Light, R. G. (1984). Good food becomes you. (Available from Extension Service, United States Department of Agriculture).

Rogers, E. M. (1971,). Communication of innovations (2nd ed.). New York, NY: The Free Press.

Rogers, E. M. (1983). Diffusion of innovations (3rd ed.). New York, NY: The Free Press.

Roling, N. G., Ascroft, J., & Chege, F. W. (1976). The diffusion of innovations and the issue of equity in rural development. Communication Research, 3, 155-170.

Ross, K. L. (1986). A study of why adult women drop out of the expanded food and nutrition education program in Wyoming. The Reporter, Fall, 7-9.

Ryan, B. B. & Gross, N. C. (1943). The diffusion of hybrid corn in two Iowa communities. Rural Sociology, 8, 15-24.

Sandman, L. R. & Copa, P. M. (1987). A profile of excellence: What makes an exemplary professional? Journal of Extension, 25, 17-20.

Schaller, L. E. (1972). The change agent. Nashville, TN: Abingdon Press.

Schmuch, R. (1985). The handbook of organization development in schools. (3rd Ed.) Palo Alto, CA: Mayfield Pub. Co.

Sebring, R. H. (1979). Knowledge utilization in organization development. The Journal of Applied Behavioral Science, 15, 194-197.

Sherman, P. R. (1982). The counselor as change agent: A revolution? Not likely. The Counseling Psychologist, 12, 111-116.

SPSS-X, (1988). The statistical package for the social sciences.

Tichy, N. M. (1975). How different types of change agents diagnose organizations. Human Relations, 28, 771-799.

Torisky, D. M. (1987). Evaluation of the Expanded Food and Nutrition Education Program (EFNEP) in selected areas of Virginia: Extent and retention of dietary improvement. (Doctoral dissertation, Virginia Polytechnic and State University, 1987).

Triplett, C. M. (1972). The relationship of selected characteristics of aides in the Kansas Cooperative Extension Service to their role success (Doctoral dissertation, Kansas State University, 1972). Dissertation Abstracts International,

United States Department of Agriculture. Extension Service. (1986). Using Professionals to Deliver Educational Programs. Washington, DC: U.S. Government Printing Office.

Unites States Department of Agriculture. Extension Service. (1977). Paraprofessionals in home economics programs for low-income families. Washington, DC: U.S. Government Printing Office.

Van De Ven, A. H. & Rogers, E. M. (1988). Innovations and organizations. Communication Research, 15, 632-651.

Virginia EFNEP. (1992). VA22 Virginia adult EFNEP for fiscal year 1992. (Available from Virginia EFNEP Office, Blacksburg, VA).

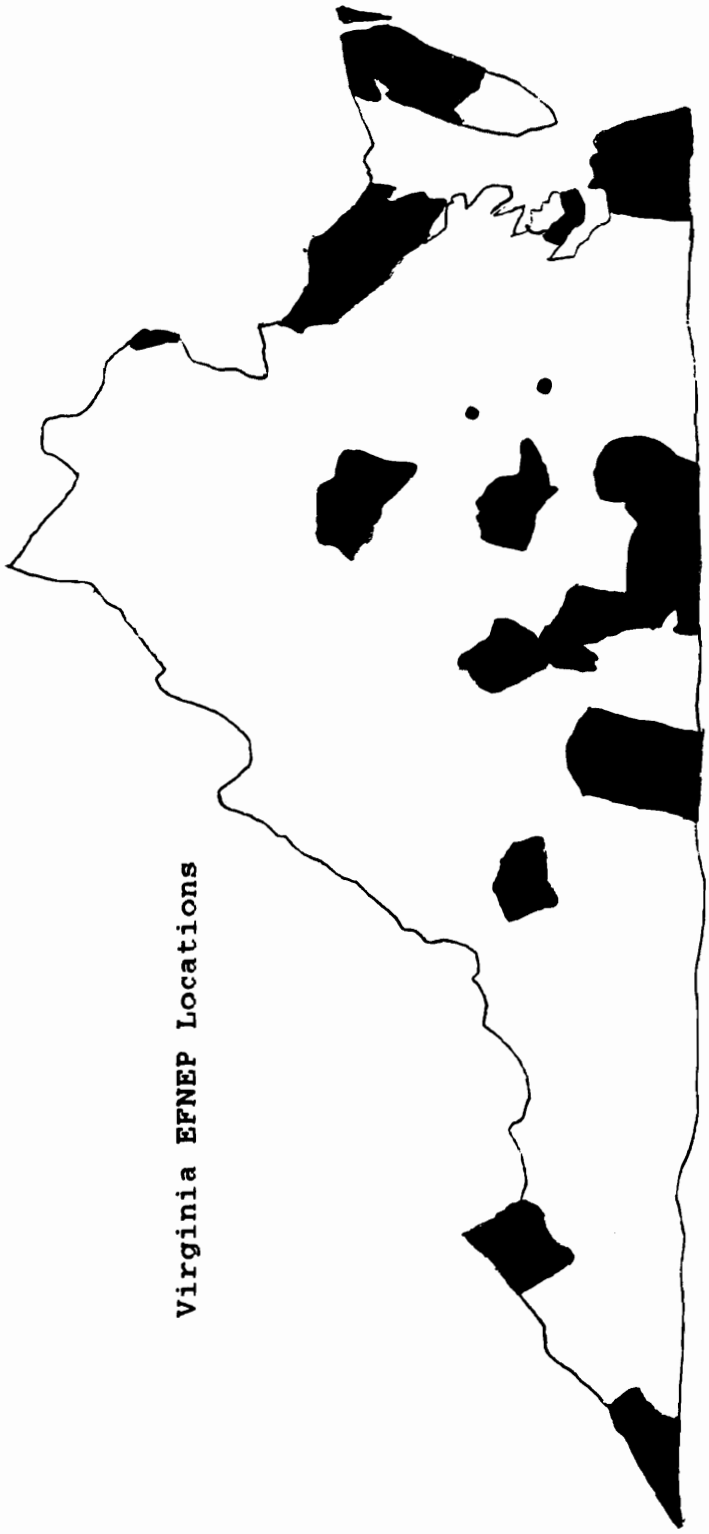
Wolf, W. C. (1986). Wolf-Welsh linkage methodology sixth revision. Unpublished manuscsript, University of Massachusetts, Amherst.

