Community Supports for Adults with Intellectual Disabilities:

Development of Nutrition Supports Scale

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THESIS

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TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

CHAPTER PAGE

TABLE OF CONTENTS (continued)

CHAPTER PAGE

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

LIST OF TABLES

LIST OF TABLES (continued)

LIST OF TABLES (continued)

LIST OF TABLES (continued)

LIST OF FIGURES

FIGURE PAGE

LIST OF FIGURES (continued)

LIST OF ABBREVIATIONS

CBO – community based organization

CILA – community integrated living arrangement

DSP – direct support professional

DIF – Differential Item Functioning

HP – health promotion

ID – intellectual disabilities

I/DD – intellectual and developmental disabilities

CILA – community integrated living arrangement

QSP – qualified support professional

SUMMARY

People with intellectual disabilities (ID) have higher prevalence of overweight and obesity compared to the general population with highest rates among people living in community settings. While dietary intake and physical activity patterns are major determinants of overweight and obesity well established predictors of dietary intake, including preferences, accessibility, and availability, may present differently among people with ID. For people with ID, social support often comes from direct support professionals (DSPs) (paid caregivers) who are key in promoting sound nutrition and informed choice along with maintaining person's autonomy. Moreover, nutrition knowledge, training needs, barriers and supports to meal planning, food purchase and preparation among DSPs are not known. A paucity of information and lack of validated instruments exist concerning meal planning, food purchase, and preparation among DSPs who support people with ID living in community homes. Understanding the resources that are needed to support staff working in community homes can lead to greater understanding of how to improve dietary intake and subsequently decrease health disparities of people with ID who live in community settings.

To address this issue, the purpose of this dissertation was to develop a reliable and valid measurement scale to evaluate nutrition supports needed among DSPs who provide services to individuals with ID residing in community homes. A three-phase exploratory mixed method design approach was used. This design incorporated the results of the first and second phase qualitative methodologies, including focus groups, expert panel review, and cognitive interviews to inform a third phase, quantitative survey.

Two hundred individuals (n=200) (DSPs, individuals with ID, family members, and CBO management) participated in the three phases of the study from five community based

organizations in Illinois and New Mexico. The final Nutrition Supports Scale (NSS) consists of 45 items and six domains (*Financial, Preparation and Storage, Knowledge, Cultural Values and Lifestyles, Organizational Culture, and Time*). NSS meets psychometric criteria for reliability and construct validity using Factor Analysis and Rasch Analysis. Six domains had unidimensional psychometric properties and can be used independently.

Understanding available nutrition supports among staff working in community homes can lead to greater understanding of how to improve dietary intake and decrease health disparities of people with ID. State mandated trainings lack the type of nutrition information needed to be covered. Understanding nutrition supports in community homes can be used by community based organizations to optimize their training and workforce development by focusing only on the competencies and supports communicated through the Nutrition Supports Scale and in turn meet the Core Residential Community Competencies (CRCC).

Community Supports For Adults With Intellectual Disabilities: Development Of Nutrition Supports Scale

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People with intellectual disabilities (ID) have higher prevalence of overweight and obesity compared to the general population with highest rates among people living in community settings. For people with ID, social support often comes from direct support professionals (DSPs) who are key in promoting sound nutrition and informed choice along with maintaining person's autonomy. Moreover, nutrition knowledge, training needs, barriers and supports to meal planning, food purchase and preparation among DSPs are not known. A paucity of information and lack of validated instruments exist concerning meal planning, food purchase, and preparation among DSPs who support people with ID living in community homes. Understanding the resources that are needed to support staff working in community homes can lead to greater understanding of how to improve dietary intake and subsequently decrease health disparities of people with ID who live in community settings.

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(NSS) consists of 45 items and six domains (*Financial, Preparation and Storage, Knowledge, Cultural Values and Lifestyles, Organizational Culture, and Time*). NSS meets psychometric criteria for reliability and construct validity using Factor Analysis and Rasch Analysis. Six domains had unidimensional psychometric properties and can be used independently.

Understanding available nutrition supports among staff can lead to greater understanding of how to improve dietary intake and decrease health disparities of people with ID. This information may optimize staff training and workforce development by focusing only on the competencies and supports communicated through the Nutrition Supports Scale and in turn meet the Core Residential Community Competencies.

I. INTRODUCTION

A. Background

Adults with intellectual and developmental disabilities (I/DD) are estimated to be 1.5% of the non-institutionalized population (DelParigi et al., 2002; Larson et al., 2001). The estimated prevalence of adults with I/DD over the age of 60 in the U.S. is expected to double from 641,000 adults in 2000 to 1.2 million by 2030. As the number of people with I/DD continues to grow and their life spans increase, the support of aging family members is being increasingly replaced or supplemented by professional day-program and residential service-providers and paid direct care workers.

Over five decades ago, the deinstitutionalization movement initiated the process of closing down institutional settings and focused on developing community-oriented supports for individuals with disabilities to enable them to integrate and live in community based settings of their own choice (Fujiura, 1998; Scheerenberger, 1987). The movement greatly affected the rights, the welfare, and the lives of people with I/DD. People with I/DD were allowed to make choices in many aspects of their life that were previously not permitted including freedom of choice, independence, individual mobility, uniqueness of life experiences, and social integration (Guess, 1985; Nirje, 1969; Scheerenberger, 1987). Freedom of choice now extends beyond schooling, recreation, employment, and housing to making choices about health promoting activities, such as exercise, nutrition, and diets. People with I/DD are now experiencing longer life spans, normal rhythms of life, including holidays, birthdays, and other life cycle events as a result of living and working in smaller community-based settings. Unfortunately, new and major health concerns are emerging and individuals are experiencing greater disparities in health status compared to their non-disabled peers, particularly chronic health conditions (Janicki et al., 2002).

While new deinstitutionalization policies for community integration allowed people with I/DD to live and work in the places they chose and improved their life spans (Janicki et al., 2002), they did not adequately take into account the social and environmental supports needed for successful healthy lifestyles.

Currently, adults with I/DD who live in community-based settings have high rates of obesity, low fitness levels, and lead sedentary lifestyles (Melville, Hamilton, Hankey, Miller, & Boyle, 2006; Rimmer & Yamaki, 2006; Rubin, Rimmer, Chicoine, Braddock, & McGuire, 1998; Yamaki, 2005). For persons with I/DD, the combination of sedentary lifestyles, high fat diets, and low fruit and vegetable intake increases their susceptibility to health conditions, such as obesity, cardiovascular disease (CVD), osteoporosis, hypertension, Type II diabetes, and depression (Beange, McElduff, & Baker, 1995; Draheim, Williams, & McCubbin, 2002; Fujiura, Fitzsimons, Marks, & Chicoine, 1997; Rimmer & Yamaki, 2006; Sisirak, Marks, Heller, & Riley, 2007; Sisirak, Marks, Riley, & Heller, 2008; Yamaki, 2005). CVD is one of the most common causes of death among adults with I/DD (Hayden, 1998; Janicki, Dalton, Henderson, & Davidson, 1999). The onset of CVD is strongly associated with lack of physical activity and poor nutrition while obesity is related to less restrictive living environments (Prasher, 1995; Rimmer, Braddock, & Marks, 1995; Rimmer & Yamaki, 2006; Robertson et al., 2000).

B. Statement of Problem

People with I/DD have higher prevalence of overweight and obesity compared to the general population with highest rates among people living in community settings (B. Frey & Rimmer, 1995; Lewis, Lewis, Leake, King, & Lindemann, 2002; Prasher, 1995; Rimmer, Braddock, & Fujiura, 1993 ; Rimmer et al., 1995; Rimmer & Yamaki, 2006; Rubin et al., 1998; van Schrojenstein & Valk, 2005; Yamaki, 2005). While dietary intake and physical activity

patterns are major determinants of overweight and obesity (World Health Organization, 2003), well established predictors of dietary intake, including preferences, accessibility, and availability, (Baranowski, Cullen, & Baranowski, 1999; Drewnowski, 1997; McCrory, Fuss, Saltzman, & Roberts, 2000) may present differently among people with I/DD. For people with I/DD, social support often comes from direct support professionals (paid caregivers) who are key in promoting sound nutrition and informed choice along with maintaining person's autonomy. Moreover, nutrition knowledge, training needs, barriers and supports to meal planning, food purchase and preparation among direct support professionals (DSPs) are not known. High staff turnover (50%-75%/year) also results in inadequate training, education, and staffing levels (Hatton et al., 2001; Larson & Lakin, 1999; Research and Training Center on Rural Rehabilitation Services, 2002; J. Rodgers, 1998). A paucity of information and a lack of validated instruments exist concerning meal planning, food purchase, and preparation among DSPs who support people with I/DD living in community homes or community integrated living arrangements (CILAs). Understanding the resources that are needed to support staff working in community homes can lead to greater understanding of how to improve dietary intake and subsequently decrease health disparities of people with I/DD who live in community settings.

C. Purpose of Study

The purpose of this study is to develop a reliable and valid measurement scale to evaluate nutrition supports needed among direct support professionals (DSPs) who provide services to adults with I/DD residing in community homes. Nutrition support in this study follows a definition of the concept of environment and situation from the Social Cognitive Theory (Bandura, 1977, 1986) and is defined as the environmental resources and the individual perception of the resources available for meal planning, food purchase, and preparation.

Environmental factors are objective factors that can affect person's behavior and are physically external to the person. In relation to nutrition support in community homes, these may include financial, preparation and storage of food, and organizational culture related to nutrition. Also, a person's subjective perception of the environment includes ones' cognitive representations (including real, distorted, or imagined factors) of the environment that may affect person's behavior. Additionally, internal to individual, several inner factors may influence nutrition support in community homes. These include staff's perceived knowledge of meal planning, grocery shopping, and meal preparation, and their cultural values and lifestyles towards nutrition. Behavior is a function of psychosocial dynamics including characteristics of person, their behavior, and the environment in which person is located and behavior performed (Bandura, 1977, 1986; Baranowski, Perry, & Parcel, 2002). Understanding the aspects of internal (subjective perceptions) and external (environmental) factors of individuals will paint a clearer picture about nutrition services in community homes and will allow management in community based organizations to develop targeted action plans to improve nutrition support available to staff working with individuals with I/DD. The objective of this study is to develop and assess the reliability and validity of the Nutrition Supports Scale (NSS). Additionally, this paper will include implications for community-based organization nutrition training of DSPs regarding their own nutrition and that of the individuals with I/DD that they support.

D. Significance of Problem/Relevance to Public Health

The primary aim of this study is to develop an instrument that will assist in gaining an understanding of the resources needed to provide optimal nutrition supports to adults with I/DD residing in community homes. The new knowledge can contribute to development and implementation of effective organizational policies, action plans, and training activities in order

to promote health and wellness of people with I/DD. These may include in-depth trainings related to nutrition, meal planning, food preparation, and budgeting. There are no measures in current literature that capture or measure nutrition supports. Food choice is very different for someone living in a community home with several housemates versus alone or with family. Uniqueness of a community home setting needs to be captured so it can help organizations identify issues, prioritize, and make action plans to more effectively promote health. Tools that identify barriers and supports are necessary for organizational benchmarking, identifying priorities, and empowering individuals within the system (management, staff, and individuals with I/DD) to articulate salient issues. A Nutrition Supports Scale can be used to develop teaching strategies for staff to improve the meal planning, food purchase and preparation they do for people with I/DD who live in community.

II. BACKGROUND

This section reviews relevant literature and elaborates on the need to explore dietary practices and supports to meal planning, food purchase and preparation of DSPs working in community homes. The analysis begins with a section that examines obesity trends among people with I/DD and the role of nutrition. The second part focuses on the demographic profile of DSPs and their social support roles. The third section delineates methodological issues related to new instrument development including the use of mixed method approach, focus groups, cognitive interviewing, and Rasch analysis.

A. Trends and Factors Related to Obesity

1. Obesity trends

In the last decade, obesity rates have increased by more than 20% (Newby et al., 2003) resulting in over half of U.S. adults being either overweight or obese (Hedley et al., 2004; Ogden et al., 2006). The most recent data from the 2003-2004 National Health and Nutrition Examination Survey (NHANES), estimate the prevalence of overweight and obesity combined at 66% and the prevalence of obesity alone at 32% among adults in the general population (Ogden et al., 2006). Excess weight is recognized as a risk factor in over 45 diseases and health conditions, specifically contributing to heart disease, diabetes, stroke, hypertension, arthritis, certain cancers, stress, depression, and respiratory problems (Chan, Rimm, Colditz, Stampfer, & Willett, 1994; Colditz, Willett, Rotnitzky, & Manson, 1995; Eckel, 1997; Haffner & Taegtmeyer, 2003; Hubert, Feinleib, McNamara, & Castelli, 1983; Must et al., 1999; National Heart Lung and

Blood Institute's Obesity Education Initiative, 1995; National Task Force on the Prevention and Treatment of Obesity, 2000; Pi-Sunyer, 1999; Sturm & Wells, 2001).

The prevalence of overweight and obese adults with I/DD, is estimated to be either equal or higher compared to the general population (Harris, Rosenberg, Jangda, O'Brien, & Gallagher, 2003; Jansen, Krol, Groothoff, & Post, 2004; Melville et al., 2006; Rimmer & Yamaki, 2006; Rubin et al., 1998; Yamaki, 2005). Yamaki (2005), in the first U.S. population based study of adults with I/DD, reported combined prevalence of overweight and obesity at 64% and the prevalence of obesity alone at 35%. Moreover, rates of overweight and obesity are reportedly higher in people living in community based settings (i.e., least restrictive environments) (B. Frey & Rimmer, 1995; Lewis et al., 2002; Prasher, 1995; Rimmer et al., 1993 ; Rimmer et al., 1995; Rimmer & Yamaki, 2006; Rubin et al., 1998; van Schrojenstein & Valk, 2005), individuals with higher levels of cognitive functioning (Rimmer et al., 1993), women, older adults (Yamaki, 2005), and people with specific genetic syndromes such as Down syndrome and Prader-Willi (Bell & Bhate, 1992; Fujiura et al., 1997; Prasher, 1995; Rimmer & Wang, 2005; Rimmer & Yamaki, 2006; Rubin et al., 1998)

2. Factors related to obesity

The factors that affect body weight include genetic, environmental, behavioral, cultural, and socioeconomic influences (US Department of Health and Human Services, 2001). Rapid increases in obesity prevalence in the recent years suggest the consequences of societal, environmental, and cultural changes. Modernization and changes in the economy brought transformations of our dietary intake and physical activity (Drewnowski, 1997; Grundy, 1998). While the availability and access to a variety of foods has improved and made available energy-dense foods to more people, motorized transport and convenient labor-saving tools have also

decreased the levels of physical activity. Presently, it is believed that the major determinants of obesity are genetic background and the lifestyle habits related to dietary intake and physical activity (Martinez, 2000). Preventing or treating obesity usually requires some degree of management of food choice including purchase, meal planning and preparation (Mela, 2001).

B. Factors related to nutrition

Multiple individual, societal, and environmental factors are related to food selection. In the general population, individual factors affecting food choices include biological (e.g. sex, age, disability status), physiological (e.g. hunger, life-changes, conditions), psychological (e.g. personality, preferences, attitudes, mood), and personal factors (e.g. cultural and religious background, familiarity with food, emotions) (Conner & Armitage, 2002; Hamilton, McIlveen, & Strugnell, 2000; Wetter et al., 2001). Furthermore, evidence suggests that taste has a major influence on food selection and preferences. (Conner & Armitage, 2002; Drewnowski, 1997; Hamilton et al., 2000; Nestle et al., 1998). Cost, shopping, time that it takes to prepare foods, storage space limitations, poor cooking skills, and accessibility of fresh fruits and vegetables have been identified as barriers towards better nutrition among the general population (Caraher, Dixon, Lang, & Carr-Hill, 1998; Nestle et al., 1998; Shankar & Klassen, 2001; Turrell, Hewitt, Patterson, Oldenburg, & Gould, 2002).

Socioeconomic status is one of the largest indicators of food purchase. People from more disadvantaged backgrounds are less likely to buy fresh fruits and vegetables and more likely to buy processed foods that are high in fat and salt (Caraher et al., 1998; Turrell et al., 2002). Food availability in the grocery stores, homes, and vending machines is also a determinant of food intake. Fruit and vegetable consumption increases when grocery stores carry more fresh produce, workplace cafeterias offer healthier food choices at lower prices, and vending machines include

more healthful choices (Nestle et al., 1998). Furthermore, convenience is also an important factor in household dietary behavior. It is often a factor in meal preparation for people who are under 50 years of age and living alone, people under 40 in adults-only households, and for all age groups in households with children, and women (Armstrong, Lange, & Stem, 1991).

Adults with I/DD who lived in institutional settings during their childhood and adolescence prior to the deinstitutionalization movement have limited knowledge of healthful eating or health in general (Jobling, 2001). Limited educational opportunities and inaccessible sources of information have resulted in scarce knowledge and less ability to make informed decisions, including making healthful food choices. Additionally, the sources of information may not provide accurate health information. Television has been reported as a major and probably most widely used source of health information second only to health professionals in the general population (Nestle et al., 1998; O'Malley, Kerner, & Johnson, 1999). Watching television is one of the major sedentary activities that U.S. children and adults engage in during their leisure-time (Hu, Li, Colditz, Willett, & Manson, 2003). Television watching exposes individuals to a constant stream of food advertisements which have been shown to increase food and caloric intake and promote poor dietary habits (Hu et al., 2003; Wallace, 2005). Due to lower levels of employment and high barriers to alternative community-based leisure time activities, adults with ID tend to watch more television than the general population (Bowe, 2006; G. C. Frey, Buchanan, & Sandt, 2005). Additionally, media messages tend to confuse people with I/DD on information related to health and food choice (J. Rodgers, 1998).

Constraints regarding group living, service structures, unclear policy guidelines, direct support professionals' (DSPs) training, attitudes and knowledge of nutrition, and resource limitations may predetermine and limit the availability of food selection in group homes (Harris

et al., 2003; Messent, Cooke, & Long, 1999). Limited time for food preparation and menu planning have increased purchasing of processed and convenience foods which are usually higher in fat and calories, but easier to prepare (Nestle et al., 1998). Furthermore, limited community exposure and increased routines in every day lives of people with I/DD have decreased experience and exposure to different foods rendering fully informed choice unavailable (Rawlings, Dowse, & Shaddock, 1995).

C. Social supports and nutrition

Social support is one of the key factors in making dietary changes and maintaining long-term adherence for an individual within the family cluster (Nestle et al., 1998; Shankar & Klassen, 2001). For people with I/DD who live in community based settings, social support from the caregiver plays an important role ensuring the promotion of independence and informed choice. Although over 60% of persons with I/DD live with members of their families (Fujiura, 1998), 56% are receiving day or employment support services and 12% are living in community homes, where the work of professional staff is essential (Braddock, Hemp, & Rizzolo, 2008). Direct support professionals (DSP) are people who work with, support, and assist people with disabilities to lead self-fulfilling and directed lives in their communities. Demographically, most DSPs are single mothers aged 18-34 years, usually with a high school diploma or GED (General Education Development), and from diverse cultural and ethnic backgrounds (American Network of Community Options and Resources, n.d.). DSPs often have low health knowledge and poor health habits themselves (Marks, Sisirak, Heller, & Hsieh, 2005; Marks, Sisirak, Heller, & Riley, 2007; J. Rodgers, 1998). Although similar to the general population, the results from one descriptive research study of health outcomes of direct support professionals showed that 60% of the staff participants had a body mass index (BMI) greater than 25 (Marks et al., 2007).

Additionally, 70% of the staff participants were smokers (Marks et al., 2005) compared to 20% in the general population (Centers for Disease Control and Prevention, 2007). The few studies that have looked at health promotion interventions for DSPs showed that staff benefit from educational seminars and personal exercise which can result in the increased long-term stability of the workforce (White, Edwards, & Townsend-White, 2006).

Caregivers have a direct influence on a person's food choice in the following ways, staff and family members can be role models and gatekeepers for food, and can influence a person's food choice by imposing their own dietary intake factors, including knowledge of menu planning and grocery shopping, food preparation, and attitudes and beliefs towards nutrition. Food preparation and menu planning are mostly staff responsibilities even in residential settings (J. Rodgers, 1998). High staff turnover, reported to be anywhere from 50% to 75% annually, results in inadequate training, education, and staffing levels. It has an overall negative effect on the person with disability by decreasing the quality of their social and emotional supports (Hatton et al., 2001; Larson & Lakin, 1999; Research and Training Center on Rural Rehabilitation Services, 2002).

Still, some researchers have suggested that improving the staff's ability to teach people with I/DD about nutrition will support and lead to more healthful food choice-making (Smyth & Bell, 2006). Although people may have the knowledge of nutrition it does not necessarily mean that this learned response will lead to a more healthful choice. The ability of caregivers to not just inform or tell, but to teach people with I/DD nutrition information and to motivate healthy eating increases the likelihood of a person with I/DD making a more informed choice. Providing staff with necessary information, skills, and confidence to teach people with I/DD necessitates strong organizational and management support. Furthermore, staff may not perceive that

teaching their clients is a part of their job and may view it as an unnecessary burden on their already full schedule (Heller, Miller, Hsieh, & Sterns, 2000). Evidence shows that the mindset of organizational management may not be supportive toward implementing systemic processes aimed at sustainable health promotion practices (Hatton et al., 1999; Messent et al., 1999; Smyth & Bell, 2006; Stalker & Harris, 1998). Oftentimes, pragmatic attitudes toward available resources and short-term solutions are used as justifications for not supporting continuing education and promoting healthful food and activity options.

D. Factors Related to Instrument Development

1. A need for mixed method design

The complexities of our socially constructed environment cannot be ignored when constructing new research instruments. Studies of people with I/DD that employ only one research paradigm (purely qualitative or quantitative) may be limited and lack enough depth to give us the answers that we want (National Science Foundation, 1997). Instead, a mixed method approach may be more helpful. Furthermore, examining human behavior and attitudes may be most productive when a variety of data collection methodologies are employed. Mixed method research is defined as "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study" (Johnson & Onwuegbuzie, 2004, p. 17).

Greene at al. (1989) delineates five principles for conducting mixed method research: triangulation, complementarity, development, initiation, and expansion. Triangulation seeks convergence and correspondence of findings through different methods used to study the same phenomenon. It increases construct validity and decreases bias of the methodology by finding maximum unrelated sources of variance. Complementarity seeks to elaborate, enhance, illustrate,

and clarify the results between the two methodologies. It draws on the strengths of both methods and decreases bias while it increases interpretation and validity of constructs. Development uses results from one method to develop and inform the other method. It increases the validity of constructs and findings by taking advantage of the strengths of both methodologies. Initiation discovers paradoxes and contradictions that may result in reframing of the research question. Expansion seeks to increase the range of research by using different methodological components. Both initiation and expansion increase the breadth and depth of findings and conclusions by analyzing them from different paradigms (Greene et al., 1989; Johnson & Onwuegbuzie, 2004).

In general, the nature of the research question guides research methodology. Many questions are more completely answered through mixed methods (Creswell & Plano Clark, 2006; Creswell, Plano Clark, Gutmann, & Hanson, 2003). Mixing paradigms requires careful considerations. First, we need to evaluate the strengths and weaknesses of both types of research. Understanding these characteristics ensures the use of overlapping strategies that compliment each other. Other things to consider include the degree of mixing, determining if one method will be used more or if the methods are evenly utilized, and choosing when mixing should be used (Greene et al., 1989; Johnson & Onwuegbuzie, 2004). Blending the components of qualitative and quantitative techniques in our research studies provides us with an opportunity to answer research questions in general population and in working with people with I/DD.