Wooten, K. C. & White, L. P. (1989). Toward a theory of change role efficacy. Human Relations, 42, 651-669.

Wholeben, B. E. (1985). Review of Sixteen Personality Factor Questionnaire. In D. J. Keyser and R. C. Sweetland (Eds.), Test Critiques (pp. 595-605). Kansas City, MO: Test Corp. of America.

Appendix A

Locations of EFNEP



Virginia EFNEP Locations

Appendix B

EFNEP NTA Workload Report

NTA'S LIST OF FAMILIES
EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM
Reporting Period: October 1, 1992 - December 18, 1992
Location: PETERSBURG (730)
NTA Number: 16

Homemaker Name	ID	Enroll. Date	Most recent Assessment Date & No.		Inst. Type	Total Cont.	Ending Date	Reason
	6384	10/01/91	10/07/91	1	G	1		
	6385	10/07/91	10/07/91	1	G	1		
	6386	10/21/91	10/21/91	1	G	1		
	6387	10/28/91	10/28/91	1	G	1		
	6388	10/28/91	10/28/91	1	G	1		
	6389	11/25/91	11/25/91	1	G	1		
	6390	11/25/91	11/25/91	1	G	1		
	6391	12/03/91	12/03/91	1	G	1		
	6392	12/03/91	12/03/91	1	G	1		
	6393	12/03/91	12/03/91	1	G	1		
	6394	12/03/91	12/03/91	1	G	1		
	6395	12/03/91	12/03/91	1	G	1		
	6396	12/10/91	12/10/91	1	G	1		
	6397	12/20/91	12/20/91	1	G	1		
	6398	01/06/92	01/06/92	1	G	1		
	6399	01/14/92	01/14/92	1	G	1		
	6400	01/23/92	01/23/92	1	G	1		
	6401	01/23/92	01/23/92	1	G	1		
	6402	01/28/92	01/28/92	1	G	1		
	6403	02/24/92	02/24/92	1	G	1		
	6404	02/27/92	02/27/92	1	G	1		
	6405	03/16/92	03/16/92	1	G	1		
	6406	03/16/92	03/16/92	2	G	2		
	6407	03/23/92	03/23/92	1	G	1		
	6408	03/23/92	03/23/92	1	I	1		
	6409	03/24/92	03/24/92	1	G	1		
	6410	03/24/92	03/24/92	1	G	1		
	6411	04/06/92	04/06/92	1	G	1		
	6412	04/15/92	04/15/92	1	G	1		
	6413	05/18/92	11/16/92	2	G	7	11/16/92	Completed
	6414	05/18/92	11/16/92	2	G	7	11/16/92	Completed
	6415	06/11/92	11/16/92	2	IG	8	11/16/92	Completed
	6416	06/15/92	11/16/92	2	G	8	11/16/92	Completed
	6417	06/22/92	11/16/92	2	G	8	11/16/92	Completed
	6418	07/22/92	11/18/92	2	IG	7	11/18/92	Completed
	6419	07/22/92	11/18/92	2	IG	8	11/18/92	Completed
	6420	07/22/92	11/18/92	2	G	8	11/18/92	Completed
	6421	07/24/92	11/18/92	2	G	18	11/18/92	Completed
	6422	07/24/92	11/18/92	2	G	7	11/19/92	Completed
	6423	07/24/92	07/24/92	2	G	7	11/19/92	Completed
	6424	07/24/92	11/19/92	2	G	8	11/19/92	Completed
	6425	07/24/92	11/19/92	2	G	8	11/19/92	Completed
	6426	07/27/92	11/19/92	2	G	7	11/19/92	Completed
	6427	07/27/92	07/27/92	2	G	7	11/19/92	Completed

NTA'S LIST OF FAMILIES
EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM
Reporting Period: October 1, 1992 - December 18, 1992
Location: PETERSBURG (730)
NTA Number: 16

Homemaker Name	ID	Enroll. Date	Most recent Assessment Date & No.		Inst. Type	Total Cont.	Ending Date	Reason
	6428	07/28/92	11/19/92	2	IG	7	11/19/92	Completed
	6429	07/30/92	11/20/92	2	IG	7	11/20/92	Completed
	6430	07/30/92	11/20/92	2	IG	7	11/20/92	Completed
	6431	07/30/92	11/20/92	2	IG	7	11/20/92	Completed
	6432	07/31/92	11/21/92	2	IG	7	11/20/92	Completed
	6433	08/10/92	11/20/92	2	G	8	11/20/92	Completed
	6434	08/24/92	12/01/92	2	G	8	12/01/92	Completed
	6435	08/24/92	12/01/92	2	G	8	12/01/92	Completed
	6436	08/24/92	12/01/92	2	G	8	12/01/92	Completed
	6437	08/25/92	12/01/92	2	G	9	12/01/92	Completed
	6438	08/25/92	12/01/92	2	G	9	12/01/92	Completed
	6439	08/25/92	12/01/92	2	G	8	12/01/92	Completed
	6440	08/25/92	12/01/92	2	IG	8	12/01/92	Completed
	6441	08/26/92	12/01/92	2	IG	8	12/01/92	Completed
	6442	08/26/92	12/01/92	2	IG	7	12/01/92	Completed
	6443	08/26/92	12/01/92	2	IG	8	12/01/92	Completed
	6444	08/27/92	12/02/92	2	IG	7	12/02/92	Completed
	6445	08/27/92	12/02/92	2	IG	8	12/02/92	Completed
	6446	08/27/92	08/27/92	1	I	1		
	6447	08/31/92	08/31/92	1	G	1		
	6448	08/31/92	08/31/92	1	I	1		
	6449	08/31/92	08/31/92	1	G	1		
	6450	09/01/92	09/01/92	1	I	1		
	6451	09/01/92	09/01/92	1	I	1		
	6452	09/02/92	09/02/92	1	I	1		
	6453	09/09/92	09/09/92	1	I	1		
	6454	09/09/92	09/09/92	1	I	1		

Appendix C

Rural and Urban EFNEP Locations

Appendix C

LIST OF EFNEP UNITS

Location	Rural Designation	Problem	Number of Aides	Number of Responses
Accomack	Rural		3	1
Amelia	Rural		1	1
Appomattox	Rural	Being eliminated	1	0
Arlington	Urban	New paraprofessional	1	0
Brunswick	Rural		2	2
Buchanan	Rural	Being elminiated	2	0
Charlotte	Rural	Other study	2	0
Chesapeake	Urban		5	5
Hampton	Urban		3	3
Lee	Rural		1	1
Louisa	Rural		1	1
Mecklenburg	Rural		3	3
Newport News	Urban		3	3
Norfolk	Urban		4	4
Northern Neck	Urban		3	3
Petersburg	Urban		3	3
Pittsylvania	Rural		4	3
Richmond	Urban		5	5
Roanoke	Urban		4	2
Virginia Beach	Urban	Computer problem	2	0
TOTAL	20		52	40

Appendix D

EFNEP Home Visit Evaluation Form

EFNEP HOME VISIT EVALUATION FORM

Name of EFNEP Technician: _____ Date of Visit: _____
Person Completing Evaluation: _____
Homemaker's Name: _____ ID Number: _____
Address: _____ No. Months Enrolled: ____
Title of Lesson Taught: _____

For the following 12 items, circle the number that best indicates the level at which you rate the Technician's performance during the home visit.

1. When Technician arrived, she/he showed sincere concern for the homemaker and her/his family's situation by asking a few pertinent questions or in other ways.

1	2	3	4	5
Poor				Excellent

2. After allowing the homemaker to adequately discuss her/his immediate concerns, the Technician was able to steer homemaker into the lesson, without excessive time delay, or (if warranted) rescheduled lesson for another day.

1	2	3	4	5
Poor				Excellent

3. The planned lesson was based on the family's most urgent dietary needs or other concerns as reflected by the Diagnostic Report or by Technician's observation in the home.

1	2	3	4	5
No Relation				Entirely Related

4. The Technician used an approved lesson plan*, but was able to adapt the plan to fit the homemaker's interest and level of knowledge and skill.

1	2	3	4	5
Not At All				Very Well

5. The Technician knew the lesson material and format well enough so that she/he did not have to "read" the lesson and also used good eye contact and other means to involve homemaker.

1	2	3	4	5
Not At All				Very Well

6. Food and nutrition information given by Technician was correct and within the guidelines of the Virginia EFNEP Program.

1	2	3	4	5
Much Wrong Information				Completely Correct

* Lesson plan approved by state nutrition specialist, EFNEP Coordinator or EFNEP Supervising Agent.

7. Technician talked WITH homemaker and not AT her/him and encouraged her/him to talk by asking questions which could not be answered by "YES" or "NO".

1	2	3	4	5
Never				Always

8. Technician conducted lesson as planned, or if she/he could not carry out the lesson as planned, she/he was able to teach an alternate lesson or adjust the planned lesson so the trip was not wasted.

1	2	3	4	5
Not At All				Excellent Adjustment

9. Technician made efforts to increase the homemaker's confidence and feeling of self-worth by doing one of the following or some other appropriate action:
-Listening to homemaker and letting her/him tell how she/he does things.
-Asking homemaker to do something then praising her/him.
-Finding ways to "sincerely" compliment homemaker.

1	2	3	4	5
Never				Every Opportunity

10. Technician provided opportunities for homemaker to "learn by doing" by having her\him do recipe preparations (with technician's guidance) or by letting her/him practice with food models or in other ways.