2. Item generation: Focus groups

Focus groups are a type of group interview and a qualitative methodology that benefit from the shared communication process in order to collect information (Krueger & Casey, 2000). The group process helps explore and clarify people's views and interests, and allows for commenting, explaining, and experience sharing from multiple opinions and attitudes. Focus

group data offer greater depth and understanding of issues and concepts and tap into ideas that may not be accessed via other methodologies. The use of focus group methodology is appropriate during the exploratory stage of the study, when the researcher is trying to discover emergent themes, and generate issues or items for instrument development (Krueger & Casey, 2000), during the study, after the study or to receive program evaluation or feedback, for development of new opportunities for research. The focus groups can be used as a sole method of the study or as a qualitative compliment to other methods. They are used especially during triangulation and validity checking (Greene et al., 1989). Focus groups have been used to identify salient issues within a variety of target populations and topical areas. It has been successfully applied to different types of nutrition research including planning, development, and evaluation stages (Crockett, Heller, & Peterson, 1990; Falk, Bisogni, & Sobal, 1996; Hartman, McCarthy, Rosemarie, Schuster, & Kushi, 1994; Mullis & Lansing, 1986; Neumark-Sztainer, Story, Perry, & Casey, 1999).

There are several advantages when using focus groups. Focus groups are very useful when identifying salient issues and explaining why they are important (Krueger & Casey, 2000). They give participant an opportunity to participate in the decision making process which can be empowering (Kitzinger, 1994), encourage participation from individuals who do not like to be interviewed, and can include people with low literacy levels (Hartman et al., 1994). On the other hand, the use of focus group may yield unexpected results and the researcher may have less control over the group. The moderator may knowingly or unknowingly bias results by giving cues about what types of responses are deemed desirable. Additionally, the results may be biased because of uncertainty, accuracy, or hesitancy in what participants say due to a group setting or the presence of a dominant member (Krueger & Casey, 2000).

3. Content Validity

The design and administration of research instruments can affect reliability and validity of the research. Choi and Pak (2005) identified 48 types of bias in questionnaire design related to question and questionnaire design and administration. Question design problems identified were related to wording, missing or inadequate data, faulty scale, leading questions, intrusiveness, and inconsistency. Questionnaire design issues included formatting, length, and structure. Administration problems were comprised of interviewer subjectivity, respondent's subconscious and conscious reactions, respondent's learning, inaccurate recall, and cultural differences. Studies related to diet and health often rely on self-report measures. Specifically when looking at nutrition research, dietary behavior reports require cognitive, perceptual, and emotional processes that may affect validity and reliability (Hebert et al., 1997). Participants may underestimate dietary intake of socially-undesirable or overestimate socially acceptable foods (Hebert et al., 1997; Hebert et al., 2001). The tendency to respond in a way that is consistent with group beliefs and norms (social desirability) and a predisposition to seek praise from others (social approval) are significant sources of biases in diet research. The use of expert panel review and cognitive interviewing techniques can provide invaluable information and important feedback about the quality of newly developed measure as well as it's content validity (Drennan, 2003; Rubio, Berg-Weger, Tebb, Lee, & Raunch, 2003). Content validity refers to "the extent to which the items on a measure assess the same content or how well the content material was sampled in the measure" (Rubio et al., 2003, p. 94).

a. Expert panel review

Expert panel review is one approach to evaluating content validity (Davis, 1992; Rubio et al., 2003). A panel of experts provides constructive feedback on representativeness and clarity of

items using objective criteria and offers suggestions on how to improve the measure. The panel is usually comprised of content and lay experts. The content experts are individuals who have professional expertise in the field and have worked or published in the content area. Content experts are helpful in establishing the suitability and structure of the instruments (Davis, 1992). The lay experts are potential research participants for whom the subject is most relevant. The use of lay experts ensures participation of the members of population of interest. Lay experts attend to the issues of phrasing, clarity of terminology, and recommend important items that may have been missed (Rubio et al., 2003).

b. Cognitive interviewing

Cognitive interviewing can be used to inform the qualitative phase of the multistage mixed method research approach to survey design (Drennan, 2003). Cognitive interviewing (also called verbal protocol or think-aloud interviewing) is a combination of cognitive psychology and survey methodology used to identify questions that may cause respondent error (Drennan, 2003; Willis, 2005). The aim of cognitive interviewing is to understand how participants perceive and interpret questions and to recognize and predict potential biases that may arise in the survey design (Drennan, 2003; Willis, Caspar, & Lessler, 1999). Miller (2003) identified three themes that present potential barriers in survey research methodology, but can be more clearly understood through cognitive interviewing when working with participants with a low education level. First, interaction between the interviewer and participant depends on an existing familiarity with surveys and the interviewing process (question-answer). For example, a person being interviewed may not be familiar and feel comfortable with research protocols. Secondly, the format of the question that requires mathematical calculations may be burdensome and potentially embarrassing if it is not understood by the participant. The questions may be

reworded so it is not necessary to perform on-the-spot calculations. Lastly, participants may need to respond to questions that use words, phrases, and language that they do not commonly use to describe their experience. All three themes may prevent participants from fully answering the questions, further inducing research bias.

Cognitive interviewing uses cognitive theory to inform and understand how a person processes information (i.e. attention span, word recognition, action, memory, language processing, problem-solving, reasoning, knowledge, organization in memory, and memory retrieval) (Drennan, 2003; Jobe & Herrmann, 1996; Thomas, Straf, Tanur, & Tourangeau, 1984; Tourangeau, 1984). Researchers can ensure comprehension of questions through four stages of cognitive processing: 1) comprehension, 2) retrieval, 3) decision making, and 4) response generation (Jobe & Herrmann, 1996; Thomas et al., 1984; Tourangeau, 1984; Willis, 2005; Willis et al., 1999). During the comprehension of the question phase, participant perceives, interprets, and stores the question in their short term memory. This stage focuses on the intent and the meaning of the question. It aims to answer what the respondent believes the question is asking and what specific words and phrases mean to the participant. In the retrieval from memory of relevant information stage, the participant uses information provided by the question to recall and generate recall cues to search his or her memory. This phase focuses on the retrieval of the type of information needed and strategies used to answer the question. During the decision making process, the participant integrates and evaluates the recalled information. Motivation and social desirability (sensitivity) affect the decision making process by influencing the effort to answer the question accurately and thoughtfully. In the response generation process, the participant maps the response to match their internally generated answer to the response categories in the questionnaire (Willis, 2005; Willis et al., 1999).

The benefits of the cognitive interviewing method are becoming increasingly recognized as an important part of development, testing, and assessment of surveys. Although a paucity of data exists on cognitive interviewing research with people with I/DD, the technique has been used in many areas of nutrition research. For example, cognitive interviewing was used to assess fruit and vegetable purchasing behaviors among low-income African American mothers (Reicks et al., 2003), to refine computerized nutrition questionnaires and tailored messages for lower-income families (Carbone, Campbell, & Honess-Morreale, 2002), to improve national nutrition surveys including food frequency questionnaires (Subar et al., 2001; Subar et al., 1995), and food security questionnaires (Alaimo, Olson, & Frongillo, 1999).

In practice, cognitive interviewing has several conceivable drawbacks. It takes time to properly administer cognitive interviews, therefore increasing the cost of the study and fatigue of the respondent (Carbone et al., 2002; Subar et al., 2001; Tourangeau & Rasinski, 1988). Additionally, improving the questions may result in a longer evaluation tool (length of the question or explanatory message in the text) which increases the burden of the participant (Carbone et al., 2002; Subar et al., 2001; Subar et al., 1995). Respondents may rely on the "satisficing rule" when deciding on a response. That is, when faced with a long series of follow-up questions, people may choose one answer over another to move the interview along and satisfy the needs of the interviewer (Tourangeau & Rasinski, 1988; Willis, 2005). Due to the long administration time of cognitive interviews, the sample size is generally very small and certain sections of the survey may not receive enough respondent remarks (Willis, 2005). Also, if the sampling is not done properly, results cannot be generalized to other populations and places (Carbone et al., 2002; Willis, 2005). Further, extra training of the interviewers and participants on the process adds time and cost (Carbone et al., 2002), while cognitive interviewing does not

detect measurement errors attributed to interviewers. Questions that pose problems for interviewers may be ignored since the cognitive interviewer's focus is more on participant response processes (Willis, 2005). Moreover, context (physical and social environment), can influence interpretation and response to the questions, especially when asking items regarding attitudinal and behavioral topics. For example, earlier items can provide the framework for subsequent items shaping the participant's expected perceptions of the future concepts. Earlier items also influence the respondent's decision about what is worth saying and what is redundant. The degree of contextual influence on the response depends on the type of questions and cognitive processes involved (Tourangeau & Rasinski, 1988; Willis, 2005). Lastly, inferences of cognitive interviewing are not causal but descriptive and indicative (Carbone et al., 2002; Willis, 2005).

Applying cognitive interviewing techniques does not necessarily imply a full understanding of the processes that transpire in respondent's mind when answering survey questions. Instead, the goal is to encourage and prompt participants to communicate information that is related to the types of processes mentioned above (Willis et al., 1999). Additionally, participants are encouraged to paraphrase items, talk about their thoughts, state their feelings and ideas, and suggest another wording. Universal accessibility of question design can be enhanced by identifying and understanding the barriers and limitations experienced by the participants through cognitive interviewing (Miller, 2003). Alternative modes of communication to evaluate a concept can be fostered through the use of pictures and photos in a card sort methodology.

4. Construct Validity: Rasch Analysis

The Rasch (Andrich, 1978; Linacre, 1989; Masters, 1982; Rasch, 1960; Wright & Masters, 1982) defines the measurement of traits or behaviors, such as nutrition supports, in

terms of the relative difficulty of survey items. Items are arranged in a hierarchical order according to their estimated difficulty level. Whereas classical approaches to measurement such as in True Score Theory assume that measurement error is constant across the various levels of a given scale, Rasch models treat measurement precision as varying over the score range. Thus, a specific estimate of the measurement error can be given for each person and item at each scale level. Measurement error is determined by the number of observations and the targeting of persons and items. Therefore, measurement precision may be several times greater at levels of the scale that most closely approximate the person's level of ability (i.e. nutrition supports) and where many item thresholds are clustered compared to other parts of the scale. Furthermore, the use of Rasch estimation methods can improve measurement precision compared to that obtained by the typical substitution methods (e.g. averaging of non-missing data) for missing data, since Rasch methods estimate ability based on items it encounters instead of the specified number of items comprising a test. In this way, Rasch probability estimators focus in on the estimate of the construct using available items, and do not require estimating items that are not there. This characteristic of Rasch models not only reduces the need for administering numerous items, but also minimizes the potential bias that results from missing data.

Another important feature of Rasch models is that estimation of item calibrations is independent of the sample distribution employed, and the estimation of person measures is independent of the item distribution used. The degree to which these properties hold depends on how closely the data fit the model. Once the parameters of a Rasch model are estimated, they are used to compute expected (predicted) response patterns on each item. Fit statistics are then derived from a comparison of the expected patterns and the observed patterns (Bond & Fox, 2007; Wright & Masters, 1982; Wright & Stone, 1979). Fit statistics test assumptions of

fundamental measurement. “Fitting the model” simply means meeting basic assumptions of measurement, e.g., high scorers should endorse or get right almost all of the easy items. Once identified, persons and items that “misfit” can then be examined qualitatively to determine the causes of the problems. Problems may include items with confusing wording or items that assess a construct that is different from the principal one being measured, i.e., multidimensionality. Understanding poor fit can lead to improving or dropping items.

Fit statistics are used as a measure of the validity of the model-data fit and as a diagnosis of individual idiosyncratic responding. Item-fit statistics are used to verify the internal validity of the items in contributing to a unidimensional scale. The model requires that an item has a greater probability of yielding a higher rating for persons with higher measures on the latent construct (e.g. higher nutrition supports) than for persons with lower levels measures (lower levels of nutrition support). Those items identified as not fitting the Rasch model need to be examined and either revised or eliminated. Such an item may not be related to the rest of the scale (e.g., assessing a concept other than that shared by the remaining items).

Fit statistics are calculated for both persons and items. The Rasch model provides two indicators of misfit: infit and outfit. The infit is sensitive to unexpected responses to items near the person ability level and the outfit is outlier sensitive. Mean square fit statistics are defined such that the model-specified uniform value of randomness is 1.0 (Wright & Stone, 1979). Person fit indicates the extent to which the person’s performance is consistent with the way the items are used by the other respondents. Item fit indicates the extent to which the use of a particular item is consistent with the way the sample respondents have responded to the other items. Fit statistics assess the degree to which an item or person’s responses are consistent with model expectations, not with sample norms. For this type of analysis, values between .75 and

1.33 logits (log odd units) are considered acceptable (Wilson, 2005). In addition to fit statistics, principal component analysis of residuals is used to examine whether a substantial factor exists in the residuals after the primary measurement dimension has been estimated (Linacre, 1998; Smith, 2002).

Person fit statistics measure the extent to which a person's pattern of responses to the items correspond to that predicted by the model. A valid response, as specified by the model, dictates that a person of a given ability has a greater probability of providing a higher rating on easier items than on more difficult items. Persons identified as misfitting may not be from the targeted population or the content of the assessment may not be appropriate for the given person.

III. CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

In this chapter, I will describe the specific theoretical framework and list the research questions for the proposed study. The theoretical framework aids in examining main and moderating factors related to nutrition supports and causal pathways related to skills for meal planning, food purchase, and preparation. The conceptual map is pictured in Figure 1.

A. Conceptual Framework

Bandura's Social Cognitive Theory (SCT) (Bandura, 1977, 1982, 1986) guided the development of this study as depicted in Figure 1. Social Cognitive Theory is one of the most widely employed and documented theories for health education and health promotion practice (Whitehead, 2001). The major postulate of SCT lies in the statement of reciprocal determinism, which assumes that behavior is a function of psychosocial dynamics including characteristics of person, their behavior, and the environment in which person is located and behavior performed (Bandura, 1977, 1986; Baranowski et al., 2002).

It is hypothesized that **Nutrition Supports**, defined as external environmental factors and internal perceptions of the environment (Bandura, 1977, 1986), may be affected by **External Resources** (Pathway A) including organizational commitment to health promotion and formal policies related to health promotion, and **Internal Resources** (Pathway B) including behavioral capability (nutrition knowledge), self-efficacy (confidence), and perceived workload. Lastly, Sociodemographic Factors, including age, gender, race/ethnicity, education level, marital and offspring status, and job tenure may have a main affect on Nutrition Supports (Pathway C) and Internal Resources (Pathway D) and are included in the model as potential confounders.

Furthermore, what is not presented in Figure 1 are outcomes of increased nutrition support in community homes. High nutrition support in community homes may predict improved skills for meal planning, food purchase, and preparation, which consequently may lead to increased nutrition support and better health for individuals with ID and possibly staff. However, these implications are beyond the scope of this study.

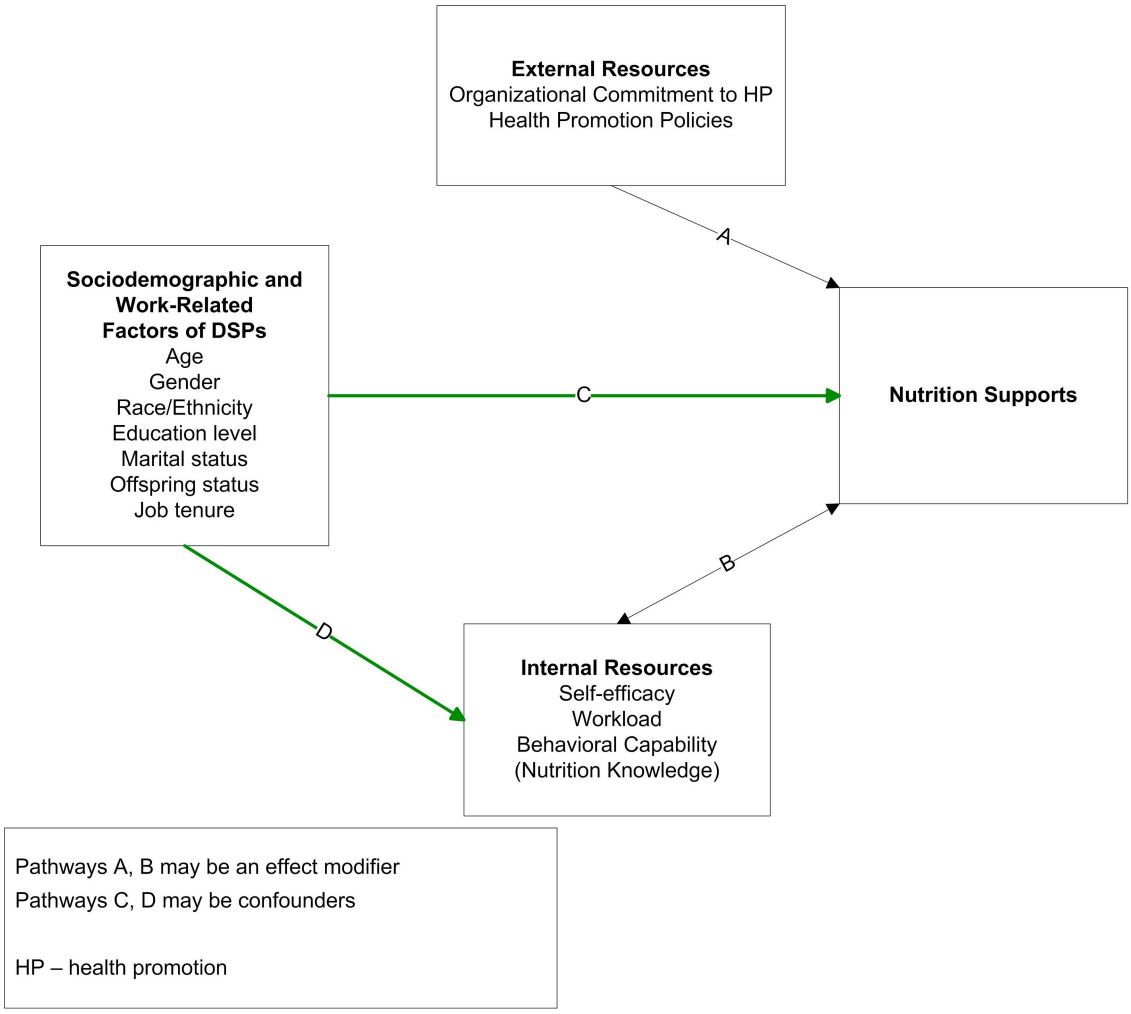

Figure 1. Nutrition supports study conceptual map

B. Research Questions

The purpose of this study is to enhance an understanding of dietary practices in community homes specifically related to meal planning, food purchase, and meal preparation within the domains found in literature including financial, preparation and storage, distribution of food, perceived knowledge, cultural values and lifestyles, government nutrition standards, organizational culture, and time. The findings from this study will offer information germane to research, practice, and policy development that is aimed at improving lives of people with I/DD who live in community settings. In order to begin this process a development of a reliable and valid Nutrition Supports Scale (NSS) is essential. The development of an instrument measure is a stepwise process where not all research questions can be developed at once. For example, it is impossible to estimate how many domains a final nutrition support instrument will hold until all three phases of the study are completed. Therefore, research questions were re-focused upon completion of each step of the study to reflect the newly generated domains of nutrition support. For example, in Phase 2 of the study, domains of nutrition support are slightly different in the expert panel compared to the cognitive interview. Lastly, this study will help us answer the following questions:

1. Phase 1: Item generation research questions

1) *What does nutrition support mean in community homes where people with I/DD live?*
    a. *What does nutrition support mean to **staff** who works in community homes?*
    b. *What does nutrition support mean to **family members** who have their relatives with ID living in community homes?*
    c. *What does nutrition support mean to **management** of CBOs who provide residential services to individuals with ID?*

d. *What does nutrition support mean to **individuals with ID** who live in community homes?*

2. <u>Phase 2: Content validity research questions</u>

3) *How does a panel of experts understand and interpret each item in the following **eight domains** in relation to wording and importance?*

a. ***Time***

b. ***Financial Supports***

c. ***Preparation and Storage***

d. ***Distribution of Food***

e. ***Knowledge and Education***

f. ***Government Nutrition Standards***

g. ***Cultural Values and Lifestyles***

h. ***Organizational Culture***

4) *How do DSPs understand and interpret each item in the following **eight domains** in relation to clarity, importance, and domain representativeness?*

a. ***Financial***

b. ***Preparation and Storage***

c. ***Distribution of Food***

d. ***Knowledge***

e. ***Cultural Values and Lifestyles***

f. ***Organizational Nutrition Policies***

g. ***Organizational Culture***

h. ***Time***

3. Phase 3: Construct and predictive validity research questions

1) *What are psychometric properties of the Nutrition Supports Scale?*

    a. *Do the items fit the Rasch model? Do the items clearly represent the concept of nutritional support?*

    b. *What is the dimensional structure of the instrument?*

    c. *What is the hierarchy of the items?*

    d. *What is the functioning of the rating scale?*

    e. *What is the reliability of the scale?*

    f. *Are individual's responses to the items consistent with the Rasch model expectation?*

2) *What is the predictive validity of the Nutrition Supports Scale?*

    a. *How is the Nutrition Supports Scale related to External Resources (Health Promotion Policies and Organizational Commitment to Health Promotion)? (Pathway A in Figure 1)*

    b. *How is Nutrition Supports Scale related to Internal Resources (Self-Efficacy, Perceived Workload and Nutrition Knowledge) (Pathway B in Figure 1)*

5) *How are staff's sociodemographic factors related to Nutrition Supports Scale? (Pathway C and D in Figure 1)*

IV. RESEARCH DESIGN AND METHODOLOGY

The sections of this chapter include the overview of research design, research setting, sampling strategies, eligibility and recruitment of participants, protection of human subjects, and data collection procedures.

A. Overview of Research Design

The research design of the study is depicted in Figure 2. A three-phase exploratory mixed method design approach was used (Creswell & Plano Clark, 2006; Creswell et al., 2003; Greene et al., 1989). This design incorporates the results of the first and second phase qualitative

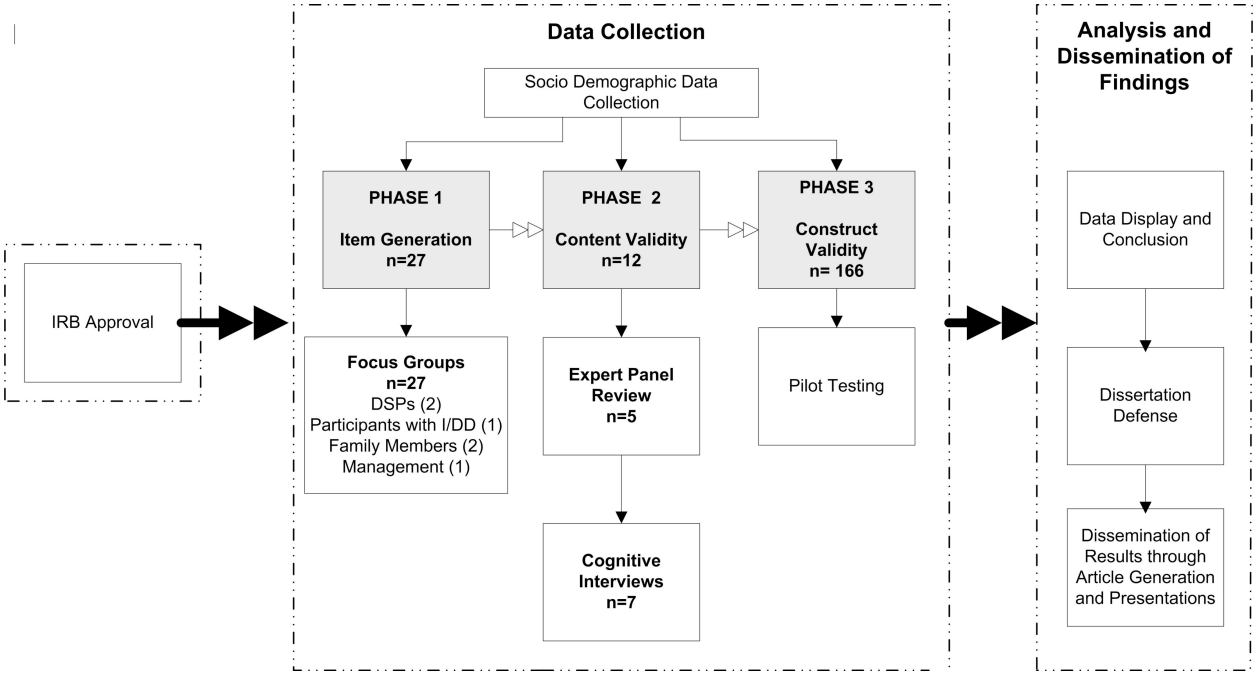

Figure 2. Research design

methodologies, including focus groups, expert panel review, and cognitive interviews. The use of multiple qualitative and quantitative methodologies is recommended for scale development because they allow for triangulation of the findings and build on the strength of each approach increasing the fidelity of the results (Creswell & Plano Clark, 2006; Creswell et al., 2003). The three qualitative methodologies were designed to develop the Nutrition Supports Scale (NSS) that was pilot tested in the third phase using a quantitative methodology. The incorporation of a qualitative design to develop the NSS was particularly salient as the literature detailing nutrition support in community setting does not include community homes for people with ID.