1	2	3	4	5
Not At All				In Every Way Feasible

11. Technician involved other family members in the lesson if they were present in the home.

1	2	3	4	5
Not At All				Very Well

12. Technician made plans with the homemaker for the next visit by doing the following:
-Setting the date and time
-Discussing topic, allowing homemaker to have input in decision
-Giving homemaker choice of recipe to prepare; ask her/him to provide some ingredients.
-Giving a practice assignment on today's lesson

1	2	3	4	5
Not At All				Thoroughly

*TOTAL SCORE: _____ *TO GET SCORE ADD ALL NUMBERS CIRCLED.

Scale for Evaluating Technician's Performance on Home Visit Evaluation Form

Excellent Performance	60-53
Very Good Performance	45-52
Good Performance (Needs some practice)	38-44
Fair Performance (Needs more practice)	30-37
Poor Performance (Needs much guidance and practice)	Below 30

COMMENTS AND SUGGESTIONS FOR IMPROVEMENT BY EVALUATOR:

_____
_____
_____
_____
_____

After completing this form, return a copy to the Technician. File the original in Notebook. This notebook will be reviewed during Unit EFNEP Program Reviews.

Prepared by: Ruby H. Cox, Ph.D., R.D.
State EFNEP Coordinator
VPI & SU
Blacksburg, VA 24061-0228

Appendix E

Paraprofessional Questionnaire

PARAPROFESSIONAL QUESTIONNAIRE

1. EFNEP Unit ID#_____ 2. Technician ID#_____

3. Date completed _____
Month/Day/Year

4. Place of residence. Check the category that best describes where you live using the same definition you apply to EFNEP homemakers.

____ Farm

____ Towns (rural non-farm) under 10,000

____ Places 10,000 TO 50,000

____ Suburbs over 50,000

____ Central cities

5. What is your racial/ethnic group?

____ White (not hispanic origin)

____ Black (not hispanic origin)

____ Hispanic

____ American Indian/Alaskan native

____ Asian or Pacific origin

6. What is your gender?

____ Male

____ Female

7. What is the highest grade you completed in school?

____ Less than 12th grade

____ 12th grade or GED

____ 1 or more years of college but less than a 4 year degree

____ Bachelor degree or higher

8. What is your total monthly family income? Please include all sources of income in the same manner as you do with EFNEP homemakers.

$ _ _ _ _ _ . _ _

9. Family Composition

(A) Marital Status

___ Single and never been married

___ Single, but divorced or widowed

___ Married

(B) Number of children

___ 0 ___ 1 ___ 3

___ 4 or more

10. How many years have you worked in the EFNEP program in Virginia? Please check the appropriate response.

__ 12 months or less
__ 13 months to 3 years
__ 3 to 5 years
__ 6 to 10 years
__ 11 to 15 years
__ More than 15 years

Think about the training you have received as an EFNEP Technician in Virginia. For purposes of this study, training is defined in the following ways:

(A) Orientation Training: Training provided during the first 6 months of employment
(B) Follow-up Training: Training provided after the first 6 months of employment.

Please respond to the following questions regarding any orientation training you may have received.

11. How many days of orientation training did you receive? Please check response.

___ Very little or no Orientation Training recieved

___ 1 to 5 days

___ 6 to 10 days

___ 11 to 15 days

___ 16 to 20 days

___ 21 to 30 days

___ More than 30 days

12. Please rate your orientation training from 1 to 5 as to how adequate it was in helping you get started in your job as an EFNEP technician. Check your response.

___ 1 = Not Adequate At All
___ 2 = Somewhat Inadequate
___ 3 = Somewhat Adequate
___ 4 = Mostly Adequate
___ 5 = Totally Adequate

13. Please list the two things you learned during orientation training that proved to be the **most helpful** to you in performing your job duties.

_____

_____

14. Now think about follow-up training sessions (workshops) in which you may have been involved as an EFNEP Technician.

Follow-up training is that received after the first 6 months on the job.

A training session or workshop is defined as a period of 1 hour or more in which job-related subject matter or procedures were taught in a group setting by your supervisor, another EFNEP or Extension worker, or a professional from another agency.

A. How many follow-up training sessions or workshops have you been involved in since your first 6 months as an EFNEP Technician?

___ Little or no follow-up training received

___ 1 to 5 sessions

___ 6 to 10 sessions

___ 11 to 15 sessions

___ 16 to 25 sessions

___ 26 to 35 sessions

___ More than 35 sessions

B. Please rate your follow-up training as to how adequate it has been in helping you do your job as an EFNEP technician. Check your response.

___ 1 = Not Adequate At All
___ 2 = Somewhat Inadequate
___ 3 = Somewhat Adequate
___ 4 = Mostly Adequate
___ 5 = Totally Adequate

C. Please list two topics (or subject areas) on which you have received follow-up training and which have proven to be most helpful to you in performing your job duties.

_____

_____

Now, think of the good nutrition principles which are taught through the EFNEP Program. Please indicate your response to the questions below using the following scale:

1 = Not at All
2 = Some of the time
3 = Most of the time
4 = All the time

		Circle your response.			
15.	To what extent do you feel you follow recommended nutrition principles in selecting your own meals and snacks?	1	2	3	4
16.	To what extent do you feel your close family members (spouse, children) follow good nutrition principles?	1	2	3	4
17.	To what extent do you feel other EFNEP Technicians in your unit or area follow good nutrition principles?	1	2	3	4

Your response to this questionnaire is greatly appreciated.

Please return this completed questionnaire by _____ in the enclosed, self-addressed stamped envelope to:

Marilyn Welschenbach
4916 Oakcrest Dr.
Fairfax, VA 22030

Appendix F

Summary of Characteristics Associated with Success in the Paraprofessional

Appendix F

Summary of Characteristics Associated with Success in the Paraprofessional (based on literature review)

16 PF Factor	Characteristic	Researcher
A (Warmth)	Empathy	Bolman (1976)
	Empathy	Hamilton (1988)
	Openness	Argyris (1970)
	Empathy	Rogers (1983)
B (Intelligence)		
C (Emotional Stability)		
E (Dominance)		
F (Impulsivity)	Trustworthy	Bolman (1976)
	Dependable	Wolf (1986)
	Credibility	Rogers (1983)
G (Conformity)		
H (Boldness)	Venturesome	Hamilton (1988)
I (Sensitivity)	Sensitive	Hamilton (1988)
	Accepting responsibility	Argyris (1970)
L (Suspicious)	Open to confrontation	Bolman (1976)
	Trusting	Hamilton (1988)

M (Imagination)	Imaginative	Hamilton (1988)
N (Shrewdness)		
O (Insecurity)	Guilt-prone	Cooper (1977)
Q1 (Radicalism)		
Q2 (Self-sufficiency)		
Q3 (Self-discipline)	Self-acceptance	Argyris (1970)
Q4 (Tension)	Relaxed	Hamilton (19880
	Relaxed	Cooper (1977)

Appendix G

EFNEP Family Record Part A - Description

Virginia Cooperative Extension

VIRGINIA TECH AND VIRGINIA STATE • VIRGINIA'S LAND GRANT UNIVERSITIES

Publication 360-014 Revised 1991

EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM

Family Record-Part A-Description

Unit ID # ☐☐☐ Aide ID # ☐☐

Family ID # ☐☐☐

Date Family Enrolled

Month ☐☐ Day ☐☐ Year ☐☐

Date Record Completed

Month ☐☐ Day ☐☐ Year ☐☐

AIDE NAME _____

FAMILY NAME _____

STREET _____

CITY _____

PHONE _____

Place of Residence

1. Farm
2. Towns (rural non-farm) under 10,000
3. Places 10,000 to 50,000
4. Suburbs over 50,000
5. Central Cities

Homemaker's Racial/Ethnic Characteristics

1. White (not Hispanic Origin)
2. Black (not Hispanic Origin)
3. Hispanic
4. American Indian/Alaskan Native
5. Asian or Pacific Origin

Total Actual Income for Family Last Month (round to the nearest dollar)

$ ☐☐☐☐.00

NOTE

Place one number in each box. For incomes below $1,000, place zeros in the leading box(es).

. amily Received
(some time during the year)

Yes	No	
☐	☐	USDA Food Stamps/Food Distribution Program
☐	☐	WIC/CSFP
☐	☐	Child Nutrition Programs (school lunch and/or breakfast, milk, Head Start, summer programs, child care)
☐	☐	Public Assistance

Family Members	Age Years	Age Months	Gender M	Gender F
Homemaker				
Total Family Members ☐☐				

Highest Grade Completed by Homemaker

1. 8th Grade or Less
2. 9th-11th Grade
3. 12th Grade or GED
4. Beyond High School

Ending Date

Month ☐☐ Day ☐☐ Year ☐☐

Reasons

1. Completed Program
2. Did Not Complete

Reasons for Incompletion:

2. Moved
3. Not Interested
4. Working, Returned to School
5. Aide Vacancy
6. Other _____

Adapted with permission from the New York EFNEP, Cornell University, Ithaca, N.Y., by Ruby Cox, State EFNEP Coordinator, Virginia Tech, Blacksburg, Virginia

Appendix H

EFNEP Family Record Part B

Food Behavior and Nutrition Knowledge

FAMILY RECORD - PART B

Record # ☐

DIRECTIONS: Place a check (✓) for the appropriate response.	Almost Never (1)	Sometimes (2)	Often (3)	Almost Always (4)
1. How often do you use canned, pre-packaged or frozen main dishes?				
2. When you prepare food from scratch, how often does it turn out the way you expect?				
3. When you prepare food, how often do you reduce or remove some of the fat?				
4. Do you leave cooked food on the table, counter, or stove for two hours or more?				
5. When you thaw frozen foods, how often do you thaw them at room temperature?				
6. Do you place garbage in a closed container at least daily?				
7. How often do you run out of food, food money, or food stamps?				
8. How often do you compare prices before you make a food purchase?				
9. How often do you buy a particular food item because you heard about it on the radio or TV or saw it in a magazine?				
10. How often do you shop with a grocery list?				
11. How often do you eat something within 2-3 hours after getting up each day?				

FOOD BEHAVIOR AND NUTRITION KNOWLEDGE

DIRECTIONS:

Please CIRCLE one answer for each question.