Consistent with other community-based research initiatives, the Centers for Disease Control and Prevention Framework for Program Evaluation in Public Health (1999) was used to guide the research design. The strategies in this framework are particularly useful in strengthening capacity to conduct research within CBOs. Specifically, the framework details the ongoing relationships that were cultivated between the research team and the community organization prior to and during the study. Moreover, the framework supports a collaborative community empowerment process as an effective approach to facilitate community entrée, recruitment, and participation in research activities. To secure "buy-in" this framework encourages research staff to meet with CBOs' key stakeholders to identify issues and generate research questions. Nutrition supports in community homes for people with ID was identified as a primary issue. The next sections will incorporate the three phases noted in Figure 2.

B. Protection of Human Subjects

Formal approval from the Institutional Review Board (IRB) at the University of Illinois at Chicago was received on March 2, 2010, prior to any recruitment of the potential participants (Appendix A). Additionally, letters of support from each CBO were obtained to strengthen the

relationship and commitment to the study (Appendix I). For Phase 1 and 2 of the study, interested participants who met inclusion criteria were consented before the first focus group and/or cognitive interview. The informed consent (Appendix B) detailed the summary, the purpose of the study, and the duration of the study, procedures involved, potential risks and discomforts, benefits of the research, information on privacy and confidentiality, voluntary nature of the research, provision of reimbursement of $10 in cash, rights as a research participants, statement offering the subject the opportunity to ask questions, to withdraw at any time from the research and contact information for the researcher and Office for the Protection of Research Subjects. In order to assess comprehension of the consent, participants were asked to explain in their own words the study purpose, their role, the benefits and risks of the study. They were asked to sign the consent form and a copy of it was given to them.

Phase 1, focus group recruitment, was completed by a designated CBO recruitment coordinator. During Phase 1 of the study, focus groups were scheduled according to participant availability. At the beginning of the focus groups, participants were informed of the nature and the purpose of the study, that their participation is voluntary and that they can refuse to participate, that they can withdraw at any time, and that they do not have to answer any questions that make them feel uncomfortable. They were also made aware that the focus group was being audio taped and that it was going to be transcribed and that participants have the right to review transcripts and edit them. Additionally, participants were informed that they would receive $10 for participating in focus groups. For specific recruitment materials, please see Appendix C. Written consent was obtained from each individual prior to starting a focus group. UIC research personnel consented participants who chose to participate in the study. For individuals with ID

who were not their own guardians, Legal Guardians were contacted after person with ID gave us permission to contact their guardian. For individual consent documents, please see Appendix B.

Recruitment and consenting process in Phase 2 was comparable to the focus groups. The cognitive interview times were scheduled to ensure participant convenience. Participants were consented right before the cognitive interview and were informed that they would receive $10 at the conclusion of the interview. Lastly, Phase 3 of the study was anonymous and no documentation of informed consent was obtained. However, participants in Phase 3 of the study were given a Participant Information sheet detailing all aforementioned pieces of the consent document. Participants in Phase 3 of the study were also given $10 in cash at the completion of the survey.

C. Research Setting

A purposive sample of five community based organizations (CBOs) who provide residential services to people with ID was selected due to their past collaborations in community-based research, a variety of geographic locations, racial/ethnic diversity of their workforce, and expressed interest in participating in this study. Additionally, organizations were located in two different geographic areas (Illinois and New Mexico) providing us with a diverse workforce and a higher ability to generalize the results of the study. We have established relationships with several CBOs in greater Chicago-based area and have prior knowledge of organizational environment, culture, traditions, and communication styles within these organizations which has provided a community entrée for the study.

Four CBOs were located in metropolitan Chicago area, Illinois, and one CBO was located in Albuquerque, New Mexico. The participating CBOs were private, non-profit providers of services for people with disabilities. The number of individuals that CBOs served ranged from

250 – 5,000, with three organizations serving 500-600 individuals. The largest CBO was also the most comprehensive service provider serving individuals with physical, intellectual, developmental, sensory, psychiatric, or HIV/AIDS with 90% of their clients being low-income. One other CBO provided services to two distinct populations including people with developmental disabilities and people with mental illness, while the remaining three CBOs served individuals with developmental disabilities only. Two CBOs' residential services were in a campus-type setting and they also had community homes. Every organization provided residential services including a mixture of independent living apartments, intermittent support, and community homes. A range of other services included education, life skills, job training, community and day program employment, evidence-based literacy and health promotion, social and recreational services, fitness and healthy living guidance, health care (i.e., psychosocial rehabilitation, physical, occupational and speech therapy, behavioral health services, counseling), specialized transportation, and foster care services.

We were interested in recruiting staff that specifically work in community homes and provide nutrition supports to the individuals with ID. Community home, also called group home or community integrated living arrangement (CILA), is a type of residential service that community based organizations (CBOs) offer to their clients with ID. The number of people in community homes depends on the individual state regulations. For example, in Illinois, fewer than eight people can live in a community home (Illinois Legal Aid, n.d.), while in New Mexico no more than four people can reside together (New Mexico Department of Health, 2007). Individuals who are eligible to participate in CILA program must be at least 18 years of age, have a mental or intellectual and developmental disability and be in need of an array of services and a supervised living arrangement (Illinois Legal Aid, n.d.).

D. Sampling Strategies

The population of interest for this study was staff who work in residential community homes and provide support to individuals with ID. The staff included direct support professionals (DSPs), qualified support professionals (QSPs), and house managers. Most house managers are DSPs who are promoted to leadership positions.

This study had three phases that included the following: Phase 1: Item Generation; Phase 2: Content Validity, and Phase 3: Construct Validity. Our goal for the Phase 1 was to recruit a convenience sample of 25-40 participants for five focus groups. The sample was selected from a pool of potential participants from one CBO in metropolitan Chicago area. Five focus groups were held with a total of 27 participants. This has satisfied the 6-8 participants recommendation for the size of a focus group (Krueger & Casey, 2000). Additionally, five members were recruited for the expert panel review in this phase.

In Phase 2 of the study, we recruited 5 experts and the goal was to recruit 5 to 10 participants for the cognitive interview. The number of interviews depended on the point of saturation where generally 5-10 cognitive interviews is recommended (Willis, 2005). Saturation for cognitive interviews was reached with 7 interviews.

For the Phase 3: Construct Validity part of the study our goal was to recruit 138 participants. Using the Rasch measurement model, the number of participants for the Phase 3 of the study depended on the type of statistical analyses that were done to measure rating scale reliability. Variability of the participant sample is essential to ensure that all response options of the measure construct for all of the variables are used (Bond & Fox, 2007; Linacre, 1994). Since statistical inference is not the primary issue related to instrument validation using Rasch analysis, sample size is not determined in terms of statistical power, but with respect to the precision and

stability of the estimates of item endorsability (Linacre, 1994). To obtain a stable item calibration, which is quantified by its standard error (SE), we have to have a sample N that is targeted for the items and responds to the test as intended. Modeled standard errors of the item are in the range of (2/SQRT N) < SE < (3/SQRT N) (Wright & Stone, 1979) which is equivalent to 4/SE2 < SE < 9/SE2. The low end of the range represents well-targeted individuals (40/60% endorsement) and upper end represents less well targeted individuals (more extreme than 15/85% endorsement) (Linacre, 1994). Specifying a 95% confidence interval and parameters estimated to be stable within .5 logits, the SE is ± .5/1.96. Substituting the previous equation yields a sample size estimate of 62 to 138 respondents. For the scale that is polytomous (e.g. Likert type scale) we need to take an extra concern with sampling where we will need at least 10 observations per category of the variable (Linacre, 2004). For example, if the scale has 4 possible categories (strongly agree, agree, disagree, strongly disagree), we will need at least a sample of 40 respondents to meet the at least 10 observations per category of the variable. Due to a high level of interest in this study, a final sample for Phase 3 of the study was 166, which exceeded the recommended sample size for the less well targeted individuals.

E. Sample and Eligibility Criteria

For the Phase 1: Focus Group of the study, a purposive recruitment of the focus group participants was done from one CBO in metropolitan Chicago area, Illinois. Focus group participants needed to meet the following inclusion criteria:

1. Belong to one of the following groups:
    a. Staff working in a community home providing diet and nutrition supports for people with ID (e.g. planning, purchasing, and preparing meals)
    b. Person with ID that lives in community home

c. Manager at a CBO that provides residential services to people with ID

d. Family member of person with ID who lives in community home;

2. Be at least 18 years or older;
3. Be able to speak and understand the English language.

For the Phase 2: Cognitive Interview and Phase 3: Pilot Test recruitment was obtained from six CBOs, five in metropolitan Chicago area, Illinois and one in Albuquerque, New Mexico. The participants needed to meet the following criteria:

1. Staff (DSP or QSP) or manager working in a community home providing diet and nutrition supports for people with ID,
2. Be at least 18 years or older;
3. Be able to speak and read the English language.

F. Recruitment Procedure

1. Phase 1 and 2: Recruitment

Phases 1 and 2 took place in one CBO in metropolitan Chicago area. The researcher met with key stakeholders to introduce the study including upper management and a designated recruitment coordinator in a CBO. The recruitment coordinator was designated by upper management of CBO. During the meeting the purpose of the study and the recruitment procedures were explained, copies of consents distributed along with the recruitment flyer and a sample recruitment email. For the Phases 1 and 2 of the study, the recruitment coordinator sent emails, made phone calls, or approached potential participants individually and inquired about their interest in the study. Once potential participants expressed an interest in participating in the study, place, date, and time of the focus groups during the Phase 1 and cognitive interviews in Phase 2 were scheduled. Recruitment was attained in steps where participants were recruited for

Phase 1 first and only after the completion of this phase did Phase 2 recruitment resume. During recruitment the recruitment coordinator was instructed to introduce the UIC research team and give historical background of UIC and CBO's connection. Also the coordinator described the study as in the following: *The purpose of this project is to develop a tool that would measure nutrition supports to meal planning, food purchase and preparation in community homes. This tool may be used in the future to assess and increase ability of staff employed in community based organizations to reduce the barriers to healthy food choices and promote overall health and wellness among people with I/DD. Participants will partake in one to three focus groups to identify major topics for developing a tool that can evaluate supports to nutrition. Upon identification of the topics we will create a list of possible items that can identify supports to nutrition. We will test this tool to see if it provides us with a suitable measurement of supports for nutrition in community home.* Finally, the coordinator asked potential participants if they were interested in being a part of focus group of cognitive interview. Once potential participants expressed interest in participating, time and date were scheduled for the focus group or cognitive interview.

2. Phase 3: Recruitment

In Phase 3 of the study, we recruited participants from five CBOs, four from Illinois and one from New Mexico. CBOs made an announcement to their DSPs who work at group homes of the time and the date of the informational recruitment meeting with the researcher. The announcement was distributed via word of mouth or by email by the CBO's Residential Directors. The research team members met with potential participants and introduced the study. Since there was no consenting for this phase of the study, the Participant Information Sheet was

given to each study volunteer and was reviewed with them. At this point, once participants expressed interest to take the survey, the survey was administered immediately.

G. Data Collection Procedures

Four primary methods of data collection were used in this study including: 1) focus group data (item generation), 2) expert panel review (content validity), 3) cognitive interview (content validity), and 3) pilot testing of final scale (construct validity). Table I delineates data collection procedures, the duration of each Phase and the time it took to complete each Phase of the study. Demographic data such as age, race, gender, marital status, education, number of years working with people with ID were also collected for all three phases of the study. Additional questions were collected for the participants of staff focus groups, Phase 2 and Phase 3. These included the size of the household, children under the age 18 living at home, the frequency of grocery shopping for the community home, meal planning, food purchase, and meal preparation habits in community home, and a questions related to whether participant is a primary grocery shopper, meal planner, and cook at their family home. We used this data to draw inferences across the sociodemographic variables. For details on the surveys, please see Appendices G and H.

1. Phase 1: Item Generation

Two moderators, the Principal Investigator and a trained research assistant, were present during every focus group session. The Principal Investigator introduced the study and the research assistant would ask general inquiry questions. The Principal Investigator took field notes and asked follow up and clarification questions during the discussion. The intent of the focus groups was to generate items for the scale around the concept of nutrition supports in

community homes. Each focus group was approximately 90 minutes long. One to two focus groups were held with

TABLE I
DATA COLLECTION PROCEDURES

Format	Date Period	Approximate time in minutes	Instrument(s)	Number of participants
Focus Group	4/14/10-4/29/10	90	Focus Group Script Demographic Questions	27
Expert Review Panel	5/1/10-5/11/10	60	*Nutrition Supports Scale (NSS)V.1*	5
Cognitive Interview	5/14/10-5/21/10	90	*NSS V.2* Demographic Questions	7
Pilot Testing	6/7/10-6/28/10	15-25	Survey	166
CBO A	6/15/10-6/27/10		*NSS V.3* *Organizational Commitment to Health Promotion*	44
CBO B	6/9/10-6/28/10		*Health Promotion Policies* *Perceived Workload*	64
CBO C	6/21/10		*Self Efficacy* *Nutrition Knowledge*	15
CBO D	6/24/10		*Demographic Questions*	18
CBO E	6/23/10-6/28/10			25

each target audience until saturation was reached. Saturation informs us that the topics have been covered as completely as possible and is reached when nearly the same items are generated from each consecutive focus group (Krueger & Casey, 2000). The sessions were audio taped and field notes were taken. Field notes contribute to dependability and credibility of the data and are researcher's perceptions of participants and environment (Tuckett, 2005; Tuckett & Stewart, 2004). The field notes included key themes for item generation and quotes of participant remarks.

A list of possible nutrition supports was drafted from a literature review related to characteristics of food purchase, meal planning and preparation in low-income populations (Local Foods Connection, n.d.; Nestle et al., 1998; Shankar & Klassen, 2001). People with I/DD who live in community homes are usually low income and may receive government subsidized food stamps/coupons (Braddock et al., 2008). An operational definition of nutrition support in community homes was derived from the literature and consisted of six factors including financial and time supports, preparation and storage of food, environmental distribution of food, knowledge and education, cultural values and lifestyles, fulfillment of government nutrition standards, and organizational/service culture (Local Foods Connection, n.d.). Prior to posing the focus group questions, and in order to orient the focus group participants, we described the construct of nutrition supports and provided a preamble on the importance of nutrition and health including current obesity rates and chronic health conditions among people with I/DD, and the affects of food choice and meal planning, food purchase and preparation. Next, we followed the Krueger et al. (2000) guide to developing discussion questions for the focus group. In general, the questions used words that were clear and easy to understand, short, open ended, and unidimensional. The questioning route was sequenced, starting with general inquiries and getting

more specific. The focus group started with opening questions such as the following: *tell us who you are, what you do, and what you most enjoy doing.* Opening questions are meant to be easy and straight forward to answer, are used to involve everyone in the discussion and are not analyzed. Introductory questions were used to launch the topic of discussion and encourage everyone to start thinking about their relationship with the topic. An example of an introductory question would be to ask what nutrition support means to people. *What does nutrition support mean to staff who work with and support people with I/DD in group homes?* Key questions propel the focus group. There are three key questions in this study and they included: *What supports does staff need for meal planning for people with I/DD? For food purchase? For food preparation in community homes?* Probing questions included the themes of perceptions of knowledge and training (in the three categories), skills, commitment, and resources. For a detailed Focus Group Script please see Appendix D (Focus Group Script).

2. Phase 2: Content Validity

a. Expert Panel Review

To ensure content validity, drafted items were presented to the expert panel which consisted of the focus group participants and experts in the field (Appendix E – Expert Panel Review Form). The purpose of the expert panel review was to verify with focus group participants and experts in the field that the themes are appropriate and reflect the concept of nutrition support and that they accurately reflect what was discussed in the focus group (focus group participants only) (Davis, 1992; Grant & Davis, 1997). The first draft of the Nutrition Supports Scale was emailed to the panel. Questions about the content and the format of the instrument were solicited. Additionally, each participant was asked to rate the **importance** of **each item** related to the conceptualization of nutrition support for staff that works in a

community home. Reviewers were asked to circle the number from 1 to 4 following each item (1 – not important, 2 – somewhat important, 3 – important, and 4 – very important), to note any problems with the wording of an item or the difficulty in understanding the item, and to note any further concerns in the space for "comments". Lastly, any additional items or suggestions regarding the development of the Nutrition Supports Scale were asked.

b. Cognitive Interviews

Upon completion of the focus groups and expert panel review, the items generated were edited into a second draft of the Nutrition Supports Scale (NSS). Please see Appendix F for Cognitive Interview Form. A cognitive interviewing technique was used to offer further insight into understanding how participants perceive and interpret the content of the scale and to recognize and predict potential biases that may arise in its design. The Cognitive Theory (Jobe & Herrmann, 1996; Tourangeau, 1984; Tourangeau & Rasinski, 1988; Willis et al., 1999) underlies the cognitive interview technique and includes the following processes: Comprehension of the Question (the intent and the meaning of terms), Retrieval from Memory of Relevant Information (recall and recall strategy), Decision Processes (motivation and sensitivity/social desirability), Response Processes (mapping the response). Interviews were open-ended and the verbal probing techniques were used to assess the comprehension of items. A NSS version 2.0 (Appendix F - Cognitive Interview Form) was presented to the interviewees in its entirety and was followed by probing questions specific to each item, such as: *Can you tell me in your own words what this sentence means to you?* Also, to test comprehension of a particular item an example question was asked such as: *What, to you, is a balanced meal?* Four additional criteria were used to evaluate NSS including (1) **representativeness** of the content domain; (2) item **clarity**; (3) factor **structure**; and (4) **comprehensiveness** of the instrument. Additionally two versions of

response tags were offered: 4-point Likert-type categories (Strongly Agree, Agree, Disagree, Strongly Disagree) or a dichotomous (Yes/No) format. Lastly, a special attention was paid to items that were noted as possibly not important or problematic during the expert panel review. The participants were asked to choose preferred format to answer each question. Each interview lasted approximately 90-120 minutes.

3. Phase 3: Construct Validity

Upon completion of the content validity portion of the study, additional comments were incorporated into a third draft of the Nutrition Supports Scale (NSS). To evaluate the scale for reliability and construct and predictive validity, we recruited about 166 additional participants from five CBOs to complete a Nutrition Supports Scale (64 items) and additional measures to evaluate predictive validity. Staff and managers of community homes completed a one time survey. It took about 15-20 minutes for staff to complete the survey.

We used additional measures to evaluate predictive validity. Predictive validity is the extent to which a score on a scale predicts scores on another criterion measure and establishes statistically significant relationship between a measure (i.e. NSS) and a criterion (in this case External and Internal Resources, Pathways D and E in Figure 1) (DeVellis, 2003; Nunnally & Bernstein, 1994). External Resources were evaluated using two measures. An 8-item *Organizational Commitment to Health Promotion* scale (α= .91; test/retest correlation = .74) (Marks, Sisirak, & Donahue Chase, 2008) to assess staff's perceptions of commitment to health promotion. The 8 items were measured on a 4 point Likert scale (1-Strongly Disagree, 2-Disagree, 3-Agree, 4-Strongly Agree). Sample items include topics related to health promotion valued by everyone in organization, having strategic priorities related to health promotion,

leaders and managers supporting health promotion programs, and employees collaborating to achieve health promotion goals.

A 10-item *Health Promotion Policies* (Marks, Sisirak, & Donahue Chase, 2008) scale was measured using a 3 point Likert scale (1-No Policies/Don't Know, 2-Informal Policies, 3 – Written/Formal Policies) (α= .81; test/retest correlation = .76) and evaluated specific organizational policies related to health promotion. Sample items include policies about healthy food preparation practices in community homes, availability of health promotion programs during work time, availability of discount memberships to fitness facilities for staff, reduction in health insurance fees for staff who participate in health promotion programs, having the statements related to health promotion in organizational vision and mission statements, and provision of nutrition guidelines in community homes.

Internal Resources were measured using three scales. A 7-item *Self-efficacy* scale (α= .90; test/retest correlation = .74) measured staff's confidence in doing health promotion activities (Marks, Sisirak, & Donahue Chase, 2008; Marks, Sisirak, Riley, & Donahue Chase, 2008). Staff confidence was measured on a 5-point Likert scale (from 1-Not at all Confident to 5-Totally Confident). Items included confidence to plan, purchase, prepare healthy meals, teaching individuals with ID how to make healthy food choices, eat more fruits and vegetables, and choose healthy portion sizes.

A 6-item *Quantitative Workload* scale measured staff's quantity of work and overload (α= .87) (Caplan, 1971). Workload was evaluated using a 5-point Likert scale (1-Not at All, 2-Just a Little, 3-Moderate Amount, 4-Quite a Lot, 5-A Great Deal). Sample items included statements related to having enough time to carry out work, having conflicting demands at work,

being able to finish work feeling that everything was completed, having adequate resources to complete the work, and ability to follow best practices.

Lastly, staff member's nutrition knowledge was measured using a 21-items (α= .97, test/retest correlation = .98) (Parmenter & Wardle, 1999). If a respondent answered the question correctly, they were given one point, if the question was answered incorrectly, no points were given. Since some of the items contained subquestions, a total score for this section was 57 points. The items included questions related to current dietary recommendations, sources of nutrients, general food choices, and specific items related to relationship between diet and disease. For a complete set of Internal and External Resources measures please see Appendix H.

Predictive validity was analyzed using Pearson correlation product-moment correlation coefficient (Pearson, 1896; J. L. Rodgers & Nicewander, 1988). Pearson correlation measures the extent to which values of two variables X and Y are proportional (correlated) with each other. The measure is widely used in sciences to determine the strength (represented with the values inclusive and between +1 and -1) of linear dependence of two variables. According to Nunnally and Bernstein (1994), a correlation of .30 shows satisfactory criterion validity.

H. Data management

The data from the focus groups, expert reviewers and cognitive interviews (Phase 1 and 2) was in the form of voice data, hand written notes, abridged transcripts, and a Expert Panel Review Form (Appendix E) and Cognitive Interview Form (Appendix F). Voice data was downloaded on the computer and Sony Digital Voice Editor 3.3 software was used to download, edit, organize, convert and upload audio files from the recorder. The data from the Phase 3: Construct Validity was managed using SPSS V.16 and the data analysis was conducted using WINSTEPS (Linacre, 2002).

Confidentiality of the data was maintained by the following: (1) Keeping participants' responses and participation safe and private to maintain their personal rights; (2) Giving a password to the computer that is only accessible by authorized research team members; (3) Storing the paper versions of notes, demographic information, and scales in locked filing cabinets in a locked office in the Department of Disability and Human Development for five years; (4) Destroy questionnaires, after a five-year period. The data derived from this study will be disseminated in written publications and presentations. Participants' names will never be associated with the data.

V. DATA ANALYSIS AND RESULTS

This chapter will re-state research questions and describe data analysis and the results of the three phases of the study. First, research questions, participants from the focus groups (Phase 1: Item Generation), data analysis and results will be presented. Next, research questions, analysis, and results from the Phase 2: Content Validity part of the study including expert panel analysis and cognitive interviews participants, analysis and results will be described. Finally, the research questions, statistical analyses, and results used to establish reliability, construct validity, and predictive validity of the Nutrition Supports Scale Instrument in Phase 3 of the study will be presented.

A. Phase 1: Item Generation

This section will describe the first phase of the study that includes research questions addressed, analysis plan, and the results of item generation using focus groups technique.