12. When do you decide what food you will make for your family?
    a) just before you make it
    b) sometime during the day
    c) a day or more ahead
    d) each family member makes own decision

13. What is missing from this meal? **chicken, carrots, milk**
    a) meat or dry beans
    b) bread or cereal
    c) milk or cheese
    d) vegetable or fruit

14. What is missing from this meal? **baked beans, rice, broccoli**
    a) meat or dry beans
    b) bread or cereal
    c) milk or cheese
    d) vegetable or fruit

15. Which of the following groups of food provides the most **iron**?
    a) whole grain breads, dry beans, ground beef
    b) winter squash, sweet potatoes, carrots
    c) dark green leafy vegetables, milk, cheese
    d) I don't know

16. How often should you include foods with **calcium** in your diet?
    a) 3-4 times a week
    b) once a day
    c) 2 or more times a day
    d) I don't know

Special Situations:

Directions: Please respond only to those questions that apply.

Put NA, if not applicable	NA	Yes	No
Since you are not currently receiving food stamps, 17. do you know how to get food stamps?			
Since you are pregnant or breast-feeding, 18. are you eating more high calcium foods?			
19. are you eating more high iron foods?			
When you can meats and/or vegetables such as green beans, 20. do you use a pressure canner?			

Appendix I

EFNEP Family Record Part C - Food Recall

FAMILY RECORD - PART C - FOOD RECALL

Record Number ☐

Number of Teaching Contacts since last Record:

☐☐ Individual ☐☐ Group ☐☐ By Mail

☐☐ Telephone ☐☐ Other

Homemaker: Pregnant ☐ Yes ☐ No

Breast-feeding ☐ Yes ☐ No

Meal Codes to Use

Column 1	Name of Meal	Column 4
B	Breakfast	1
L	Lunch	2
D	Dinner	3
S	Snack	4

-- To Be Coded --

1 Meal	2 Food Item	3 Amount Eaten	4 Meal Code	5 Food ID Number	6 Amount Code
					.
					.
					.
					.
					.
					.
					.
					.
					.
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					.
					.
					.
					.
					.

TBSP=Tablespoon tsp.=teaspoon c=cup oz.=ounce

Appendix J

EFNEP Diagnostic Report

This is a four page report for an individual homemaker. Page one analyzes the information from Family Record Part B. Page two places the information obtained from Family Record Part C into food groups. Pages three and four compare the individual's intake to recommended intake of certain nutrients.

DIAGNOSTIC REPORT
EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM

Homemaker's name: Family ID No.: 6444
Family's income last month: $291
Family received:
  Food Stamps/Food Dist. Program
  WIC/CFSP
  Child Nutrition Programs
  Public Assistance

Assessment number: 2 Date of assessment: 12/02/92

Analysis of Food Behavior and Nutrition Knowledge

1) Teach to prepare economical meals.
2) Teach to follow recipes/basic skills.
3) Usually reduces fat when cooking.
4) Great! Stores cooked foods safely.
5) Usually thaws food safely.
6) Great! Stores garbage properly.
7) Current budget management: excellent.
8) Current comparison shopping: excellent.
9) Not easily influenced by ads: great!
10) Great! Uses grocery list.
11) Eats after arising each day: excellent!
12) Try to plan meals further ahead.
13) Knows components of a meal.
14) Knows components of a meal.
15) Great! Knows iron sources.
16) Great! Knows calcium needs.

MEAL	FOOD#	FOOD NAME	AMOUNT
BREAKFAST	452	PANCAKE PLN FR MIX 4IN	4.00 PANCAKE
BREAKFAST	1439	SYRUP PANCAKE	4.00 TABLESPOON
BREAKFAST	99	EGG LG FRD+BUTTER	2.00 EGG
BREAKFAST	1203	SAUSAGE PATTY PORK	2.00 OZ
BREAKFAST	50	MILK WHOLE	2.00 CUP
LUNCH	498	SPAGHETTI+MEATBALLS CND	2.00 CUP
LUNCH	487	ROLL BROWN+SERVE 1 OZ	2.00 ROLL
LUNCH	906	BEV KOOL AID PREPARED	2.00 CUP
DINNER	498	SPAGHETTI+MEATBALLS CND	2.00 CUP
DINNER	610	COLLARDS FRSH CKD	2.00 CUP
DINNER	655	POTATO SALAD	1.00 CUP
DINNER	487	ROLL BROWN+SERVE 1 OZ	2.00 ROLL
DINNER	906	BEV KOOL AID PREPARED	2.00 CUP
DINNER	1259	PIE COCONUT 1/6	1.00 PIECE

DIAGNOSTIC REPORT

This is how the food items fit into the daily food guide for

Item	Servings
MILK GROUP	
MILK WHOLE	2.00
PIE COCONUT 1/6	0.50
MEAT GROUP	
EGG LG FRD+BUTTER	1.00
SAUSAGE PATTY PORK	0.66
SPAGHETTI+MEATBALLS CND	0.30
SPAGHETTI+MEATBALLS CND	0.30
FRUIT AND VEGETABLE GROUP	
SPAGHETTI+MEATBALLS CND	1.00
SPAGHETTI+MEATBALLS CND	1.00
COLLARDS FRSH CKD	4.00
POTATO SALAD	2.00
BREAD AND CEREAL GROUP	
PANCAKE PLN FR MIX 4IN	4.00
SPAGHETTI+MEATBALLS CND	4.00
ROLL BROWN+SERVE 1 OZ	2.00
SPAGHETTI+MEATBALLS CND	4.00
ROLL BROWN+SERVE 1 OZ	2.00
PIE COCONUT 1/6	1.00
OTHER (FATS, SUGAR AND ALCOHOL)	
SYRUP PANCAKE	4.00
BEV KOOL AID PREPARED	2.00
POTATO SALAD	1.00
BEV KOOL AID PREPARED	2.00
PIE COCONUT 1/6	2.00

DIAGNOSTIC REPORT

The following sections pertain to the calories and nutrients that were provided by the foods you reported eating.