1. Description of the Focus Group Participants

Six (6) focus groups were held between April 14th 2010 and April 29th 2010. Overall 27 participants attended the six focus groups. Participants included two DSP focus groups (n=7), two family members focus groups (n=8); one management focus group (n=6) and one participants with ID focus group (n=6). Table II describes focus group participants.

a. DSP Focus Groups

Seven individuals participated in two DSP Focus Groups. The two groups included 5 females and 2 males. Age range of the participants was 22 to 52 years (M=40). Four of the participants were black, not of Hispanic origin, and 3 white, not of Hispanic origin. Regarding marital status, four individuals were single, one separated, one married, and one unknown. One participant was a college graduate, three participants have finished some college, one participant was a high school graduate, one participant had some high school, and one was unknown. Participants had a wide range of job tenure working in the field of ID. Mean job tenure was 11 years with one participant working in the field for only six months and the most established staff working over 25 years. All participants in DSP focus group were involved in meal planning, food purchase, and meal preparation. Four individuals had children under the age of 18 living with them and majority of the participants (n=5) were primary grocery shoppers, meal planners, and cooks in their own family homes.

b. Family Members Focus Groups

Two Family Members Focus Groups had a total of eight participants. The two groups included 6 females and 2 males. Age range of the participants was 42 to 74 years (M=55). All participants were white, not of Hispanic origin. Four participants were parents of individuals with ID, three were siblings, and one was a legal guardian with no blood relationship. Three participants hold a graduate college degree, three were college graduates, one individual had some college and one individual was a high school graduate. Participants reported a range of 2 to 25 (M=16) years of their family member with ID living in a community home.

TABLE II
FOCUS GROUP CHARACTERISTICS OF STUDY PARTICIPANTS
(n=27)

Background Characteristics	DSP	Family Members	Management	Individuals with ID
Gender – *n (%)*				
Male	2 (29)	2 (25)	2 (33)	4 (68)
Female	5 (71)	6 (75)	4 (68)	2 (33)
Race/Ethnicity – *n (%)*				
American Indian or Alaskan Native	0	0	0	1 (17)
Black, not of Hispanic origin	4 (57)	0	2 (33)	0
White, not of Hispanic origin	3 (43)	8 (100)	4 (68)	5 (83)
Age – *M (range)*	40 *(22-52)*	55 *(42-74)*	36 *(23-61)*	47 *(28-69)*
Education – *n (%)*				
Some high school (grades 9-12)	1 (14)	0	0	2 (33)
High school graduate	1 (14)	1 (13)	0	4 (68)
Some college	3 (43)	1 (13)	0	0
College graduate	1 (14)	3 (38)	6 (100)	0
Post-college or graduate school	0	3 (38)	0	0
Unknown	1 (14)	0	0	0
Tenure in the Community Home – *M (range) years*	11 (.5-25)	16 (2-25)	9.4 (.3-40)	13 (1-20)

c. Management Focus Group

Six individuals participated in one Management Focus Group. The group included 4 females and 2 males. Age range of the participants was 23 to 61 years (M=36). Two participants were black, not of Hispanic origin and four participants were white, not of Hispanic origin. Two participants were Qualified Support Professionals (QSP), one individual was a Health and Wellness Coordinator, one Registered Nurse, and one a Vice President of Residential Services. All participants were college graduates. Participants had a wide range of job tenure ranging from 4 months to 40 years (M=9.4 years) of working with individuals with ID.

d. Individuals with ID Focus Group

Six individuals with ID participated in one Focus Group. The group included 2 females and 4 males. Age range of the participants was 28 to 69 (M=47). Five participants were white, not of Hispanic origin and one was American Indian/Alaskan Native. Four individuals were high school graduates and two had some high school education. Participants had a wide range of the time that they lived in community home from one year to 20 years (M=13 years).

2. Focus Group Analysis Plan

a. Statistical Software

Voice data was downloaded on the computer and Sony Digital Voice Editor 3.3 software was used to download, edit, organize, convert and upload audio files from the recorder. Microsoft Word was used to organize items into domains. Lastly, SPSS (version 16) was used for summarizing descriptive variables of the focus groups.

b. Research Questions

The research questions stated in Chapter III are re-introduced here. Phase 1 of the study addresses the following research questions:

1) *What does nutrition support mean in community homes where people with I/DD live?*

   a. *What does nutrition support mean to **staff** who works in community homes?*

   b. *What does nutrition support mean to **family members** who have their relatives with ID living in community homes?*

   c. *What does nutrition support mean to **management** of CBOs who provide residential services to individuals with ID?*

   d. *What does nutrition support mean to **individuals with ID** who live in community homes?*

c. Methods of Investigating Research Questions

Structure: Analysis of the focus group results included data derived from the written field notes, taped recordings, oral summaries of key points, and focus group debriefing. An abridged transcript was generated from the analysis of taped recordings which included comments related to the items plus the PI and moderator's summary comments of the discussion. Microsoft Word was used to organize units of information and items derived from an abridged transcript were coded from 1-8 to correspond to six topical factors from literature. A Coding Guide was created in Microsoft Word using six topical domains from literature. The data were organized by focus group script question. The focus group responses were organized using domains. The notes from the PI and focus group moderator were reviewed from each focus group for identifying information gaps and classifying themes of the discussion within the six factors identified from the literature. The analysis was completed concurrently where each focus group was analyzed and compared to the previous group. For example, the focus group script

(Appendix D) was used to guide a discussion in the first DSP focus group, however, during the second DSP focus group, besides using focus group script, the participants received a draft of items for Nutrition Supports Scale and were prompted to comment on the items and add additional items.

Process: Item generation from four perspectives (DSPs, management, family members and individuals with ID) was the primary aim for each of the focus groups. Specifically, participants were asked their perceptions in regards to the nutritional supports needed for the following three items: 1) meal planning in community homes; 2) food purchase in community homes; and, 3) meal preparation in community homes. The Focus Group Script incorporated an operational definition of Nutrition Support that consisted of six factors derived from literature review including (1) financial and time supports, (2) preparation and storage of food, (3) environmental distribution of food, (4) knowledge and education, (5) cultural values and lifestyles, (6) fulfillment of government nutrition standards and organizational culture. Participants were initially asked an open-ended question as to what nutritional support for meant to them in the context of DSPs working with people with ID. This question was used to provide the facilitator with a general idea of the kinds of supports and programs with which the participants were familiar, and to set the context by illustrating the breadth and depth of each of the factors (financial and time supports, preparation and storage of food, environmental distribution of food, fulfillment of government nutrition standards and organizational culture). Participants were then provided a listing of the six factors derived from the literature. Facilitators queried participants on the six domains and the importance of each domain to participants in each of the focus group sessions (e.g., why were financial issues salient).

3. Focus Group Results: Item Generation

The focus group participants were purposefully selected to acquire a wider picture of nutrition supports in community homes from all stakeholders involved. Because of this, a wide range of discussions emerged and some new insights were gained as to what nutritional support meant and the kinds of supports and programs that were necessary from the perspective of families, DSPs, management, and individuals with ID. In regards to the specific domains under nutrition support, each group, as expected, had focused on different domains of nutrition support.

a. DSP Focus Group

Research Question: *What does nutrition support mean to **staff** who works in community homes?*

The DSP focus groups had several major and overlapping themes regarding nutrition support. A large percentage of the discussion focused on items related to organizational culture. For example, DSPs noted that nutrition may not be a priority within the organization. Many of the cooking standards, guidelines, and policies often do not exist, are unclear, or are faulty. One DSP reported on the chain of events associated with one food policy that mandated washing all fruits and vegetables and place them in the refrigerator. This policy results in some fruits and vegetables, specifically berries and lettuce, spoiling before use and being wasted, therefore, leading to the house running out of food before the end of the month.

Communication was another theme that was related to organizational culture and was expressed as an area of significant concern. Specifically, DSPs noted that communication between shifts, including day and residential services impacted the continuity of care across day and residential services for individuals with ID. For example, residential staff have no way of knowing what people eat during the day beyond what was packed for the individual's lunch.

Conceivably, people with ID have the capacity to purchase snack items (e.g., candy, chips, soda) in vending machines Further, DSPs noted that policies were needed to address time management issues requiring weekly menu planning from a designated staff member. This would improve consistency of meal purchasing and preparation across all staff members and communication across shifts. Household consistency was noted as another issue impacting nutrition. The practice of "pulling" staff to other houses where they lack the knowledge of nutrition requirements (e.g., food preferences, allergies, special diets) and accountability for food (e.g., food inventory, coordination of meals, maintenance of appliance) is common and is problematic for maintaining household consistency.

Staff find that their role in regards to nutrition often degrades into being the "food police." For example, staff noted that families will initiate complaints that their loved one is gaining weight, whilst the organization concomitantly either has no policies, education, or training related to menu planning, food preparation, meal preparation, or strategies for teaching and supporting individuals with ID. At the same time, individuals with ID will say it's my right to eat what I want whatever the choice may be and it's my staff's job to cook the food that I want. Staff acknowledge that individuals with ID have the right to choice, however, many people with ID have never been taught the health consequences of their poor food preferences and choices. Hence, staff are left in a precarious position of having to abide by organization rules while ensuring the welfare of individuals with ID.

Regarding knowledge issues, DSPs noted that many staff simply cannot cook (e.g., do not know how, not interested in learning how, do not perceive it as their responsibility to cook). From an organizational level, focus group members thought that potential job applicants need to

be queried as to their knowledge, skills, abilities, and interest related to menu planning, food purchasing, and preparing meals.

Lastly, staff noted that families may become a barrier to the provision of nutrition support. For example, families frequently will take their loved ones out to eat without considering the types of choices and food portions that support a healthy diet. When an individual returns to the community home, they may exhibit an increase in aggressive behaviors towards staff. Furthermore, family members often send and/or bring snack foods into community homes contributing to poor dietary habits.

b. Family Focus Group

Research Question: *What does nutrition support mean to **family members** who have their relatives with ID living in community homes?*

Many of the items generated from the family focus group dealt with staff knowledge and education, cultural values and lifestyles, organizational culture and finances. From the family perspective, focus group participants emphasized the importance of support in the homes to create a "family" culture for eating nutritious meals with adequate time to enjoy the meal and having access to quality food. Family members also expressed a strong concern over the use of convenience foods, uncontrolled portions sizes, and the use of "unhealthy" methods for preparing the food. Family members stated that all of these issues could be attributed to high staff turnover and lack of education and training related to meal planning, food purchase, and preparation. Families noted that staff routinely prepared foods with high fat and high starch; and noted that many people with ID ate due to boredom with constant snacking due and that people with ID will remind staff that it is his or her right to eat as much as the want. One family member stated the following:

At Ann's house, this one staff loved to cook she would make them like meatloaf, or they'd have steak and potatoes and broccoli, I mean, they would have a full meal. This other staff, and they are all great staff, don't get me wrong, they would eat a lot of frozen pizza, fish sticks, for dinners, and … which is not good…but they claim that and I don't think they sit down, supposedly, they are supposed to sit down, those who go to the store, and workout a menu for a week, never happens, and they come home with all these goodies…there really is no continuity.

Family members also noted that staff are expected to teach people with ID how to cook; however, most noted that this was not occurring and questions emerged as whether this was in fact realistic given the lack of education and training for staff. That is, in general, staff were not viewed by families as having the knowledge and skills to plan, purchase, and prepare meals. Consensus among family members existed in that these basic skills were critical in being able to teach individuals with ID how to cook, present healthy options for different types of meals, and promote healthy nutritious behaviors.

Family members viewed organizational culture as important from the standpoint of having nurses or dietitians available as resources for staff. Specifically, families wanted access to dieticians to teach staff how to prepare balanced meals and special diets (e.g., diabetic diets) and nurses to teach staff the connection between diets and health outcomes (e.g., heart health, diabetes prevention) Reducing staff turnover was another major concern in addressing many of the issues associated with nutrition support. The following quotes from the family member focus group illustrates the issues related to staff turnover:

[with] Turnover of staff you have lack of consistency, even if you do have some good staff that are there, they get pulled to work at other houses frequently so they float to other houses. And when they get someone good they don't stay a long time they get pulled to the other houses.

...every time you get another staff, everything you have worked [related to nutrition and the family member with ID] out is forgotten

Sad to say but I do believe agencies throughout the US they need a warm body who is gonna at least take care of the people and if so whether they cook or not, they just want somebody in there who is gonna take care of our people

c. Management Focus Group

Research Question: *What does nutrition support mean to **management** of CBOs who provide residential services to individuals with ID?*

The management focus groups focused more on the domains of finance, knowledge and training, and organizational culture. Management noted that healthier food is more expensive, while convenient is quicker to make and cheaper. Because of variations in staff abilities for cooking, management discussed different approaches for food services (e.g., full delivery packaged foods, box dinners and how to cook with boxed dinner sets, full menu including how to prepare meals from scratch). Management discussed the expenses related to training staff to plan menus, purchase foods, and prepare meals; and, noted that full delivery of packaged foods being

a cheaper alternative. Management also stated safety concerns during food preparation and noted again the need to have a full delivery of packaged foods being a cheaper alternative.

Management did not believe that staff had the knowledge of client's food preferences leading to food waste. Theft was another large concern and led to consideration of food delivery services. Consideration was given to focusing on the process of hiring individuals and identifying existing skills for planning menus, purchasing foods, and preparing meals. Behavior challenges among persons with ID may impact staff's ability to cook.

d. Individuals with ID Focus Group

Research Question: *What does nutrition support mean to **individuals with ID** who live in community homes?*

The focus group among people with ID focused more on the domains of preparation and distribution food and cultural values. Individuals with ID wanted to make regular food. They expressed interest in learning how to cook meals from scratch. Some people noted that they often preferred to eat alone due to behavioral issues exhibited from their housemates. Much of the discussion among people with ID focused on their interest in having food that tasted good. Ultimately, in this focus group, people noted that they were most interested in learning more about food so that they would be able to either live in an independent setting or have greater control over their food choices.

...I never go to my room. I eat at the table. It's the proper way.

At the conclusion of all of the focus groups, 93 items were generated and the items were organized in six different categories. The focus group moderators independently coded the

generated items into the six factors found in literature. The coded items were compared to assess inter-rater congruence. Both raters determined that **Financial and Time Supports** factor was actually two factors and agreement was reached to separate the factors into two. The two new factors **Time Supports** consisted of 7 items, while **Financial Supports** factor consisted of 14 items. The same decision was made to separate the factor **Government Nutrition Standards** and **Organizational Culture**. **Government Nutrition Standards** had 5 items and **Organizational Culture** consisted of 18 items. Under the **Preparation and Storage** factor, the raters agreed, two of the items were very similar therefore one was deleted while one additional item (*I rely on convenience foods when I cook*) was better suited in **Cultural Values and Lifestyles** section. A consensus to delete the three items related to restaurant outings was reached as these items did not fit the definition of nutrition supports in community homes. Further the two items that one rater categorized under **Knowledge and Education** factor (*I usually make a list before going grocery shopping and I ask individuals I support what they would like to buy*) after discussion, were moved to **Cultural Values and Lifestyles**. Several items were worded negatively and the raters decided on rewriting the items to reflect nutrition support. Additionally, there were five items that the raters could not reach consensus for categorizing. These items were flagged for expert panel review. After inter rater review the Nutrition Supports Scale consisted of 89 items. For details of the first version of NSS please see Table III (Focus Group Final Items).

TABLE III

FOCUS GROUP ITEMS GENERATED FOR NUTRITION SUPPORTS SCALE

TIME SUPPORTS	
T1	I have enough time to plan a nutritious meal.
T2	I have enough time to grocery shop.
T3	I have enough time to prepare food.
T4	I have enough time to make a meal from scratch.
T5	I usually make a list before going grocery shopping.
T6	I follow a menu in community home.
T7	We make a menu to follow during the week.
FINANCIAL SUPPORTS	
F1	I am able to buy fresh produce.
F2	I am able to purchase food for a balanced meal.
F3	I can buy fresh foods with food assistance coupons/cards.
F4	I am able to buy good quality meat/protein.
F5	We have a budget to replace utensils/pots/appliances.
F6	We have enough money to buy as much food as we need.
F7	I use newspaper coupons when grocery shopping.
F8	I usually buy food items that are on sale.
F9	I check online ads for grocery store sales.
F10	Most foods I buy are boxed, canned, and processed.
F11	We keep an inventory of food items in a community home.
F12	We use up all the food that we purchase.
F13	We rotate products in the fridge.
F14	I leave a note on food that needs be used up soon.
PREPARATION AND STORAGE OF FOOD	
PS1	We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices.
PS2	We have adequate pots/pans to prepare food.
PS3	We have enough kitchen appliances to prepare food.
PS4	We have recipes to prepare food.
PS5	We have enough storage space for food.
PS6	We have enough utensils (spatula, whisks, measuring cups, etc.).
PS7	Our appliances are in good working order (e.g. fridge broken, cook-top with one working burner, etc).

Table III (continued)

DISTRIBUTION OF FOOD	
D1	I know where to buy fresh local food.
D2	I have transportation to a grocery store.
D3	Fresh food can be purchased near community home.
D4	I shop at local farmer's market for food.
KNOWLEDGE AND EDUCATION	
K1	I know how to cook.
K2	I know how to make tasty nutritious food.
K3	I understand the benefits of eating fruits and vegetables.
K4	I know how to prepare a balanced meal.
K5	I am familiar with the Dietary Guidelines for Americans.
K6	I am familiar with MyPyramid.
K7	I know how to prepare fresh food quickly.
K8	I can follow most recipes to make a meal.
K9	My nutrition knowledge is adequate.
K10	My food preparation skills are good.
K11	I understand portion sizes.
K12	My coworkers share cooking tips with me.
K13	I know how to cook with fresh produce (fruits and vegetables).
K14	I understand different food groups.
K15	I know how to make a food budget for a household.
K16	I know how to prepare specialty diets (e.g. low salt, low fat, low cholesterol, diabetes)
GOVERNMENT NUTRITION STANDARDS	
G1	I am aware that the governing body for services for people with ID has nutrition standards.
G2	I am able to provide meals within those guidelines.
G3	I have to follow government nutrition standards when preparing food for individuals with ID.
G4	I can plan a menu that meets government nutrition standards.
G5	The government places restrictions on where food assistance coupons/cards can be used OR We cannot buy nutritious food because the government restricts where food assistance coupons/cards can be used.

Table III (continued)

CULTURAL VALUES AND LIFESTYLES	
CL1	My cultural background influences what foods I **buy** for individuals with ID.
CL2	My cultural background influences how I **prepare** meals for individuals with ID.
CL3	I shop the same way I would for myself.
CL4	Individuals whom I support ask for fresh fruits and vegetables.
CL5	I follow a menu that my clients and I have prepared together.
CL6	We all sit down together during the mealtime.
CL7	The clients I support sit together during the mealtime.
CL8	I eat the same meal with individuals I support.
CL9	I have many individuals I support who are on special diets.
CL10	I like to cook.
CL11	I rely on convenience foods when I cook OR Convenient food is easier to prepare.
CL12	I use measuring cups when serving meals.
CL13	Family members of individuals I support are helpful with nutrition.
CL14	I try to incorporate fruits and vegetables in every meal.
CL15	My coworkers and I communicate between shifts about food and meals.
CL16	I seek nutrition advice from a dietitian or nurse on staff.
CL17	I ask for advice related to food from my coworkers.
CL18	Nutrition is a priority when I support individuals with ID.
ORGANIZATIONAL CULTURE	
OC1	I have support from my **manager** to improve nutrition for people with ID.
OC2	I have support from my **coworkers** to improve nutrition for people with ID.
OC3	My organization has a list of resources available related to food and nutrition.
OC4	My workplace offers trainings on food **purchase**.
OC5	My workplace offers trainings on food **budgeting**.
OC6	My workplace offers trainings on meal **planning.**
OC7	My workplace offers trainings on meal **preparation.**
OC8	My manager listens to me when I have suggestions related to nutrition.
OC9	Management recognizes my interest in providing balanced meals to individuals I support.
OC10	Staffing in community home where I work is consistent OR Our staffing is consistent in a community home.
OC11	My organization has a dietitian on staff.
OC12	My organization has a nurse on staff.
OC13	I can access recipes online (computer).
OC14	We receive food from food bank.
OC15	Most food from the food bank is boxed, canned, and processed.
OC16	We sometimes share food with other community homes.
OC17	We use government issued coupons/cards to buy food.
OC18	Our food delivery service provides quality meals.

B. Phase 2: Content Validity

This section will describe the research questions, analysis plan, and results for the second phase of the study. Expert panel review and cognitive interviewing techniques were used to assess content validity. In the next section, description of expert panel participants and cognitive interviewees will be presented, the analysis of two different approaches and the results from both approaches delineated.

1. Content Validity: Expert Panel Review

a. Expert Panel Participants

The expert panel was comprised of 5 reviewers including 1 content expert and 4 lay experts. The content expert reviewer was registered, licensed dietitian with extensive experience in working with individuals with I/DD. The four lay experts worked in CBOs and were knowledgeable of nutrition and community homes. Two of the lay experts were in upper management positions and two of them were in mid-management but have worked as DSPs in the past and were also focus group participants.

b. Expert Panel Analysis

1) Statistical Software

The expert Panel Review Form (Appendix E) was used to collect data from the panel of experts. Each expert received instructions via email and returned the completed content review form electronically. Four reviews were returned with ratings and comments and one review was returned with just comments. The data collected from the expert panel review was in the form of

hand written notes and numerical ratings (item importance). The hand written notes from the expert review were transcribed using Microsoft Word into one document so the notes were available in aggregate form. The same was done with all of the cognitive interviews. SPSS V. 16 was used to enter numerical data for expert review.

2) Research Questions

The following research questions are addressed in the expert panel review portion of Phase 2:

1) *How does a panel of experts understand and interpret each item in the following **eight domains** in relation to wording and importance?*
    a. ***Time***
    b. ***Financial Supports***
    c. ***Preparation and Storage***
    d. ***Distribution of Food***
    e. ***Knowledge and Education***
    f. ***Government Nutrition Standards***
    g. ***Cultural Values and Lifestyles***
    h. ***Organizational Culture***

3) Methods of Investigating Research Questions

Ratings from the four reviewers were entered in SPSS V. 16 and sum of total scores and mean score for each item were calculated (Table IV Expert Panel Review Total Score and Means). During the expert panel review, items that were consistently rated below 3.00 (important) were flagged for closer examination during the cognitive interviews. The first version of Nutrition Supports Scale (NSS) contained 89 items and eight factors (refer to Table

III). Further, problems with the wording and additional comments or new items within the eight factors [(1) time supports were noted, (2) financial supports, (3) preparation and storage of food, (4) distribution of food, (5) knowledge and education, (6) government nutrition standards, (7) cultural values and lifestyles, (8) organizational culture] were noted.

c. Expert Panel Results

Four out of seven items within *Time Supports* factor received at least two comments related to clarification or alternative wording of the item by the expert panel. All seven items were rated above 3.00 (important) to conceptualization of nutrition support. One expert reviewer questioned whether people would understand the word *nutritious* in item T1 *I have enough time to plan a nutritious meal* and the word *scratch* in item T4, *I have enough time to make a meal from scratch.* The question probes for items T1 and T4 (*What does "nutritious" mean to you?* and *What does "from scratch" mean to you?*) were added to be used during cognitive interviews. A clarification was suggested for item T6; *I follow a menu in a community home* to say *I follow a menu in the community home where I work* so the item was more specific. The use of "we" in Item T7, *We make a menu to follow during the week* was confusing for two reviewers. An alternative option *I make a menu with my clients each week* was added for the cognitive interview.