This first portion pertains to calories and the nutrients which supply calories. One gram of fat furnishes 9 calories. Proteins and carbohydrates each supply about 4 calories per gram. While not a nutrient, alcohol provides 7 calories per gram.

	Calories	Carbohydrates (gm)	Fats (gm)	Protein (gm)	Alcohol (gm)
	3791	487	145	123	0
RDA	2200	**	**	50	**
Difference	1591	487	145	73	0
% of RDA	172%	**	**	246%	**

, these analyses of your diet indicate that both the total calories and the calories from fat are greater than suggested. Consider ways to reduce both total calories and calories from fat.

Of the calories supplied by the food and beverages consumed, the calorie distribution among the sources are:

	Carbohydrates	Fats	Protein	Alcohol
Your intake	52%	34%	13%	0%
Suggested range	50-60%	25-30%	10-15%	**

Iron, calcium, vitamin A and vitamin C are the nutrients most often lacking in American diets. This is how diet compares to the recommended dietary allowance.

	Iron (mg)	Calcium (mg)	Vit. A (i.u)	Vit. C (mg)
	26.1	1671	15391	127
RDA	15.0	800	4000	60
Difference	11.1	871	11391	67
% of RDA	174%	209%	385%	212%

** There is no RDA value for this category.

DIAGNOSTIC REPORT

IRON

The following foods provided iron:

PANCAKE PLN FR MIX 4IN
EGG LG FRD+BUTTER
SPAGHETTI+MEATBALLS CND
ROLL BROWN+SERVE 1 OZ
SPAGHETTI+MEATBALLS CND
COLLARDS FRSH CKD
POTATO SALAD
ROLL BROWN+SERVE 1 OZ
PIE COCONUT 1/6

VITAMIN A

The following foods provided vitamin A:

SPAGHETTI+MEATBALLS CND
SPAGHETTI+MEATBALLS CND
COLLARDS FRSH CKD

VITAMIN C

The following foods provided vitamin C:

BEV KOOL AID PREPARED
COLLARDS FRSH CKD
POTATO SALAD
BEV KOOL AID PREPARED

CALCIUM

The following foods provided calcium:

MILK WHOLE
COLLARDS FRSH CKD
PIE COCONUT 1/6

Appendix K

Nutrient Adequacy Ratio (NAR)

Score Calculation

NAR score is a composite of the intake of four nutrients (iron, calcium, Vitamin A, and Vitamin C) relative to the Recommended Dietary Allowances of the nutrients.

Appendix K

Nutrient Adequacy Ratio (NAR)

Score Calculation

$$\text{NAR Score} = \frac{\frac{\text{Intake of Vitamin A}}{\text{RDA of Vit. A}} + \frac{\text{Intake of Vitamin C}}{\text{RDA of Vit. C}} + \frac{\text{Intake of Calcium}}{\text{RDA of Ca}} + \frac{\text{Intake of Iron}}{\text{RDA of Iron}}}{4}$$

Appendix L

Informed Consent

Appendix L

STATEMENT OF INFORMED CONSENT

I, _____ HAVE BEEN ASKED TO PARTICIPATE IN A STUDY EXAMINING THE RELATIONSHIP OF PERSONALITY AND DEMOGRAPHIC VARIABLES OF EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM (EFNEP) PARAPROFESSIONALS TO SUCCESS IN TEACHING NUTRITION TO EFNEP HOMEMAKERS.

I UNDERSTAND THAT THE INFORMATION I AM PROVIDING IS TO BE USED AS PART OF A DISSERTATION IN EDUCATION RESEARCH AT VIRGINIA POLYTECHNIC AND STATE UNIVERSITY AND THAT NO INFORMATION PROVIDED BY ME WILL EVER BE LINKED WITH MY NAME.

I ALSO UNDERSTAND THAT I DO NOT HAVE TO PROVIDE ANY INFORMATION ABOUT MYSELF OTHER THAN THAT REQUESTED IN THE QUESTIONNAIRE OR PERSONALITY TEST. ADDITIONALLY, NO ONE OTHER THAN MARILYN WELSCHENBACH WILL EVER SEE ANY OF THE FORMS ON WHICH I PROVIDE MY ANSWERS. ALL DATA OBTAINED THROUGH PARTICIPATION IN THIS STUDY WILL BE IDENTIFIED BY CODE NUMBER SO THE ANONYMITY AND CONFIDENTIALITY WILL BE ENSURED.

FURTHERMORE, I UNDERSTAND THAT NO ANALYSIS WILL BE DONE THAT DEALS WITH MY RESPONSES ALONE AND THAT ALL DATA WILL BE GROUPED FOR PURPOSES OF ANALYSIS. ONCE THE DATA ARE GROUPED, THE INDIVIDUAL FORMS THAT I PROVIDED WILL NO LONGER BE USED AND WILL BE DESTROYED.

I UNDERSTAND THAT THERE ARE NO RISKS INVOLVED IN PARTICIPATING IN THIS STUDY. THE ONLY INCONVENIENCE WILL BE THE AMOUNT OF TIME REQUIRED TO COMPLETE THE QUESTIONNAIRE AND PERSONALITY TEST. WHILE THERE ARE NO IMMEDIATE BENEFITS, THE RESULT OF THIS STUDY MAY HELP GUIDE FUTURE EFNEP TRAINING PROGRAMS.

I UNDERSTAND THAT PARTICIPATION IN THIS STUDY IS COMPLETELY VOLUNTARY AND THAT I AM FREE TO WITHDRAW FROM THE STUDY AT ANY TIME.

IF I HAVE ANY QUESTIONS AT ANY TIME DURING THIS STUDY, I UNDERSTAND THAT I MAY CALL MARILYN WELSCHENBACH AT (703) 385-7378 OR DR. GABRIELLA BELLI, ASSOCIATE PROFESSOR OF EDUCATION RESEARCH AND EVALUATION, VIRGINIA TECH AT (703) 698-6064.

I HAVE RECEIVED A COPY OF THIS CONSENT FORM.

I VOLUNTEER TO PARTICIPATE IN THE ABOVE STUDY.

_____

SUBJECT'S SIGNATURE

_____

DATE

Appendix M

Instrument Instructions

Appendix M

INSTRUCTIONS FOR COMPLETING 16 PF

1. The questionnaire is not time linited but can be completed before or after the Paraprofessional Questionnaire.

2. On the answer sheet **Do not put your name** please use your Technician ID #. Complete gender (M or F) and date, but leave address, age, and other blank.

3. Ignore the note at the bottom of page one, "Do not turn page until told to do so".

4. Upon competion of the questionnaire, place both the answer sheet and the 16 PF booklet in the enclosed envelope.

Appendix N

Homophily Score Calculation

Appendix N

Homophily Score Calculation

(1) Three of the variables, place of residence, presence of children, and gender had matching categories and did not require recoding.

(2) The education level categories for homemakers and paraprofessionals did not match. Recoding to facilitate matching was done by, (a) combining categories 3 and 4 for the paraprofessionals, and (b) combining categories 1 and 2 for the homemakers. This resulted in three categories as follows: (a) less than a high school education or GED, (b) high school diploma or GED, and (c) some college, including a college degree.

(3) Due to small numbers in some of the racial/ethnic categories, the variable was dichotomized from five categories to two categories. The categories were black and other.

(4) In order to use income, categorization was necessary. Both the homemakers and paraprofessionals were placed in two groups, one of $1396 and below, and the second of above $1396.

(5) Marital status and number of children of the homemakers could not be determined from the Family Record and thus

could not be used.

(6) Each paraprofessional was individually matched on each of the six variables (place of residence, gender, presence of children, education level, race, and income) with each of the three homemakers from their caseload. The two were either exactly matched (score=1) or a mismatch (score=0) for all the variables except place of residence and education level. For education level and place of residence, a different calculation was done since more than two categories were involved. A partial score was given if the homemaker/paraprofessional pair was not exactly matched but only one category or level different. The sum of matches for each homemaker on each of the six variables was obtained, then the total for all three homemakers was done to calculate the homophily score for each paraprofessional.

NOTE: Two of the paraprofessionals did not have three homemakers who had graduated from EFNEP and were excluded from this analysis. This resulted in N=38 rather than 40.

Appendix O

Second Order Factor Descriptions and Correlations with Effectiveness Measures

Appendix O

Sixteen PF Second Order Factors

Second Order Factor	Direction of Score	Description	First level Factors
F1 Extraversion	Low High	Introversion Extraversion	A, F, H, Q2
F2 Anxiety	Low High	Low anxiety High anxiety	C, H, L, O, Q3, Q4
F3 Tough poise	Low High	Emotionally sensitive Tough poise	A, E, F, I, L, M
F4 Independence	Low High	Subduedness Independence	E, G, M, Q1, Q2
F5 Superego/ Control	Low High	Low control High control	G, Q3

Correlations of Second Order Factors with Effectiveness Measures

N = 38

Second Order Factor	Change in Food Behavior	Change in Nutrient Intake	Para-professional Workload
F1	.39 **	.12	.12
F2	-.14	-.16	-.38 *
F3	.14	.06	-.05
F4	.03	-.17	.04
F5	-.32	.03	.11

* = p <.05 ** = p <.01

VITA

Marilyn A. Crowl Welschenbach was born on September 3, 1949 in Columbus, Ohio. She received a Bachelor of Science in Home Economics with a major in dietetics form The Ohio State University in 1976. She received a Master of Science in Nutrition with a major in maternal and child health from Virginia Polytechnic and State University in 1981. She is a registered dietitian and a member of the American Dietetic Association.

Mrs. Welschenbach has had professional experience as a public health nutritionist with the Women, Infant, and Children (WIC) Program, a clinical dietitian, and an administrative dietitian. She is currently a Commissioned Corp Officer of the United States Public Health Service.

Marilyn A. Welschenbach

Marilyn A. Welschenbach