TABLE IV
EXPERT PANEL REVIEW:
NUTRITION SUPPORTS SCALE IMPORTANCE MEANS FOR EACH ITEM

	Item	Importance Mean
FINANCIAL SUPPORTS		
F1	I am able to buy fresh produce. OR I have a budget to buy fresh produce.	3.75
F2	I am able to purchase food for a balanced meal. OR I have access to money to purchase food for a balanced meal.	3.50
F3	I can buy fresh foods with food assistance coupons/cards.	3.75
F4	I am able to buy good quality meat/protein.	3.75
F5	We have a budget to replace utensils/pots/appliances.	3.25
F6	We have enough money to buy as much food as we need.	3.75
F7	I use newspaper coupons when grocery shopping.	**2.25**
F8	I usually buy food items that are on sale.	**2.75**
F9	I check online ads for grocery store sales.	**2.25**
F10	Most foods I buy are boxed, canned, and processed.	**2.75**
F11	We keep an inventory of food items in a community home.	3.00
F12	We use up all the food that we purchase.	3.25
F13	We rotate products in the fridge.	**2.50**
F14	I leave a note on food that needs be used up soon.	**2.75**
PREPARATION AND STORAGE OF FOOD		
PS1	We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices.	4.00
PS2	We have adequate pots/pans to prepare food.	4.00
PS3	We have enough kitchen appliances to prepare food.	4.00

TABLE IV (continued)

PS4	We have recipes to prepare food.	3.75
PS5	We have enough storage space for food.	**2.75**
PS6	We have enough utensils (spatula, whisks, measuring cups, etc.).	3.50
PS7	Our appliances are in good working order (e.g. fridge broken, cook-top with one working burner, etc).	4.00
DISTRIBUTION OF FOOD		
D1	I know where to buy fresh local food.	3.50
D2	I have transportation to a grocery store.	3.75
D3	Fresh food can be purchased near community home.	3.50
D4	I shop at local farmer's market for food.	**2.25**
KNOWLEDGE AND EDUCATION		
K1	I know how to cook.	4.00
K2	I know how to make tasty nutritious food.	4.00
K3	I understand the benefits of eating fruits and vegetables.	3.75
K4	I know how to prepare a balanced meal.	3.75
K5	I am familiar with the Dietary Guidelines for Americans.	3.25
K6	I am familiar with MyPyramid.	3.50
K7	I know how to prepare fresh food quickly.	3.50
K8	I can follow most recipes to make a meal.	3.25
K9	My nutrition knowledge is adequate.	3.00
K10	My food preparation skills are good.	3.75
K11	I understand portion sizes.	3.50

TABLE IV (continued)

K12	My coworkers share cooking tips with me.	**2.25**
K13	I know how to cook with fresh produce (fruits and vegetables).	3.25
K14	I understand different food groups.	3.25
K15	I know how to make a food budget for a household.	3.75
K16	I know how to prepare specialty diets (e.g. low salt, low fat, low cholesterol, diabetes)	3.75
GOVERNMENT NUTRITION STANDARDS		
G1	I am aware that the governing body for services for people with ID has nutrition standards.	**2.75**
G2	I am able to provide meals within those guidelines.	3.25
G3	I have to follow government nutrition standards when preparing food for individuals with ID.	3.00
G4	I can plan a menu that meets government nutrition standards.	3.25
G5	The government places restrictions on where food assistance coupons/cards can be used OR We cannot buy nutritious food because the government restricts where food assistance coupons/cards can be used.	4.00
CULTURAL VALUES AND LIFESTYLES		
CL1	My cultural background influences what foods I buy for individuals with ID.	**2.75**
CL2	My cultural background influences how I prepare meals for individuals with ID.	3.00
CL3	I shop the same way I would for myself.	**2.75**
CL4	Individuals whom I support ask for fresh fruits and vegetables.	3.50
CL5	I follow a menu that my clients and I have prepared together.	3.75
CL6	We all sit down together during the mealtime.	3.75
CL7	The clients I support sit together during the mealtime.	3.50
CL8	I eat the same meal with individuals I support.	3.75
CL9	I have many individuals I support who are on special diets.	3.75

TABLE IV (continued)

CL10	I like to cook.	**2.75**
CL11	I rely on convenience foods when I cook OR Convenient food is easier to prepare.	3.00
CL12	I use measuring cups when serving meals.	**1.75**
CL13	Family members of individuals I support are helpful with nutrition.	3.25
CL14	I try to incorporate fruits and vegetables in every meal.	4.00
CL15	My coworkers and I communicate between shifts about food and meals.	3.25
CL16	I seek nutrition advice from a dietitian or nurse on staff.	3.50
CL17	I ask for advice related to food from my coworkers.	**2.00**
CL18	Nutrition is a priority when I support individuals with ID.	3.25

ORGANIZATIONAL CULTURE

OC1	I have support from my manager to improve nutrition for people with ID.	4.00
OC2	I have support from my coworkers to improve nutrition for people with ID.	3.75
OC3	My organization has a list of resources available related to food and nutrition.	3.75
OC4	My workplace offers trainings on food purchase.	3.00
OC5	My workplace offers trainings on food budgeting.	3.50
OC6	My workplace offers trainings on meal planning.	3.50
OC7	My workplace offers trainings on meal preparation.	3.75
OC8	My manager listens to me when I have suggestions related to nutrition.	3.50
OC9	Management recognizes my interest in providing balanced meals to individuals I support.	3.50
OC10	Staffing in community home where I work is consistent OR Our staffing is consistent in a community home.	4.00
OC11	My organization has a dietitian on staff.	3.50
OC12	My organization has a nurse on staff.	3.75
OC13	I can access recipes online (computer).	3.00

TABLE IV (continued)

OC14	We receive food from food bank.	**2.50**
OC15	Most food from the food bank is boxed, canned, and processed.	**2.50**
OC16	We sometimes share food with other community homes.	3.00
OC17	We use government issued coupons/cards to buy food.	4.00
OC18	Our food delivery service provides quality meals.	4.00
TIME SUPPORTS		
T1	I have enough time to plan a nutritious meal.	3.50
T2	I have enough time to grocery shop.	3.75
T3	I have enough time to prepare food.	4.00
T4	I have enough time to make a meal from scratch.	3.25
T5	I usually make a list before going grocery shopping.	3.00
T6	I follow a menu in community home.	3.75
T7	We make a menu to follow during the week.	3.75

Additionally, this item was found to be very similar to CL5 *I follow a menu that my clients and I have prepared together* but was left in both places for clarification in Phase 2. Upon the suggestion of one expert panel reviewer, *Time Supports* factor was moved to after *Knowledge and Education* factor as it was more logical to evaluate nutrition concepts before asking participants about time supports.

Out of 14 items in the *Financial Supports* factor, an alternatively worded option was added to three items. Additional variation was added to item F1 *I am able to buy fresh produce* or *I have a budget to buy fresh produce*; F2 *I am able to purchase food to make a balanced meal* or *I have access to money to purchase food for a balanced meal*; and, F13 *We rotate products in the fridge* or *We regularly rotate products in the fridge.* An additional item (*I have access to monies to purchase food from local stores and markets*) was suggested by one reviewer and added to a list for cognitive interviews. Finally, six items received a score below 3.00 (important) and items F7 *I use newspaper coupons when grocery shopping* and F9 *I check online ads for grocery store sales* received 2.25 rating which was lowest scoring for item importance for two factors and was noted for further examination in Phase 2.

On average, most items in the *Preparation and Storage of Food* factor were rated as very important with the exception of PS5 *We have enough storage space for food.* One reviewer suggested an additional item *I have enough storage containers to use to keep leftover food* which was added to the second version of NSS. Two out of four items under the *Distribution of Food* factor needed to be clarified. A second wording option was added to item D1 *I know where to buy fresh local food* or *I know where to buy fresh food locally* for the cognitive interviews. Also, one reviewer noted that this item may be more suitable under *Knowledge and Education* factor. A clarification in wording was added to item D3 *Fresh foods can be purchased near the*

community home to read as the following *Fresh foods can be purchased near community home where I work.* Lastly, item D4 received a rating of 2.25 for importance which was noted for Phase 2.

After review it was decided that the *Knowledge and Education* factor was to be rewritten as *Knowledge* since it was clear that the items were not related to education. Two out of 16 items in this category needed an alternative wording. Item K2 *I know how to make tasty nutritious food* was noted as a bit confusing and alternative option of *I know how to prepare nutritious meals that taste good* was suggested. Two additional alternatives were recommended for item K14 *I understand different food groups*. The alternative item wordings *I understand that there are different food groups* or *I know what the different food groups are* were added for Phase 2. Two reviewers commented on possible confusion and vagueness of item K9 *My nutrition knowledge is adequate.* This was noted for further review in Phase 2. Finally, an additional item K17 *I know how to prepare meals following my organization's nutrition policies* was included at a suggestion of one reviewer.

Government Nutrition Standards factor was the most problematic factor for the expert panel. Two reviewers noted that most DSPs would not understand the meaning of "governing body" and noted that every CBO develops nutrition policies that reflect state nutrition regulations and recommendations. In considering these comments, this factor was renamed to *Organizational Nutrition Policies.* The item G1 was reworded to state *My organization has policies about nutrition standards/guidelines in community homes.* A consensus on which word to insert, *standards* or *guidelines,* could not have been reached and this was left open for cognitive interview phase. Item G2 was deleted as it was not support and a new item with two wording options *I know what my organization's policies on nutrition are* or *I know what is*

included in my organization's policies on nutrition in community homes were added. Item G3 was rewritten as *I follow organizational nutrition policies when preparing meals for individuals with ID.* Item G4 was deleted because it was no longer relevant to the factor. Item G5 was completely rewritten to reflect a support to state *Food assistance coupons/cards allow me to purchase nutritious foods.* One additional item *The organization has no restrictions on where I can buy food* was suggested by one reviewer and was added for Phase 2.

Five items under the *Cultural Values and Lifestyles* factor were scored below 3.00. Four of those items may have been rated low because they lacked clarity. Reviewers questioned whether items CL1 and CL3 were representative of nutrition support concept. Two of the reviewers thought that the item is important to ask but that it may not be necessarily within the support scale but asked separately. Another phrasing option was added to item CL12 *I use measuring cups to measure portions when serving meals.* Three items were slightly reworded for clarity and they included the following: item CL6 was reworded to *I eat with individuals I support during mealtime,* item CL 8 was reworded to *I eat the same meal as the individuals I support,* and item CL9 was reworded to *I have individuals I support who are on special diets.* Even though item CL11 had two options, reviewers focused more on the definition of *convenience foods* and the question probe was added to cognitive interview protocol. Even though item CL13 was rated as important, item was flagged as possibly confusing and a question probe *What does this item mean to you?* was added for Phase 2. Lastly, item CL17 *I ask for advice related to food from my coworkers* received a rating of 2.00 which was noted for further exploration.

Six out of 18 items under *Organizational Culture* received comments from the reviewers. Similarity was noted between items OC1, 8, and 9. These items were marked for closer

examination or possible deletion during the cognitive interviews. Item OC10 already had two options but the first option was rewritten to state *Staffing patterns in the community home where I work are consistent.* Item OC16 in the form it was written was not a support (*We sometimes share food with other community homes*). This item was rephrased to state *We sometimes borrow food from other community homes.* One of the reviewers noted that item OC17 *We use government issued coupons/cards to buy food* should go under possibly *Financial Support* factor. Although item OC18 *Our food delivery service provides quality meals* was rated as very important (4.00) by all reviewers, a comment was made that not every CBO would be receiving food delivery service. For those that do, it was suggested to maybe ask a few follow up questions such as *Does your organization have a food delivery service?* and from there ask a few more probing questions on satisfaction, quality, and nutritional quality of the meals. This was noted to be further explored during cognitive interviews. Finally, items OC13 *We receive food from a food bank* and OC14 *Most food from the food bank is boxed, canned, and processed* received a rating of 2.50 from the reviewers. This was also noted for further investigation during cognitive interviews. Similarly to item OC18, a comment was made that many DSPs may not even think that community home residents are eligible for the food bank or that the food bank is an option in their area. Finally, the second version of NSS which was used during Phase 2: Cognitive Interviews contained 92 items . Please see Appendix F (Cognitive Interview Form) for the second version of Nutrition Supports Scale.

2. Content Validity: Cognitive Interviews

Seven (7) cognitive interviews were held between May 14th 2010 and May 21st 2010. Table V describes participants of the cognitive interviews. The number of interviews depended on the point of saturation where generally 5-10 cognitive interviews is recommended (Willis,

2005). After the seventh interview saturation was reached and it was clear which items were problematic and needed to be either re-written or deleted from the scale. After the seventh interview a decision was made to finish Phase 2 as there was no need to continue interviewing participants. Each interview was approximately 90 minutes long, ranging from 60-120 minutes.

TABLE V
COGNITIVE INTERVIEW CHARACTERISTICS OF PARTICIPANTS
(n=7)

Background Characteristics	n	%
Gender		
Male	2	28.6
Female	5	71.4
Race/Ethnicity		
Black, not of Hispanic origin	3	42.9
White, not of Hispanic origin	4	57.1
Marital Status		
Single	2	28.6
Married	2	28.6
Domestic Partner	3	42.9
Education		
Some college	3	42.9
College graduate	3	42.9
Post-college or graduate school	1	14.3
	M	*range*
Age *(years)*	36.71	23-61
Tenure in the Community Home *(years)*	8.76	.4-40

a. Cognitive Interview Participants

Please see Table V for characteristics of participants in Phase 2: Cognitive Interview section of the study. Out of seven cognitive interview participants, five of them were female and two male. Age range of participants was 23 to 61 years (M= 36.71). Three participants were black, not of Hispanic origin and four white, not of Hispanic origin. Concerning marital status, two participants were single, two married, and three lived with a domestic partner. Three of the participants had some college, three were college graduates and one participant had a post-college degree. Three participants were direct support professionals (DSPs) who were directly involved in community home food purchase, menu planning, and preparation. One participant was middle management who was a DSP before. Two participants were Qualified Support Professionals (QSPs) who where directly involved in food service support in group homes, including food purchase, menu planning, budgeting, etc. Lastly, one participant was a Residential Director with over 40 years of experience in working with individuals with ID. Participants had a broad range of job tenure of supporting individuals with ID. A range of job tenure was 5 months to 40 years (M=8.76). One individual had children under the age of 18 living with them and majority of the participants (n=5) were primary grocery shoppers, meal planners, and cooks in their own family homes.

b. Cognitive Interviews Analysis

1) Statistical Software

Cognitive Interview Form (Appendix F) was used to collect data during cognitive interviews. The data collected from the cognitive interviews was in the form of hand written

notes and numerical rating. The hand written notes from the cognitive interviews were transcribed using Microsoft Word into one document so the notes were available in aggregate form. SPSS V. 16 was used to enter numerical data for cognitive interviews and analyze demographic information.

2) Research Questions

This section of the study addresses the following research questions:

2) *How do DSPs understand and interpret each item in the following **eight domains** in relation to clarity, importance, and domain representativeness?*

   a. ***Financial***
   b. ***Preparation and Storage***
   c. ***Distribution of Food***
   d. ***Knowledge***
   e. ***Cultural Values and Lifestyles***
   f. ***Organizational Nutrition Policies***
   g. ***Organizational Culture***
   h. ***Time***

3) Methods of Investigating Research Questions

The second version of NSS that was used in Phase 2: Cognitive Interviews contained 92 items (Appendix F - Cognitive Interview Form). Steps described in Willis (2005) and guidelines on content and domain validity from Rubio, Berg-Weger, Tebb, Lee, and Raunch (2003) were used to develop a Cognitive Interview Guide Protocol for Nutrition Supports Scale V.2 (Appendix F Cognitive Interview Form/Protocol). The cognitive interview data included the scores generated for **item importance** (*1-not important, 2-somewhat important, 3-important, 4-very important)*, and inferences or written comments by the researcher such as free form written

notes to the answer question probes related to content validity of the scale such as **clarity** (*1-item is not clear, 2-major revisions, 3-minor revisions, 4-item is clear*), and **representativeness** (*1-item is representative, 2- item needs major revisions to be representative, 3-item needs minor revisions to be representative, 4-item is not representative)*. For **item importance**, each participant was asked the following question *How important you feel this item is to nutrition support for staff working in community homes?* For **clarity**, questions such as *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* were asked. We also asked whether additional items should be added or if any items should be deleted to clarify **representativeness** of the scale. Lastly, to investigate domain validity, a list of eight factors that comprised Nutrition Supports Scale was available to participant. Each interviewee was invited to respond whether item could fit better into another domain.

Handwritten comments were transcribed into an electronic copy of the Cognitive Interview Form Nutrition Supports Scale V2 (Appendix F) under each target item, generating aggregate results record of each interview. A similarity of comments across interviews and the frequency of each problem were explored. In the last step, tables were developed to identify the findings and actions taken to improve the scale (rewrite the item to be more understandable, delete, re-categorize, etc.) Please see Tables VI-XII for item importance means, item clarity, dimension, and representativeness for each item. Some of the items were moved to another domain after the cognitive interviews. For clarity, these items were kept under their original domains in Tables VI-XII but their dimension was noted in the tables.

Similar to expert panel review analysis, item importance ranking was entered in SPSS V. 16 and mean score for each item was generated. Mean scores for each item of cognitive interviews were compared to mean scores from the expert panel. Items that were rated below

3.00 (important) after cognitive interview were deleted from the scale. Additionally two tag options were given for each item, a dichotomous one (*Yes* or *No)* and a 4-point Likert-scale type (*strongly disagree, disagree, agree, strongly agree*) and participants were surveyed to choose which tag was more appropriate.

c. Cognitive Interviews Results

1) Financial

Research Question: *How do DSPs understand and interpret each item in the* ***Financial*** *domain in relation to clarity, importance, and domain representativeness?*

There were a total of 15 items under *Financial* domain. Please see Table VI for means and a brief outline of actions taken for each item after the cognitive interviews. Two items, F7 and F9, were deleted because their importance rating was consistently (both expert panel review and cognitive interviews) below 3.00. Additionally, a third item, F10, was deleted because it was very similar to the item CL11 (see Table X) and it received a borderline importance score. Four items, F11, F12, F13, F14, were moved to *Preparation and Storage* domain since majority of interviewees chose the new domain as more suitable for those items. Items F4, F13, and F14 had to undergo major rewording as they were confusing to most participants. Finally, items F2, F12, and F15 had major revisions such as addition or deletion of a word or grammar clarification and a 4-point Likert scale was chosen as the most appropriate tag for all of the items. An extra item was added to this domain from *Distribution of Food* domain. The final *Financial* domain contained a total of 9 items.

TABLE VI

FINANCIAL DOMAIN:
ITEM IMPORTANCE MEAN, ITEM CLARITY, DIMENSION, AND REPRESENTATIVENESS

	Item	Item Importance Mean	Clarity	Dimension	Representativeness
F1	I have a budget to buy fresh produce.	3.57	Item is clear	*Financial*	Item is representative
F2	I have access to money to purchase food for a balanced meal (getting appropriate servings from different food groups).	4.00	Minor revisions	*Financial*	Item is representative
F3	I can buy fresh foods with food assistance coupons/cards.	3.71	Item is clear	*Financial*	Item is representative
F4	I have access to monies to purchase quality meat/protein at all times.	3.57	Major revisions	*Financial*	Item is representative
F5	We have a budget to replace utensils/pots/appliances.	3.00	Item is clear	*Financial*	Item is representative
F6	We have enough money to buy as much food as we need.	3.57	Item is clear	*Financial*	Item is representative
F7	I use newspaper coupons when grocery shopping.	2.71	Not Applicable	Not Applicable	Item Deleted
F8	I usually buy food items that are on sale.	3.29	Item is clear	*Financial*	Item is representative
F9	I check online ads for grocery store sales.	2.29	Not Applicable	Not Applicable	Item Deleted
F10	Most foods I buy are boxed, canned, and processed.	3.00	Not Applicable	Not Applicable	Item Deleted

TABLE VI (continued)

F11	We keep an inventory of food items in a community home.	3.71	Item is clear	*Preparation and Storage*	Item is representative
F12	We eat all the food that we purchase.	3.43	Minor revisions	*Preparation and Storage*	Item is representative
F13	I move food with closest expiration date to the front of fridge or cabinet.	3.43	Major revisions	*Preparation and Storage*	Item is representative
F14	I leave a note on the food that is close to being expired.	3.43	Major revisions	*Preparation and Storage*	Item is representative
F15	I have access to monies to purchase food from local stores.	3.00	Minor revisions	*Financial*	Item is representative

2) Preparation and Storage of Food

Research Question: *How do DSPs understand and interpret each item in the* ***Preparation and Storage*** *domain in relation to clarity, importance, and domain representativeness?*

Eight items comprised *Preparation and Storage* domain before cognitive interviews (Table VII). At the end of the cognitive interviews, there were no major issues with these items. Items PS3 and PS7 had some minor wording revisions. All eight items were rated as important to the domain and were understandable to interview participants. Additionally, a 4-point Likert scale was deemed appropriate for a tag for these items. Lastly, with the addition of four items from the *Financial* domain, a final item count for *Preparation and Storage* was 12 items. Table VII only shows eight items since the four items from *Financial* domain were kept in Table VI for clarity.

3) Distribution of Food

Research Question: *How do DSPs understand and interpret each item in the* ***Distribution of Food*** *domain in relation to clarity, importance, and domain representativeness?*

There were only four items under *Distribution of Food* domain (Table VIII). This domain was rather confusing to interview participants. When asked what "Distribution of Food" meant to them, we received a variety of answers, none of them were similar to the meaning found in literature. The distribution of food is the physical location of food (Local Foods Connection, n.d.; Nestle et al., 1998) used in literature to understand the environmental supports and barriers to buy food. Many times this was meant to identify "food deserts" or geographic regions that do not

have access to fresh food and produce. Participants in cognitive interview saw this more as food distribution in the community.

TABLE VII

PREPARATION AND STORAGE DOMAIN:
ITEM IMPORTANCE MEAN, ITEM CLARITY, DIMENSION, AND REPRESENTATIVENESS

	Item	Item Importance Mean	Clarity	Dimension	Representativeness
PS1	We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices.	3.86	Item is clear	*Preparation and Storage*	Item is representative
PS2	We have adequate pots/pans to prepare food.	3.43	Item is clear	*Preparation and Storage*	Item is representative
PS3	We have enough kitchen appliances (e.g. blender, toaster, fridge) to prepare food.	3.71	Minor revisions	*Preparation and Storage*	Item is representative
PS4	We have recipes to prepare food.	3.29	Item is clear	*Preparation and Storage*	Item is representative
PS5	We have enough storage space for food.	3.57	Item is clear	*Preparation and Storage*	Item is representative
PS6	We have enough utensils (spatula, whisks, measuring cups, etc.).	3.71	Item is clear	*Preparation and Storage*	Item is representative
PS7	Our appliances are in good working order.	3.43	Minor revisions	*Preparation and Storage*	Item is representative
PS8	I have enough storage containers to use to keep leftover food.	3.71	Item is clear	*Preparation and Storage*	Item is representative

TABLE VIII
DISTRIBUTION OF FOOD DOMAIN:
ITEM IMPORTANCE MEAN, ITEM CLARITY, DIMENSION, AND REPRESENTATIVENESS

	Item	Item Importance Mean	Clarity	Dimension	Representativeness
D1	I know where to buy fresh food locally.	3.43	Item is clear	*Knowledge*	Item is representative
D2	I have transportation to a grocery store.	3.14	Item is clear	*Financial*	Item is representative
D3	Fresh foods can be purchased near community home.	3.29	Item is clear	*Knowledge*	Item is representative
D4	I shop at local farmer's market for food.	2.29	Not applicable	Not applicable	Item Deleted

homes and how staff in community homes was managing food. Due to the lack of clarity, the domain was deleted and the items were re-categorized. One item was consistently rated below 3.00 (during cognitive interviews and expert panel review) for its importance and was deleted from the scale. Additionally, the remaining three items were re-categorized into other domains during the interview. Two items were put into *Knowledge* domain and one item was categorized into *Financial* domain. Please see Table VIII.

4) Knowledge

Research Question: *How do DSPs understand and interpret each item in the* ***Knowledge*** *domain in relation to clarity, importance, and domain representativeness?*

There were 17 items under *Knowledge* domain (Table IX). There were no major issues with majority of the items under this domain. Three items K4, K8, and K13 had minor wording revisions. The interview participants consistently commented on two items, K9 and K10. They were deemed too broad and the content was represented in other items under *Knowledge* domain. The two items were deleted. Item K17 was deleted after the third cognitive interview since this item assumed that each CBO would have nutrition policies and that a DSP would know these policies. Additionally, a 4-point Likert scale was also chosen for a tag for these items. Lastly, with the addition of two items from *Distribution of Food*, 2 items from *Cultural Values and Lifestyles*, and one item from *Organization Culture* domains, a final item count for *Knowledge* was 19 items. For clarity, Table IX only shows the original items prior to cognitive interview.

TABLE IX

KNOWLEDGE DOMAIN:
ITEM IMPORTANCE MEAN, ITEM CLARITY, DIMENSION, AND REPRESENTATIVENESS

	Item	Item Importance Mean	Clarity	Dimension	Representativeness
K1	I know how to cook.	3.86	Item is clear	*Knowledge*	Item is representative
K2	I know how to prepare nutritious meals that taste good.	3.86	Item is clear	*Knowledge*	Item is representative
K3	I understand the benefits of eating fruits and vegetables.	3.71	Item is clear	*Knowledge*	Item is representative
K4	I know how to prepare a balanced (getting appropriate servings from different food groups) meal.	3.43	Minor revisions	*Knowledge*	Item is representative
K5	I am familiar with the Dietary Guidelines for Americans.	3.00	Item is clear	*Knowledge*	Item is representative
K6	I am familiar with MyPyramid.	3.57	Item is clear	*Knowledge*	Item is representative
K7	I know how to prepare fresh food quickly.	3.00	Item is clear	*Knowledge*	Item is representative
K8	I can follow recipes to make a meal.	3.00	Minor revisions	*Knowledge*	Item is representative
K9	My nutrition knowledge is adequate.	2.86	Item is not clear	Not applicable	Item deleted
K10	My food preparation skills are good.	2.86	Item is not clear	Not applicable	Item deleted

TABLE IX (continued)

K11	I understand portion sizes.	3.71	Item is clear	*Knowledge*	Item is representative
K12	My coworkers share cooking tips with me.	2.57	Not applicable	Not applicable	Item deleted
K13	I know how to cook fresh produce (fruits and vegetables).	3.71	Minor revisions	*Knowledge*	Item is representative
K14	I understand that there are different food groups.	3.71	Item is clear	*Knowledge*	Item is representative
K15	I know how to make a food budget for a household.	3.71	Item is clear	*Knowledge*	Item is representative
K16	I know how to prepare specialty diets (e.g. low salt, low fat, low cholesterol, diabetes).	3.71	Item is clear	*Knowledge*	Item is representative
K17	I know how to prepare meals following my organization's nutrition policies.	Not applicable	Item is not clear	Not applicable	Item deleted

5) Cultural Values and Lifestyles

Research Question: *How do DSPs understand and interpret each item in the* ***Cultural Values and Lifestyles*** *domain in relation to clarity, importance, and domain representativeness?*

Cultural Values and Lifestyles domain contained 18 items (Table X). Eight items were deleted from this domain after the interviews and two were moved to *Knowledge* domain. Items CL1, CL2, and CL3 were confusing for over half of the interviewees. Even though two of the items received above 3.00 importance score, most participants did not think that the items were representative of nutrition support. Further, item CL5 was regarded very similar to item T6 (Table XII) and since item T6 received higher importance score of 3.86 versus 3.71 for item CL5, CL5 was deleted. Item CL6 was deleted because it was very similar to CL8 and majority of participants favored the latter item. Item CL7 was deleted because two participants noted that there may be contraindications to all residents in community home sitting together during the mealtime. Interviewees listed issues such as aggressive behavior during meal time, messy eating habits that other residents did not like, or individual housemates not getting along as some of the concerns that may arise during meal time. Item CL9 was also deleted because it was not representative of nutrition support. Instead, several participants thought that the question was an

TABLE X
CULTURAL VALUES AND LIFESTYLES DOMAIN:
ITEM IMPORTANCE MEAN, ITEM CLARITY, DIMENSION, AND REPRESENTATIVENESS

	Item	Item Importance Mean	Clarity	Dimension	Representativeness
CL1	My cultural background influences what foods I buy for individuals with ID.	2.57	Item not clear	Not applicable	Item deleted
CL2	My cultural background influences how I prepare meals for individuals with ID.	3.43	Item not clear	Not applicable	Item deleted
CL3	I shop the same way I would for myself.	3.57	Item not clear	Not applicable	Item deleted
CL4	Individuals whom I support ask for fresh fruits and vegetables.	3.43	Item is clear	*Knowledge*	Item is representative
CL5	I follow a menu that my clients and I have prepared together.	3.71	Item not clear	Not applicable	Item deleted
CL6	We all sit down together during the mealtime.	Not applicable	Not applicable	Not applicable	Item deleted
CL7	The clients I support sit together during the mealtime.	3.43	Item not clear	Not applicable	Item deleted
CL8	I eat the same meal with individuals I support.	3.71	Item is clear	*Cultural Values and Lifestyles*	Item is representative
CL9	I have many individuals I support who are on special diets.	Not applicable	Not applicable	Not applicable	Item deleted
CL10	I like to cook.	3.57	Item is clear	*Cultural Values and Lifestyles*	Item is representative

TABLE X (continued)

CL11	I rely on convenience foods (e.g. boxed and canned meals, frozen dinners) when I cook.	3.43	Minor revisions	*Cultural Values and Lifestyles*	Item is representative
CL12	I use measuring utensils (e.g. cups, spoons, scales) to measure portions when serving meals.	3.57	Minor revisions	*Knowledge*	Item is representative
CL13	Family members support healthy food choices for individuals with ID	3.14	Major Revisions	*Cultural Values and Lifestyles*	Item is representative
CL14	I include fruits and vegetables in most meals.	3.71	Minor revisions	*Cultural Values and Lifestyles*	Item is representative
CL15	My coworkers and I communicate between shifts about food and meals.	3.71	Item is clear	*Cultural Values and Lifestyles*	Item is representative
CL16	I seek nutrition advice from a dietitian or nurse.	3.43	Minor revisions	*Cultural Values and Lifestyles*	Item is representative
CL17	I ask for advice related to food from my coworkers.	2.71	Not applicable	Not applicable	Item deleted
CL18	Nutrition is a priority when I support individuals with ID.	4.00	Item is clear	*Cultural Values and Lifestyles*	Item is representative

important one to ask. This item was re-worded to fit into demographic section of the survey for Phase 3 of the study and was used as one of the potential confounders or effect modifiers influencing nutrition support outcome. Lastly, one of the items, CL13, underwent major rewriting revisions to improve clarity and three other items had some minor revisions. A final count of items in this domain was eight after the cognitive interviews and majority of participants preferred a 4-point Likert scale as a tag for these items.

6) Organizational Nutrition Policies

> **Research Question:** *How do DSPs understand and interpret each item in the* ***Organizational Nutrition Policies*** *domain in relation to clarity, importance, and domain representativeness?*

This domain contained five items. Even before the interviews began it had become evident that the items in this domain, albeit representing support, were better suited under organizational health promotion policies (Marks, Sisirak, & Donahue Chase, 2008; Marks, Sisirak, Riley et al., 2008) for the use in measuring predictive validity of the Nutrition Supports Scale. The domain was deleted from the NSS and four items were added to organizational health promotion policies for predictive validity of the NSS in Phase 3. Lastly, item P5 was deleted because of its low importance score of 2.71.

7) Organizational Culture

> **Research Question:** *How do DSPs understand and interpret each item in the* ***Organizational Culture*** *domain in relation to clarity, importance, and domain representativeness?*

Organizational Culture contained 18 items before the cognitive interviews (Table XI). Eight items were deleted after the interviews. Item OC10 had some minor wording revisions, and

TABLE XI

ORGANIZATIONAL CULTURE DOMAIN:
ITEM IMPORTANCE MEAN, ITEM CLARITY, DIMENSION, AND REPRESENTATIVENESS

	Item	Item Importance Mean	Clarity	Dimension	Representativeness
OC1	I have support from my manager to improve nutrition for people with ID.	3.71	Item is clear	*Organizational Culture*	Item is representative
OC2	I have support from my coworkers to improve nutrition for people with ID.	3.43	Item is clear	*Organizational Culture*	Item is representative
OC3	My organization has a list of resources available related to food and nutrition.	4.00	Item is clear	*Knowledge*	Item is representative
OC4	My workplace offers trainings on food purchase.	3.14	Item is clear	*Organizational Culture*	Item is representative
OC5	My workplace offers trainings on food budgeting.	3.57	Item is clear	*Organizational Culture*	Item is representative
OC6	My workplace offers trainings on meal planning.	3.57	Item is clear	*Organizational Culture*	Item is representative
OC7	My workplace offers trainings on meal preparation.	3.86	Item is clear	*Organizational Culture*	Item is representative
OC8	My manager listens to me when I have suggestions related to nutrition.	Not applicable	Not applicable	Not applicable	Item deleted
OC9	Management recognizes my interest in providing balanced meals to individuals I support.	Not applicable	Not applicable	Not applicable	Item deleted

TABLE XI (continued)

OC10	Staffing patterns in community home where I work are consistent.	3.86	Minor revision	*Organizational Culture*	Item is representative
OC11	My organization has a dietitian on staff.	3.00	Item is clear	*Organizational Culture*	Item is representative
OC12	My organization has a nurse on staff.	3.86	Item is clear	*Organizational Culture*	Item is representative
OC13	I can access recipes online (computer).	2.71	Not applicable	Not applicable	Item deleted
OC14	We receive food from food bank.	2.57	Not applicable	Not applicable	Item deleted
OC15	Most food from the food bank is boxed, canned, and processed.	Not applicable	Item is not clear	Not applicable	Item deleted
OC16	We sometimes share food with other community homes.	2.29	Not applicable	Not applicable	Item deleted
OC17	We use government issued coupons/cards to buy food.	Not applicable	Item is not clear	Not applicable	Item deleted
OC18	Our food delivery service provides quality meals.	Not applicable	Item is not clear	Not applicable	Item deleted

item OC3 was moved to the *Knowledge* domain since the majority of interview participants deemed it better suited under aforementioned domain. Items OC8 and OC9 were deleted from the domain because they were very similar to item OC1 which during the interviews was the most favored item out of the three and that OC9 wording was found to be very confusing. Further, importance means for the three items, OC13, OC14, and OC16 were below 3.00 and were deleted. The remaining three deleted items, OC15, OC17, and OC18 were removed because of their lack of clarity. Specifically, OC15 (*Most food from the food bank is boxed, canned, and processed*) was not viewed as nutrition support and also assumed that every CBO receives food from the food bank. Instead, two interviewees were more interested whether DSPs would know if the community home where they work is eligible to get food from a food bank. Several interviewees thought that if DSPs knew that the community home was eligible this might improve dietary services in homes. When asked during the interview from one participant who has used food bank in the past, if most food from the food bank was boxed and processed, participant stated the following: *Not necessarily…you can get very nice items from the food bank…sometimes they have whole frozen turkeys and you can make them on your own from scratch… they have good fruits and vegetables as well...but not all staff would know that they can go to a food bank.* OC15 was reworded to state *Is community home where you work eligible to get food from a food bank?* with tag lines *Yes, No,* and *Don't know* and moved into demographic section of the survey (Appendix H).

Item OC17 (*We use government issued coupons/cards to buy food*) was also deleted because of its lack of clarity. Participants perceived this item as important to ask but not necessarily support for nutrition in community homes. Item was re-written to state *Do you use government issued coupons/cards to buy food?* and was moved to demographic/descriptive

section of the survey (Appendix H). Item OC18 (*Our food delivery service provides quality meals*) was deleted since four out of five organizations were not using food delivery service. While participants stated that it was an important item to ask, they suggested moving it into a completely new section where a few additional follow up items can be asked about food delivery service and quality of meals and general satisfaction with the meals that were being delivered (Appendix H). A final count of items in this domain was ten after the cognitive interviews and majority of participants preferred a 4-point Likert scale as a tag for the remaining items.

8) Time

Research Question: *How do DSPs understand and interpret each item in the **Time** domain in relation to clarity, importance, and domain representativeness?*

The *Time* domain included seven items (Table XII). Overall, there were no major issues with this domain. Two of the items, T1 and T4 had minor wording revisions. For example, item T1 (*I have enough time to plan a nutritious meal)* was perceived as easier to understand by four out of seven participants if word *nutritious* was deleted and *healthy* was substituted instead. Additionally, item T4 contained phrase *meal from scratch*. Two participants noted that some staff, particularly the ones with less cooking experience may not know the meaning of this phrase. In order to clarify this item, we added *homemeade* in parentheses after the phrase. Lastly, one item, T7, was unclear to majority of interviewees and was deleted from the domain. At the completion of the interviews, *Time* domain contained six items and a 4-point Likert scale was deemed appropriate for the remaining items.

TABLE XII

TIME DOMAIN:
ITEM IMPORTANCE MEAN, ITEM CLARITY, DIMENSION, AND REPRESENTATIVENESS

	Item	Item Importance Mean	Clarity	Dimension	Representativeness
T1	I have enough time to plan a healthy meal.	3.86	Minor Revisions	*Knowledge*	Item is representative
T2	I have enough time to grocery shop.	3.43	Item is clear	*Knowledge*	Item is representative
T3	I have enough time to prepare food.	3.86	Item is clear	*Knowledge*	Item is representative
T4	I have enough time to make a meal from scratch (homemade).	3.43	Minor Revisions	*Knowledge*	Item is representative
T5	I usually make a list before going grocery shopping.	3.86	Item is clear	*Knowledge*	Item is representative
T6	I follow a menu in community home.	3.86	Item is clear	*Knowledge*	Item is representative
T7	We make a menu to follow during the week.	Not applicable	Item is not clear	Not applicable	Item deleted

9) Nutrition Supports Scale Version 3

The Nutrition Supports Scale Version 3 consisted of 64 items divided into six domains. Please see Appendix H for a complete list of items and domains. This version of the scale was used for reliability and validity testing in Phase 3 of the study.

C. Phase 3: Construct Validity

1. Description of the Participants

A total of 166 surveys were collected in Phase 3. During data entry, two surveys were missing several pages of answers and one survey had only the first page filled out. These three surveys were dropped out of analyses. The final Phase 3 sample consisted of 163 individuals. A summary of demographic characteristics of participants can be found in Table XIII. Seventy three percent (n=119) of the sample were women (this was expected since the majority of DSPs nationally are women). Age range of participants was 19 to 70 years (M=38.26). Forty two percent of the sample was White, not of Hispanic origin, 29% Black, not of Hispanic origin, 16% Hispanic/Latino, 5% Asian or Pacific Islander, 4% American Indian or Alaskan Native, 3% Other, and 3% were unknown. Regarding marital status, 47% were single, 29% married, 13% divorced, 4% lived with domestic partner, 3% widowed, 3% unknown, and 2% separated. Forty four percent of the sample had completed some college, 30% were college graduates, 14% were high school graduates, 7% had a post-graduate degree, 3% some high school, 3% unknown, and 1% were 8th grade graduates. Eighty three percent of the participants were full time employees, 14% part time, 3% unknown, and 1% volunteers. Regarding their job title, 75% were DSPs, 10% Qualified Support Professionals (QSPs), 8% House Managers, and 6% other. Average job tenure was 8.72 years (range 4 months to 32 years).

TABLE XIII
PHASE 3 CHARACTERISTICS OF PARTICIPANTS
(n=163)

Background Characteristics	n	%
Gender		
Male	42	26
Female	119	73
Unknown	2	1
Race/Ethnicity		
American Indian or Alaskan Native	6	4
Asian or Pacific Islander	8	5
Black, not of Hispanic origin	47	29
Hispanic/Latino	26	16
White, not of Hispanic origin	68	42
Other	4	3
Unknown	4	3
Marital Status		
Single	77	47
Widowed	4	3
Divorced	21	13
Separated	3	2
Married	47	29
Domestic Partner	7	4
Unknown	4	3
Education		
8th grade graduate	1	1
Some high school (grades 9-12)	4	3
High school graduate	22	14
Some college	71	44
College graduate	49	30
Post-college or graduate school	12	7
Unknown	4	3
Employment Status		
Full time	136	83
Part time	22	14
Volunteer	1	1
Unknown	4	3
Current Position		
Direct Support Professional	122	75
Qualified Support Professional	17	10
House Manager	13	8
Other	9	6
	M	*range*
Age *(years)*	38.26	19-70
Tenure in the Community Home *(years)*	8.72	.25-32.00

2. Analysis Plan: Psychometric Properties

a. Statistical Software

Winsteps 3.70.0 was used for Rasch analysis and SPSS (version 16) was used for factor analysis, and regression analyses of resulting subscales and scales. SPSS was also used for correlation analyses and to create scatterplots of relationships between data.

b. Research Questions

The research questions stated in Chapter III are re-introduced here. Phase 3 of the study answers the following research questions:

1) *What are the psychometric properties of Nutrition Supports Scale?*

    a. *Do the items fit the Rasch model? Do the items clearly represent the concept of nutritional support?*

    b. *What is the dimensional structure of the instrument?*

    c. *What is the hierarchy of the items?*

    d. *What is the functioning of the rating scale?*

    e. *What is the reliability of the scale?*

    f. *Are individuals responses to the items consistent with the Rasch model expectation?*

2) *What is the predictive validity of the Nutrition Supports Scale?*

    a. How is the Nutrition Supports Scale related to External Resources (Health Promotion Policies and Organizational Commitment to Health Promotion)? (Pathway A in Figure 1)

    b. How is the Nutrition Supports Scale related to Internal Resources (Self-Efficacy, Perceived Workload and Nutrition Knowledge) (Pathway B in Figure 1)

3) *How are staff's sociodemographic factors related to the Nutrition Supports Scale? (Pathway C and D in Figure 1)*

c. Methods of Investigating Research Questions

Classical approaches of factor analysis (Thurstone, 1931) and Rasch measurement (Rasch, 1960, 1980) were chosen for the evaluation of the psychometric properties of the developed scale using the Phase 3 data. The Rasch rating scale model exhibits desirable scaling properties of linear, interval-level measurement (Embretson & Reise, 2000). Rasch analysis requires an examination and quantification of accuracy, precision, reliability, construct validity, quality-control fit statistics, statistical information, linearity, local dependency and unidimensionality (Bond & Fox, 2007). If the data fit the Rasch model, the model will produce equal interval measures that are appropriate for subsequent parametric statistical analysis. Rasch measures are the most valid for mathematical operations, such as correlation and regression analysis, as well for assessing change (e.g. before and after intervention or training). Rather than tailoring models to fit the data, the Rasch rating scale model fulfills the requirements of fundamental measurement (e.g., linear interval scale) (Bond & Fox, 2007), and examines the data (items and persons) for flaws or problems that are indicated by their failure to fit the model.

1) Dimensionality and Model Fit

Research Question 1a: *Do the items fit the Rasch model? Do the items clearly represent the concept of nutritional support?*

Research Question 1b: *What is the dimensional structure of the instrument?*

Rasch measurement model assumes unidimensionality. Unidimensionality is often defined as "a single latent trait being able to account for the performance on items" (E. V. Smith,

2004, p. 575). This definition was later expanded to recognize that psychological processes including cognitive, personality, and test-taking factors affect unidimensionality. Thus, unidimensionality "should not be viewed as a dichotomous yes or no decision, but rather as a continuum" (E. V. Smith, 2004, p. 576). It is important to understand at what point on this continuum, multidimensionality becomes a threat to inferring item and person estimates. Before evaluating the effects of multidimensionality, understanding the extent to which a set of items represents a unidimensional construct should be explored. Unfortunately, there is no established methodology for determining unidimensionality. Recently Tennant and Pallant (2006) have suggested three key approaches to assessing unidimensionality:

a) Testing using classical approaches (i.e., factor analysis)
b) Model Fit: Item and Person Fit
c) Principal Component Analysis

i. Factor Analysis

In order to detect the relationship structure of the variables I performed factor analysis (Thurstone, 1931). Factor analysis was initially completed on the six domains that constitute *nutrition support* and further used to evaluate complete NSS. Factor analysis on the domains and the complete NSS was performed after Rasch analyses. The varimax method, the most commonly used orthogonal rotation (Ford, MacCallum, & Tait, 1986), was used to assess construct validity. Factor loadings of .30 or greater for each item were considered significant. Further, the Kaiser criterion for extracting factors with eigen values greater than one was used to evaluate the number of factors for each domain. The number of factors for the complete NSS was forced to reflect the number of domains that were remaining after Rasch analyses.

ii. Model fit

The fit of the data to the model in this study was assessed by the Mean Square fit ratio (MNSQ) for both persons and items. WINSTEPS (Linacre, 2002) as well as other Rasch software applications provide two types of fit statistics for persons and items: Infit, which is sensitive to unexpected responses to items near a person's ability level, and Outfit, which is sensitive to atypical responses on items far from person's ability level. When reported as mean square fit statistics (MNSQ), these fit statistics have an expected value of one and a standard deviation of one. Values less than one suggest that the response pattern "overfits." A fit statistic less than 1 indicates that the pattern is similar to a Guttman pattern, e.g., 1111100000 rather than what the Rasch model would expect, e.g., 1111010100000 (Bond & Fox, 2007). Values greater than one are indicative of a response pattern being random (in the case of infit) or atypical (in the case of outfit). A reasonable range for both types of fit statistics is .75-1.33 (Adams and Khoo, cited in (M Wilson, 2005). Items or persons with fit statistics outside this range were evaluated in order to determine the possible cause of the misfit. Specifically, items with a MNSQ greater than 1.33 in the study were examined closely.

Items with infit greater than 1.33 were deleted. Items with outfits greater than 1.33 were examined more closely since they are not as large of a threat to dimensionality compared to the infit. Low fit values, showing statistics <.75 which are similar to Guttman-type items, usually overfit the model, which is not as big threat as high values (M Wilson, 2005, p. 129). Further, once items were removed, previous analyses were re-run. This process was repeated until satisfaction with the items was reached.

Similarly to item fit, person fit was determined by MNSQ infit and outfit measures. High person outfit MNSQ scores may result due to random response patterns of participants (R. M. Smith, 1991). An example of a random response might be when an individual does not know the answer so instead guesses or is just careless when taking the survey. Participants that have high infit and outfit scores were examined more closely to determine why they were misfitting. We compared misfitting individuals with the remainder of the sample to see if there were any demographic differences that are causing participants to misfit.

iii. Principal Component Analysis

Another way to assess unidimensionality was to use principal component analysis (PCA) of residuals and determine if a substantial factor exists in the residuals after estimating the primary dimension (Linacre, 1998; E.V. Smith, 2002; Tennant & Pallant, 2006). Since there is no "rule of thumb" to interpret PCA, unidimensionality was determined using the following three criteria: 1) explained variance >40% of measurement dimension (Conrad, Conrad, Dennis, Riley, & Funk, 2009; Conrad, Iris, Ridings, Langley, & Wilber, 2010; Linacre, 2006), 2) the percent of unexplained variance explained by the first contrast (principal component) is <15% (Conrad et al., 2009; Conrad et al., 2010), and 3) eigen value of unexplained variance explained by the first contrast is less than 2 (Linacre, n.d.-a).

2) Item Hierarchy

Research Question 1c: *What is the hierarchy of the items?*

The item variable maps illustrate how separate nutrition support domains and combined NSS items appropriately target levels of nutrition support in community homes. Item hierarchy refers to the evaluation of variable maps to determine how well the items are targeted to the

sample and to examine the instrument's construct validity. WINSTEPS (Linacre, 2002) produces a graphical display of item and person relationships. Items in the scale measure a full range of nutrition support construct if the items and persons are evenly distributed along the full length of the map. Items that are towards the bottom, lower than the item mean, are considered easier items to endorse. This is also true for persons who are in the lower portion of the map, below the mean – those individuals exhibit low nutrition support. Consequently, items that are high on the item map are considered hard items to endorse and represent higher levels of nutrition support. Also, individuals that are high on the map show high levels of nutrition support. Lastly, the item and person targeting is evaluated by examining the mean of a person relative to the mean of items. The criteria for mistargeted instrument is if the mean of the person is greater than 2 standard deviations than the item mean.

3) Rating Scale Structure

Research Question 1d: *What is the functioning of the rating scale?*

The exact model for the Nutrition Supports Scale (dichotomous, rating scale, or partial credit) was determined at the end of Phase 2 of this study. Since all of the items in NSS use a 4-point Likert-type scale (1 = strongly disagree; 2 = disagree; 3 =agree; 4= strongly agree), the Rating Scale Model (RSM) for the measure was chosen for the analysis. The Rating Scale Model is a popular Rasch-based model and a specialized case of the Partial Credit Model (Masters, 1982). The RSM specifies that the intersections between categories on the category response curve are the same for all items. The only difference between items is their difficulty or location parameter. For an item bank with n items with k categories, there are n+k parameters in the RSM to estimate, while a partial credit model or multi-parameter IRT model would require considerably more parameters.

The proper functioning of the rating scale was assessed using the four criteria. First, the average measures of the four response categories were expected to increase monotonically and be in proper order (Conrad et al., 2010). Additionally, the average measures were considered to be in good order if the steps are >1.0 logits.

Second, step calibrations, expressed as log-odds of adjacent response categories (e.g. "strongly disagree" and "disagree") having the same likelihood of being endorsed, were also expected to increase monotonically (Linacre, 2004). Step calibrations should be in order consistent with the ordering of rating scale categories. For example the NSS has 4 steps - 1, 2, 3, 4. It was expected that step 1 would precede step 2. If the step calibrations were not ordered, a possibility of collapsing steps was examined. The structure steps of each domain and entire NSS should be >1.0 logit.

Third, the fit statistic of the rating scale was evaluated. Outfit MNSQ should be less than 2. Outfit MNSQ greater than two is a sign that there is more misinformation rather than information (Linacre, 2004).

Fourth, a probability curve was visually evaluated to assess if instrument is achieving an independent peak on the rating scale probability curve diagram. It was expected that the probability curve diagram would show four independent peaks.

4) Reliability

Research Question 1e: *What is the reliability of the scale?*

Another criterion in the instrument development is scale reliability. In order for the scale to be useful for research, it has to be reliable. Reliability is the amount of variance attributed to the latent variable. Reliability helps us evaluate instrument accuracy and consistency of the respondent's answers to the items (DeVellis, 2003). Reliability in this study was assessed using

traditional measures of Cronbach's alpha (Cronbach, 1951) and person and item reliability of Rasch Measurement Model (Rasch, 1960, 1980).

i. Using conventional measures

Traditionally, reliability of the scale is reported using Cronbach's alpha (CA). *Alpha* is defined as "the proportion of a scale's total variance that is attributable to a common source, presumably the true score of a latent variable underlying the items" (DeVellis, 2003). CA reliability coefficient ranges between 0 and 1 and the scale has greater internal consistency the closer the CA is to 1. In interpreting CA, George and Mallery (2003, p. 231) provide the following guidelines " > .9 – Excellent, > .8 – Good, > .7 – Acceptable, > .6 – Questionable, > .5 – Poor, and < .5 – Unacceptable." The limitations of CA are that a complete set of data is needed and that during calculations it is assumed that the "extreme scores have perfect precision" (Linacre, n.d.-b) while in reality they do not (since they are extreme) which consequently inflate the estimation of reliability of coefficients (Linacre, 1997).

ii. Using Rasch analysis

Rasch analysis calculates person and item reliability estimates that are not inflated. The *person reliability index* is analogous to Cronbach's alpha, with scores closer to 1 characterizing better ability of the measure to discriminate between different people in the sample. The *Person reliability index* is dependent on the length of a measure and the rating scale (the longer the measure the higher person reliability) and sample-item targeting (better targeted sample to the items the higher person reliability) (Linacre, n.d.-b).

The *item reliability* does not have a corresponding traditional measure. *Item reliability* also ranges between 0 and 1 with low values pointing to narrow range of items or a small sample size (Linacre, n.d.-b). *Item reliability* is influenced by the variance in item difficulty (the wider the difficulty higher item reliability) and person sample size (the larger the sample, the higher the item reliability). *Item reliability* is not influenced by the length of the measure and by model fit. Similarly to CA, a value of .8 is acceptable for both *item and person reliability index*.

WINSTEPS calculates two reliability estimates for persons and items. The *model* person reliability is the upper limit of the true reliability value, and *real* person reliability is the lower limit of this value (Linacre, n.d.-b). This is the same for *item reliability*.

In addition to person and item reliability, Rasch analysis calculates the error variance for person and item difficulty. These errors can also be used to determine strata which are regions of the scale whose centers are separated by logit distances greater than can be accounted for by measurement error. Mathematically, strata are the quotient of four times the separation index plus one (4G +1) divided by three. The separation index (Gp) is calculated by dividing the adjusted person standard deviation by the average measurement error. It has been suggested that a scale must reach out to at least two item difficulty strata to be useful for scale definition (Kilgore, Fisher, Harvey, & B., 1993).

5) Differential Item Functioning

Research Question 3: *How are staff's sociodemographic factors related to Nutrition Supports Scale? (Pathway F and G in Figure I)*

Differential item functioning (DIF) arises when respondents from different groups with the same ability/skill have a different probability of endorsing a certain response on a measure (Bond & Fox, 2007). Rasch analysis estimates between and within fit statistics to examine

differences between groups. The effects of job tenure were explored using DIF. DIF analysis compares the weight of individual items by specific groups. These differences (if any) were shown graphically. A significant DIF is present if the difference of >0.58 logits for comparisons is detected and should be investigated further. Item weights calculated during Rasch DIF analysis were exported to an Excel spreadsheet file in order to graphically present item weights in different groups. This section of the study is only explorative because in order to detect a moderate uniform DIF a sample size of 200 is required per each group (Scott et al., 2009).

6) Predictive Validity

Research Questions:

2) *What is the predictive validity of the Nutrition Supports Scale?*

   a. *How is the Nutrition Supports Scale related to External Resources (Health Promotion Policies and Organizational Commitment to Health Promotion)? (Pathway A in Figure 1)*

   b. *How is the Nutrition Supports Scale related to Internal Resources (Self-Efficacy, Perceived Workload and Nutrition Knowledge) (Pathway B in Figure 1)*

Predictive validity is the extent to which a score on a scale predicts scores on another criterion measure and establishes a statistically significant relationship between a measure (i.e. NSS) and a criterion (in this case External and Internal Resources, Pathways D and E in Figure 1) (DeVellis, 2003; Nunnally & Bernstein, 1994). To measure predictive validity, we used an 8-item scale that assesses staff's perceptions of organizational health promotion commitment and a 10-items scale that evaluates organizational policies related to health promotion (External Resources) and Internal Resources comprised of a 7-item scale measuring staff's self-efficacy in doing health promotion activities (Marks, Sisirak, & Donahue Chase, 2008; Marks, Sisirak,

Riley et al., 2008), 6-item scale measuring staff's workload (Caplan, 1971), and a 21-item measure evaluating staff's nutrition knowledge (Parmenter & Wardle, 1999).

Predictive validity was analyzed using a Pearson correlation product-moment correlation coefficient (Pearson, 1896; J. L. Rodgers & Nicewander, 1988). Pearson correlation measures the extent to which values of two variables X and Y are proportional (correlated) with each other. The measure is widely used in the sciences to determine the strength (represented with the values inclusive and between +1 and -1) of linear dependence of two variables. According to Nunnally and Bernstein (1994), a correlation of .30 shows satisfactory criterion validity.

3. Results

Nutrition support is a complex construct that contains several different concepts. Rasch and classical factor analysis were proposed as a way of determining a reliable measurement scale for this construct and the steps for analysis were outlined in the previous section. In this section I will present the findings from the described analyses. As previously stated, the developed *NSS* has six distinct domains (*Financial, Preparation and Storage, Knowledge, Cultural Values and Lifestyle, Organizational Culture,* and *Time*) that were generated through activities in Phases 1 and 2. It is theorized that despite six domains, the final *NSS* scale will hold unidimensional structure and can be used as a valid and reliable measurement of nutrition support in community homes. Additionally, if the six domains or subscales can "hold together" as mini-scales, it is possible to use individual domains independently. In order to evaluate this idea, we analyzed subscales (individual domains) first, and further combined these subscales into a complete *NSS* to evaluate psychometric properties of the combined scale.

a. Results: Financial Domain

1) Dimensionality and Model Fit

Research Question 1a: *Do the items fit the Rasch model? Do the items clearly represent the concept of Financial support?*

Research Question 1b: *What is the dimensional structure of the instrument?*

The dimensionality of the *Financial* domain subscale was examined by Model Fit, Principal Component Analysis (PCA), and Factor Analysis. The results are presented in the following sections.

i. Model fit

Model fit was evaluated by Mean Square fit ratio (MNSQ) for items. Since the goal of examining subscale domains was to optimize the functioning of the subscale, a special focus was given to items. Further, individual MNSQ Infit and Outfit were examined for each item. Table XIV presents the items that did not meet the fit statistics criteria for Infit and Outfit of 1.33. Two items, F3 and F7, were deleted since they had Infit and Outfit MNSQ scores higher than 1.33. Seven items remained in the *Financial* domain subscale after this deletion and these items were used in the subsequent analyses. The overall MNSQ for items produced Infit of 1.01 and Outfit of .98 which indicates a good fit for the *Financial* domain subscale.

TABLE XIV
MOST MISFITTING ITEMS OF FINANCIAL DOMAIN SUBSCALE

Iteration #	Logits	Infit MNSQ	Outfit MNSQ		Item(s)
1	.73	1.73	1.88	F3	I can buy fresh foods with food assistance coupons/cards.
1	-.07	1.37	1.46	F7	I usually buy food items that are on sale.

ii. Principal Component Analysis

PCA was evaluated following three criteria: 1) unexplained variance >40%, 2) unexplained variance explained by the first contrast <15%, and 3) eigenvalue of unexplained variance explained by the first contrast being less than 2. Table XV presents the results of PCA for the *Financial* domain. PCA of the 7 items of the *Financial* subscale showed that the variance explained by a measure that was acceptable 51.4%. Unexplained variance explained by the first factor was 12.9% which was less than recommended criteria. Further, eigenvalue of unexplained variance explained by the first contrast was 1.9 which was less than 2. The PCA evaluation of *Financial* domain indicates acceptable subscale unidimensionality.

TABLE XV
STANDARDIZED RESIDUAL VARIANCE (IN EIGENVALUE UNITS)
FOR FINANCIAL DOMAIN

	Empirical			Modeled
Total variance in observations	14.4	100.0%		100.0%
Variance explained by measures	7.4	51.4%*		52.4%
Unexplained variance (total)	7.0	48.6%	100.0%	47.6%
Unexplained variance in 1st contrast	1.9‡	12.9%†	26.5%	

* >40% recommended
† <15% recommended
‡ <2 optimal

iii. Factor Analysis

A Kaiser criterion for extracting factors with eigenvalues greater than 1 was used to evaluate the number of possible factors for the *Financial* subscale. Factor analysis of the seven items produced only one significant factor that was explaining 50.25% of the variance and had an eigenvalue of 3.5. There were no other factors with greater than 1 eigen value extracted using classical methodology. The Varimax method used to examine factor loadings could not have been used since there was only one extracted factor. Figure 3 indicates a graphical representation of *Financial* domain. Examining the Scree plot (Figure 3) it also points to only one factor that represents the *Financial* domain.

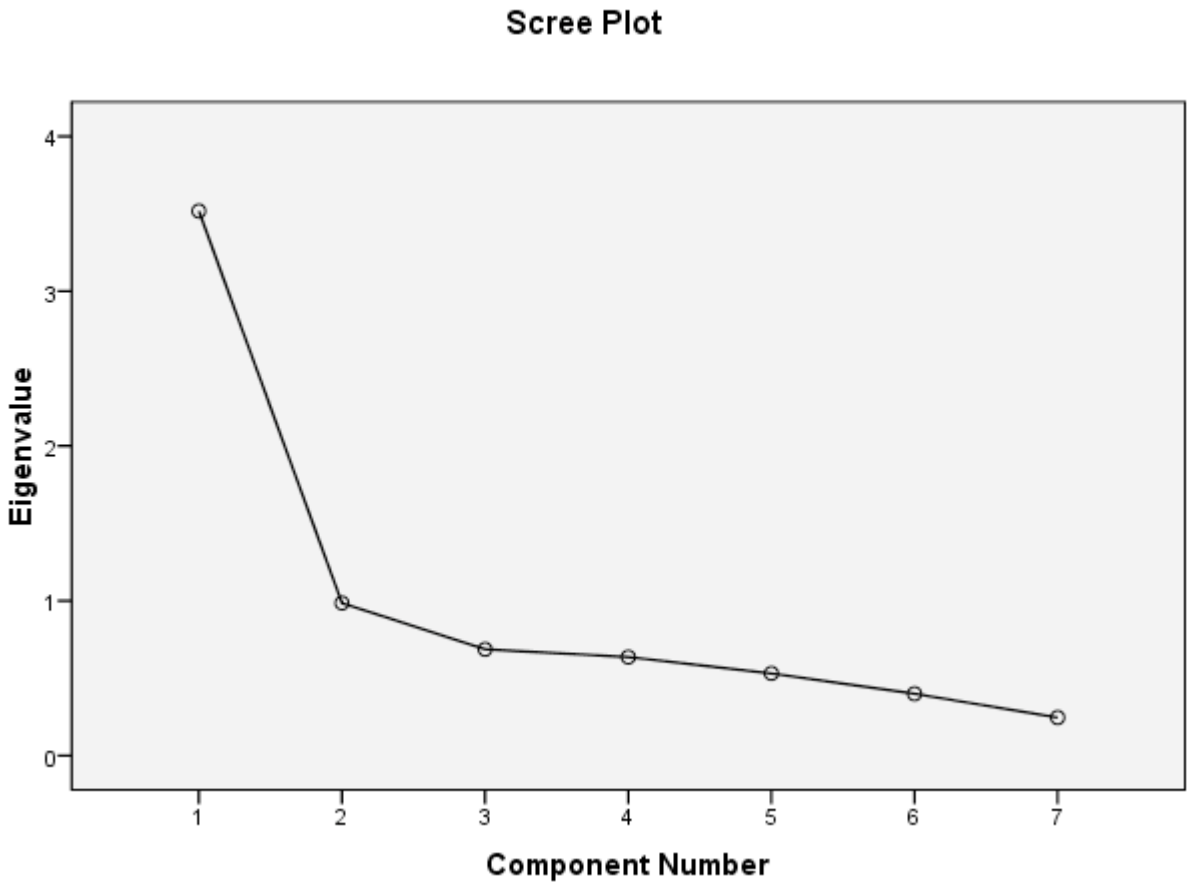

Figure 3. Scree Plot for *Financial* domain

2) Item hierarchy

Research Question 1c: *What is the hierarchy of the items?*

Item hierarchy was examined using variable maps. Figure 4 contains item hierarchy map for the *Financial* domain subscale. Examining variable maps determines how well the items are targeted to the sample where item and person targeting is determined by examining the mean of person relative to the mean of items. If the person mean is greater than 2 standard deviations

(SD) of the item mean the instrument is considered mistargeted. Letter “M” on the right side of the map represents the item mean, and “M” on the left side of the map is the person mean. Letter “S” represents 1 SDs from the mean (for both person and item sides of the map) and letter “T” represent 2 SDs from the mean. Examining the hierarchy map in Figure 4 mean of persons was 1.61 SDs greater than the item mean which indicates acceptable targeting.

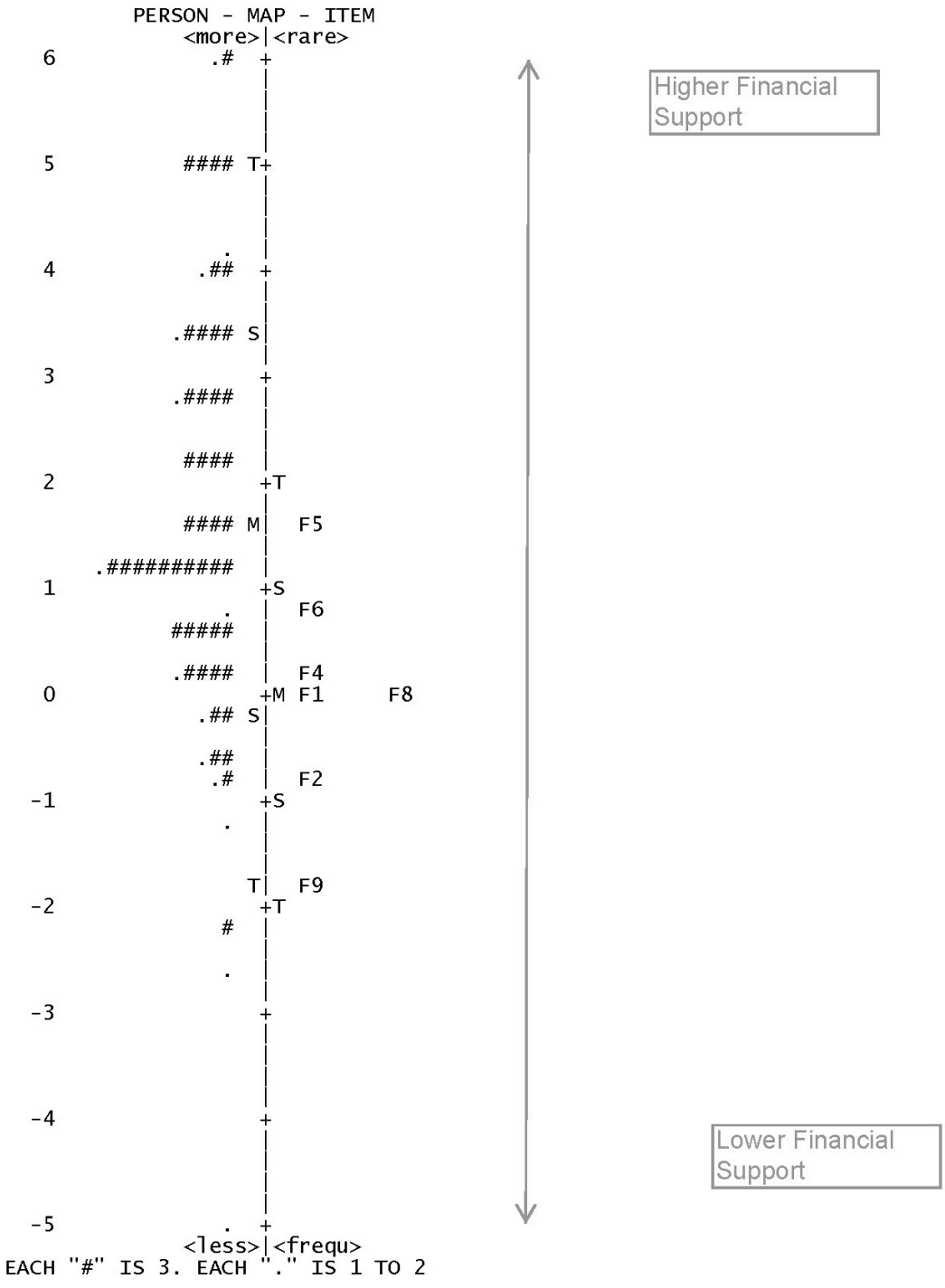

Figure 4. Item Map for *Financial* domain

3) Rating scale structure

Research Question 1d: *What is the functioning of the rating scale?*

The appropriate functioning of the rating scale was assessed using four criteria including average measures of the four response categories which were expected to increase monotonically, in proper order and have steps >1.0 logit. Further, the step calibrations were expected to be in order consistent with the ordering of the rating scale categories and the difference between the steps should be >1.0 logit. The fit statistic of the rating scale was also examined where Outfit MNSQ should be less than 2 for each category. Lastly, probability curves were visually examined to assess independent peaks of the rating scale probability curve diagram.

Table XVI presents the results of the functioning of the rating scale. OBSVD AVRGE measure column shows average measures of the four response categories. The response categories, as expected, are increasing monotonically, in proper order and have steps >1.0 logits. The step calibrations are also shown in Table XVI under STRUCTURE CALIBRATN column and the difference between the steps is >1.0 logit. Outfit MNSQ for the rating scale is less than 2 for each category.

TABLE XVI

SUMMARY OF RATING SCALE STEPS FOR 7 ITEM FINANCIAL DOMAIN

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE	
1	1	55	5	-1.30	-1.58	1.24	1.36	NONE	(-3.29)	1 Strongly Disagree
2	2	141	13	-.20	-.25	1.11	1.15	-1.99	-1.47	2 Disagree
3	3	578	52	1.19	1.28	.91	.79	-.93	1.04	3 Agree
4	4	344	31	3.59	3.47	.93	.89	2.92	(4.03)	4 Strongly Agree
MISSING		6	1	2.93						

Probability curve diagram is shown in Figure 5. Visual examination of the probability curves illustrates expected four independent peaks, one for each category.

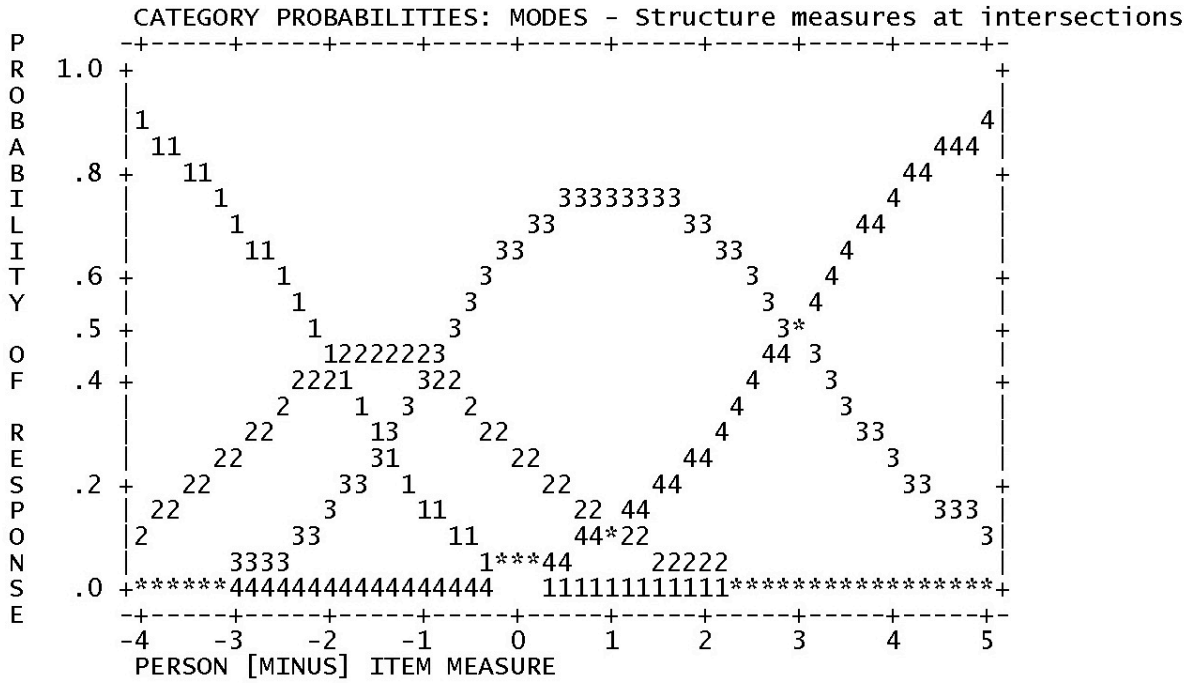

Figure 5. Probability curves for *Financial* domain

4) Reliability

Research Question 1e: *What is the reliability of the scale?*

Reliability of *Financial* domain subscale was evaluated using conventional measures of Cronbach's alpha and person and item reliability of Rasch Measurement Model.

i. Using Conventional Measures

Using classical measurement of Cronbach's Alpha, the reliability of *Financial* domain was .82. According to George and Mallery (2003), Cronbach's Alpha >.8 is considered "good" reliability for the scale.

ii. Using Rasch Analysis

The *model Person reliability index* of the *Financial* domain was .80 while *real* was .75. The *model* reliability for items was .98 and *real* was .97. Similarly to Cronbach's alpha, a value of .80 is considered acceptable for both *item* and *person reliability.* Further, a value >.70 is acceptable.

The Person and Item separation index was calculated for *Financial* domain. A scale must reach out to at least two item difficulty strata to be useful for scale definition. Person separation of the 7 items was 1.72 which indicates that the item differentiate between 2.63 statistically distinct groups [based on the calculation for Gp=(4*1.72+1)/3]. The item separation was 6.02, which points out that people discriminate 8.36 distinct groups of the items.

b. Results: Preparation and Storage Domain

1) Dimensionality and Model Fit

Research Question 1a: *Do the items fit the Rasch model? Do the items clearly represent the concept of nutritional support?*

Research Question 1b: *What is the dimensional structure of the instrument?*

Dimensionality of *Preparation and Storage* domain subscale was examined by Model Fit, Principal Component Analysis (PCA), and Factor Analysis.

i. Model fit

Individual MNSQ Infit and Outfit were examined for each item. Table XVII presents the items that did not meet the fit statistics criteria for Infit and Outfit of 1.33. Three items, PS9, PS12, and PS11 out of 12 items in *Preparation and Storage* subscale were deleted since they had Infit and Outfit MNSQ scores higher than 1.33 in the first iteration. The item fit was evaluated again with the remaining 9 items. PS10 item was deleted in the second iteration because of its high Infit and Outfit MNSQ scores. Eight items remained in *Preparation and Storage* domain subscale after this deletion and these items were used in the subsequent analyses. The overall MNSQ for items produced Infit of 1.04 and Outfit of .97 which indicates a good fit for the *Preparation and Storage* domain subscale.

TABLE XVII
MOST MISFITTING ITEMS OF PREPARATION AND STORAGE DOMAIN SUBSCALE

Iteration #	Logits	Infit MNSQ	Outfit MNSQ		Item(s)
1	.96	1.35	1.55	PS9	We keep an inventory of food items in a community home.
1	.87	1.37	1.44	PS12	I leave a note on the food that is close to being expired.
1	-.23	1.30	1.41	PS11	I move food with closest expiration date to the front of fridge or cabinet.
2	-.03	1.51	1.81	PS10	We eat all the food that we purchase.

ii. Principal Component Analysis

PCA was evaluated using the same criteria as the *Financial* domain subscale. Table XVII presents the results of PCA for *Preparation and Storage* domain. PCA of the 8 items of the *Preparation and Storage* subscale demonstrated that the variance explained by measure was acceptable 47.2%. Unexplained variance explained by the first factor was 10.3% which was less than the recommended criteria. Further, the eigenvalue of unexplained variance explained by the first contrast was 1.6 which was less than 2. The PCA evaluation of *Preparation and Storage* domain indicates acceptable subscale unidimensionality.

TABLE XVIII
STANDARDIZED RESIDUAL VARIANCE (IN EIGENVALUE UNITS)
FOR PREPARATION AND STORAGE DOMAIN

	Empirical			Modeled
Total variance in observations	15.1	100.0%		100.0%
Variance explained by measures	7.1	47.2%*		47.0%
Unexplained variance (total)	8.0	52.8%	100.0%	53.0%
Unexplained variance in 1st contrast	1.6‡	10.3%†	19.6%	

* >40% recommended
† <15% recommended
‡ <2 optimal

iii. Factor Analysis

Factor analysis of the remaining eight items produced only one significant factor that was explaining 53.70% of the variance and had an eigenvalue of 4.3. There were no other factors with greater than 1 eigenvalue extracted using classical methodology. Figure 6 illustrates a graphical representation of *Preparation and Storage* domain. Examining the Scree plot (Figure 6) it also points to only one factor that represents the *Preparation and Storage* domain.

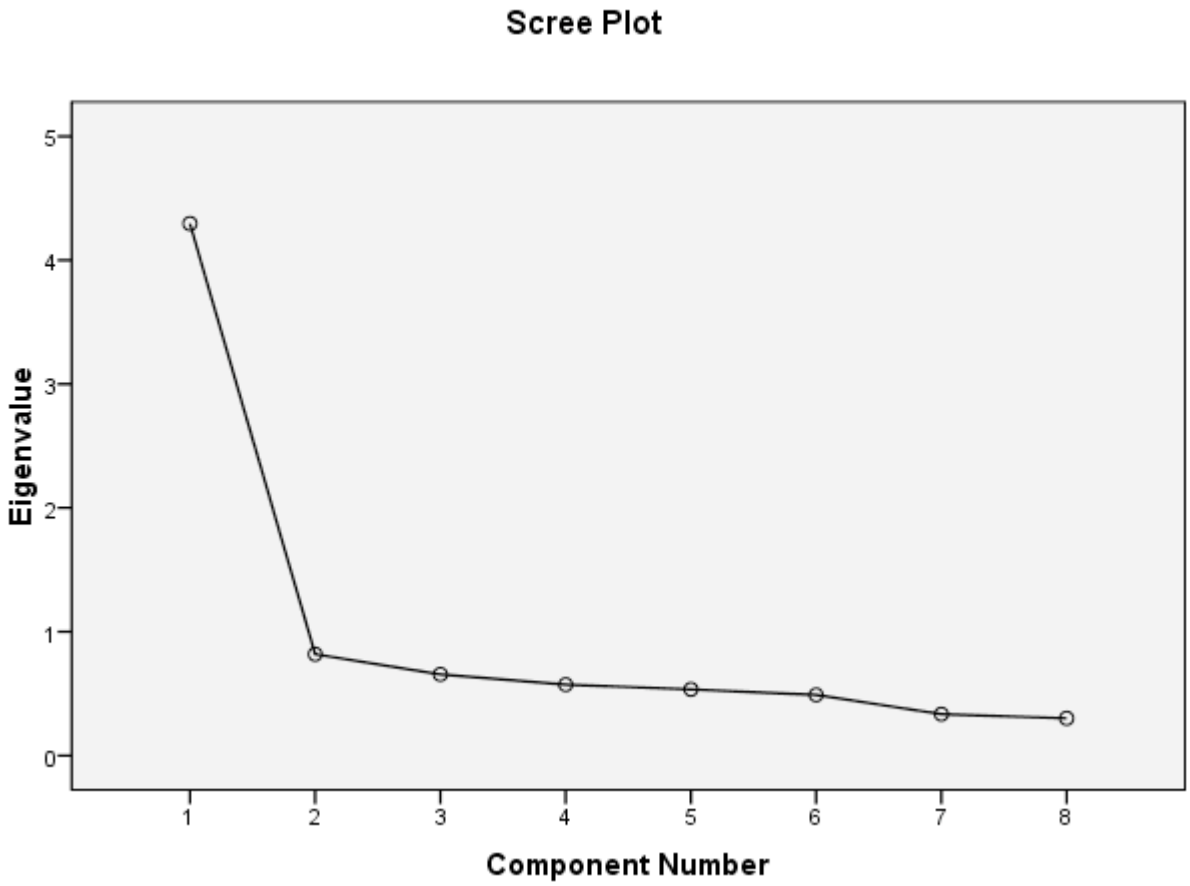

Figure 6. Scree Plot for *Preparation and Storage* domain

2) Item hierarchy

Research Question 1c: *What is the hierarchy of the items?*

Item hierarchy was evaluated using variable maps. Figure 7 contains item hierarchy map for *Preparation and Storage* domain subscale. Examining the hierarchy map in Figure 7 the mean of persons was 1.75 SDs greater than the item mean which indicates acceptable targeting.

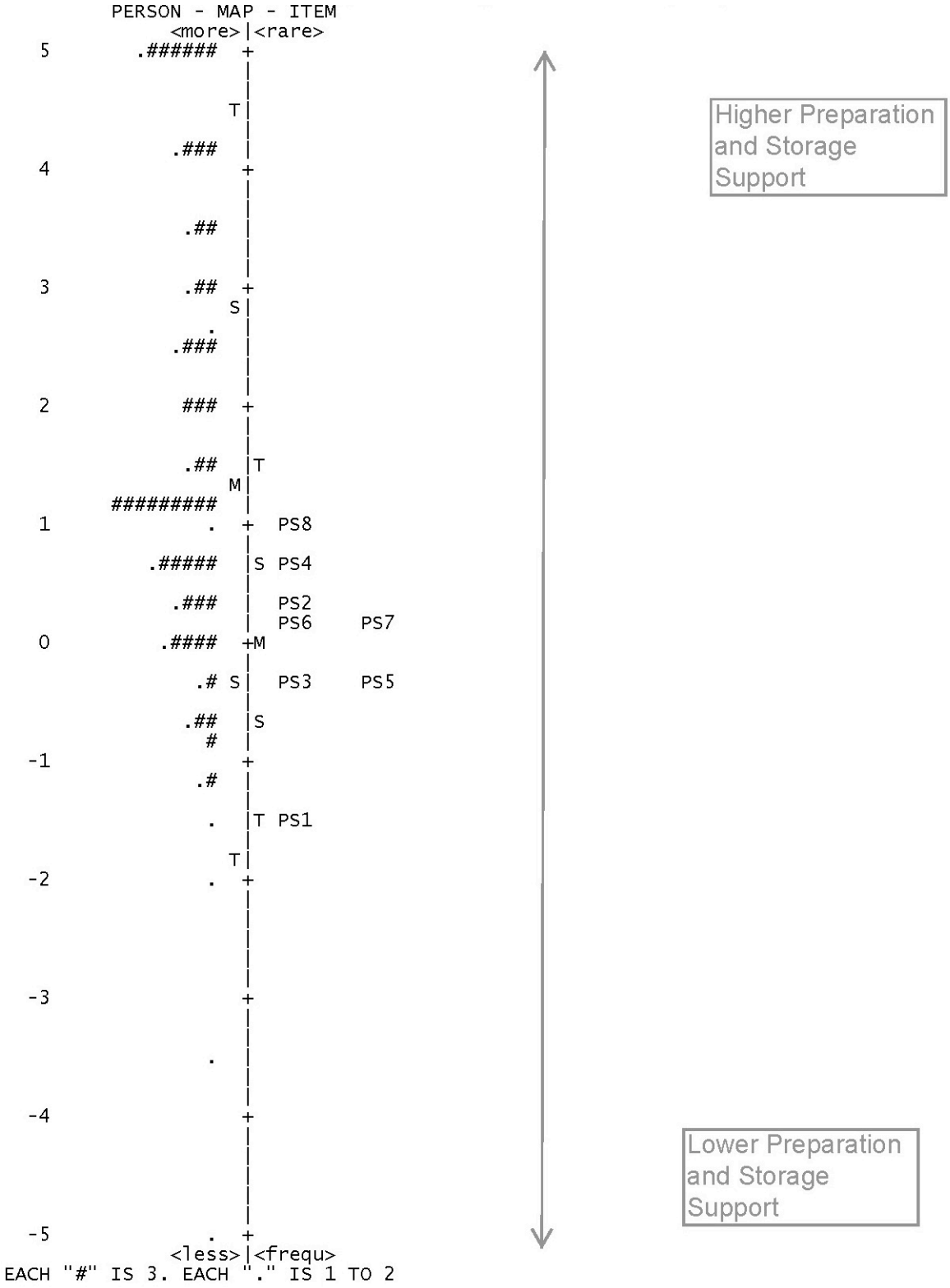

Figure 7. Item Map for *Preparation and Storage* domain

3) Rating scale structure

Research Question 1d: *What is the functioning of the rating scale?*

Table XIX illustrates the results of the functioning of the rating scale. The OBSVD AVRGE measure column shows average measures of the four response categories. The response categories, as expected, are increasing monotonically, in proper order and have steps approximately >1.0 logits. The step calibrations are also shown in Table XIX under STRUCTURE CALIBRATN column and the difference between the steps is >1.0 logit. Outfit MNSQ for the rating scale is less than 2 for each category.

TABLE XIX
SUMMARY OF RATING SCALE STEPS FOR 8 ITEM PREPARATION AND STORAGE DOMAIN

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE	
1	1	56	4	-1.34	-1.34	1.01	1.05	NONE	(-3.32)	1 Strongly Disagree
2	2	184	14	-.11	-.15	1.03	1.05	-2.05	-1.44	2 Disagree
3	3	638	50	1.10	1.13	.96	.94	-.80	1.07	3 Agree
4	4	410	32	3.10	3.07	.99	.96	2.84	(3.96)	4 Strongly Agree
MISSING		7	1	1.10						

The probability curve diagram is shown in Figure 8. Visual examination of the probability curves illustrates expected four independent peaks, one for each category.

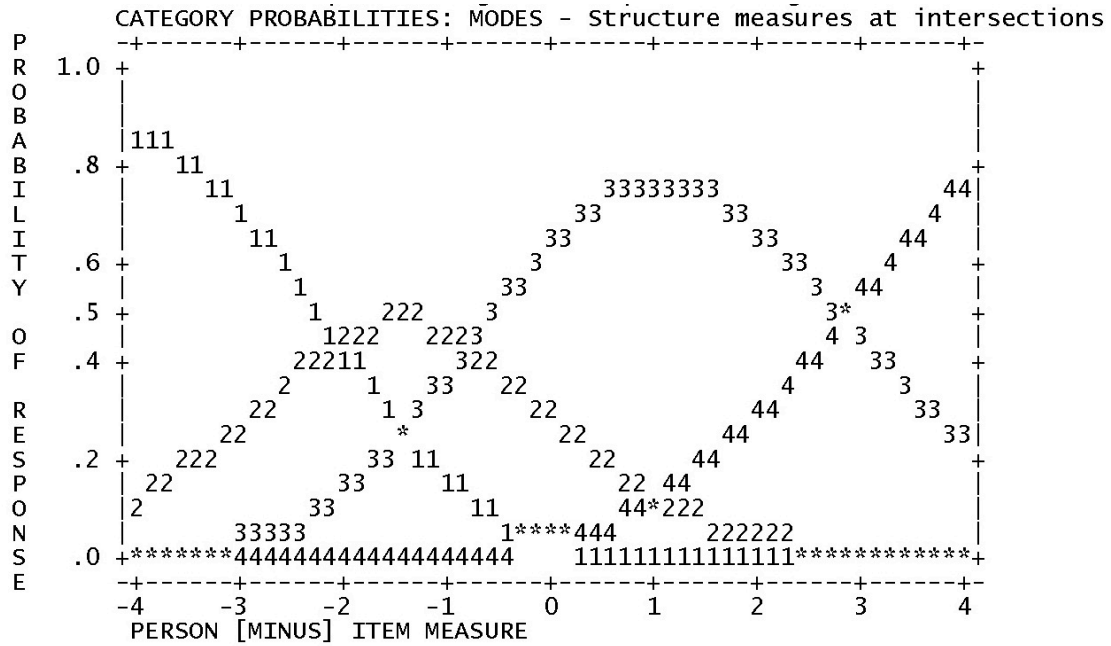

Figure 8. Probability curves for *Preparation and Storage* domain

4) Reliability

Research Question 1e: *What is the reliability of the scale?*

Reliability of *Preparation and Storage* domain subscale was evaluated using conventional measures of Cronbach's alpha and person and item reliability of Rasch Measurement Model.

i. Using Conventional Measures

Using the classical measurement of Cronbach's Alpha, the reliability of *Preparation and Storage* domain was .87 indicating a "good" reliability of the scale.

ii. Using Rasch Analysis

The *model Person reliability index* of the *Preparation and Storage* domain was .82 while *real* was .77. The *model* reliability for items was .96 and *real* was .95. Similarly to Cronbach's alpha, a value of .80 is considered acceptable for both *item* and *person reliability.* Further a value >.70 is acceptable.

The Person and Item separation index was calculated for *Preparation and Storage* domain. Person separation of the 8 items was 1.25 which indicates that the item differentiate between 2.00 statistically distinct groups [based on the calculation for Gp=(4*1.25+1)/3]. The item separation was 9.20, which points out that people discriminate 8.36 distinct groups of the items.

c. Results: Knowledge Domain

1) Dimensionality and Model Fit

Research Question 1a: *Do the items fit the Rasch model? Do the items clearly represent the concept of Knowledge support?*

Research Question 1b: *What is the dimensional structure of the instrument?*

Dimensionality of *Knowledge* domain subscale was examined by Model Fit, Principal Component Analysis (PCA), and Factor Analysis.

i. Model fit

Individual MNSQ Infit and Outfit were examined for each item. Table XX presents the items that did not meet the fit statistics criteria for Infit and Outfit of 1.33. Three items, K17, K19, and K18 out of 19 items in *Knowledge* subscale were deleted since they had Infit and Outfit

MNSQ scores higher than 1.33 in the first iteration. The item fit was evaluated again with the remaining 16 items. In the second iteration, three additional items misfitted. K5, K12, and K6 items were deleted in the second iteration because of this high Infit and/or Outfit MNSQ scores. Upon close examination of the six items that were deleted to determine whether some of the deleted items could fit under another domain, item K19 was moved to *Organizational Culture*. Thirteen items remained in *Knowledge* domain subscale after this deletion and these items were used in the subsequent analyses. The overall MNSQ for items produced Infit of .99 and Outfit of .96 which indicates a good fit for the *Knowledge* domain subscale.

TABLE XX
MOST MISFITTING ITEMS OF KNOWLEDGE DOMAIN SUBSCALE

Iteration #	Logits	Infit MNSQ	Outfit MNSQ	Item(s)	
1	1.92	1.79	1.96	K17	Individuals whom I support ask for fresh fruits and vegetables.
1	1.62	1.66	1.86	K19	My organization has a list of resources available related to food and nutrition.
1	1.29	1.55	1.80	K18	I use measuring utensils to measure portions when serving meals.
2	1.74	1.22	1.61	K5	I am familiar with the Dietary Guidelines for Americans.
2	.80	1.47	1.45	K12	I know how to make a food budget for a household.
2	1.28	1.13	1.33	K6	I am familiar with MyPyramid.

ii. Principal Component Analysis

PCA was evaluated using the same criteria as the *Financial* domain subscale. Table XXI presents the results of PCA for *Knowledge* domain. PCA of the 13 items of the *Knowledge* subscale demonstrated that the variance explained by measure was acceptable at 55.7%. Unexplained variance explained by the first factor was 8.2% which was less than recommended criteria. Further, the eigenvalue of unexplained variance explained by the first contrast was 2.4 which was higher than recommended eigenvalue of 2 and indicates potential presence of another factor. The PCA evaluation of *Knowledge* domain indicates acceptable PCA for two out of three criteria. Further dimensionality of *Knowledge* domain will be examined further with Factor Analysis in the next section to determine dimensionality of the scale.

TABLE XXI
STANDARDIZED RESIDUAL VARIANCE (IN EIGENVALUE UNITS)
FOR KNOWLEDGE DOMAIN

	Empirical			Modeled
Total variance in observations	29.3	100.0%		100.0%
Variance explained by measures	16.31	55.7%*		55.5%
Unexplained variance (total)	13.0	44.3%	100.0%	44.5%
Unexplained variance in 1st contrast	2.4‡	8.2%†	18.4%	

* >40% recommended
† <15% recommended
‡ <2 optimal

iii. Factor Analysis

Factor analysis of the remaining thirteen items produced only one significant factor that was explaining 58.87% of the variance and had an eigenvalue of 7.7. Eigenvalue for the secondary component was 1.097 which indicates that may be a possible another factor with greater than 1 eigenvalue extracted using classical methodology. In order to evaluate the presence of the secondary factor, we have used Varimax Rotated Component Matrix and examined the factor loadings on the two possible factors. Table XXII presents the item loadings on the two potential factors of *Knowledge* domain. Upon examining the item loadings in Table XXII, it became clear that items with the similar stem (i.e. "I know how") were loading on one factor, while items that did not have the same stem were loading on the second factor. Determining the cause factor loading leads it was decided that the secondary factor is very small and that it does threaten the unidimensionality of the scale. Therefore, *Knowledge* domain is treated as a one factor unidimensional subscale. Further, Figure 9 indicates a graphical representation of *Knowledge* domain. Examining the Scree plot (Figure 9) it also points to only one significant factor that represents *Knowledge* domain.

TABLE XXII
FACTOR LOADINGS FOR KNOWLEDGE DOMAIN SUBSCALE

	Factor	
	1	2
K1 I know how to cook.	**.835**	.215
K2 I know how to prepare nutritious meals that taste good.	**.834**	**.326**
K3 I understand the benefits of eating fruits and vegetables.	**.391**	**.691**
K4 I know how to prepare a balanced meal.	**.704**	**.431**
K7 I know how to prepare fresh food quickly.	**.785**	**.335**
K8 I can follow recipes to make a meal.	**.541**	**.646**
K9 I understand portion sizes.	**.579**	**.592**
K10 I know how to cook fresh produce.	**.704**	**.300**
K11 I understand that there are different food groups.	**.327**	**.736**
K13 I know how to prepare specialty diets.	**.616**	**.318**
K14 I know where to buy fresh food locally.	**.378**	**.745**
K15 Fresh foods can be purchased near the community home.	.255	**.765**
K16 I know if the individuals I support are on special diets.	.209	**.813**

Bolded – significant loading.
Underlined – stronger loading.

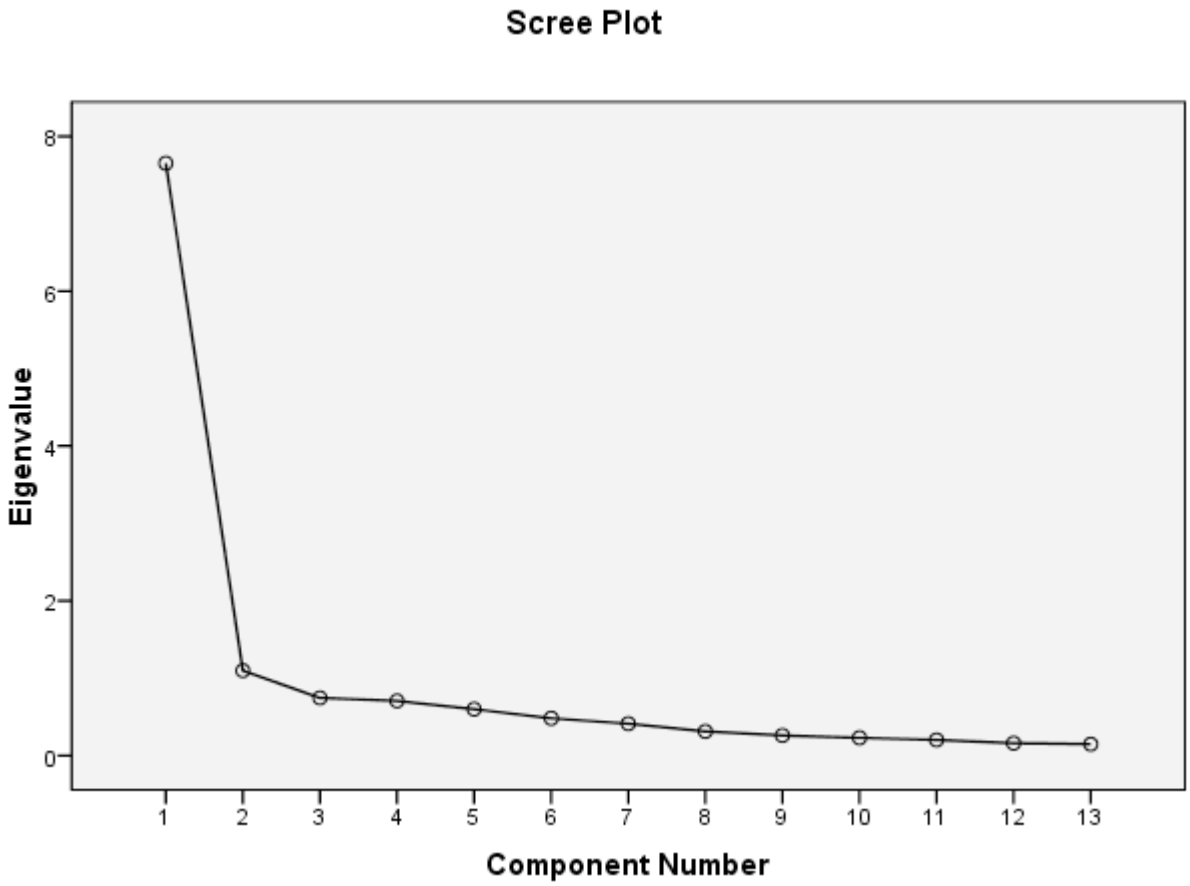

Figure 9. Scree Plot for *Knowledge* domain

2) Item hierarchy

Research Question 1c: *What is the hierarchy of the items?*

The variable map in Figure 10 was examined to determine item hierarchy for *Knowledge* domain subscale. Looking at the hierarchy map in Figure 10 mean of persons was 3.04 SDs greater than the item mean which indicates item and person sample mistargeting. Interpreting further this result indicates that the knowledge support items were easy to endorse for this sample set. Therefore a need exists to develop knowledge items that are harder to endorse for this sample set.

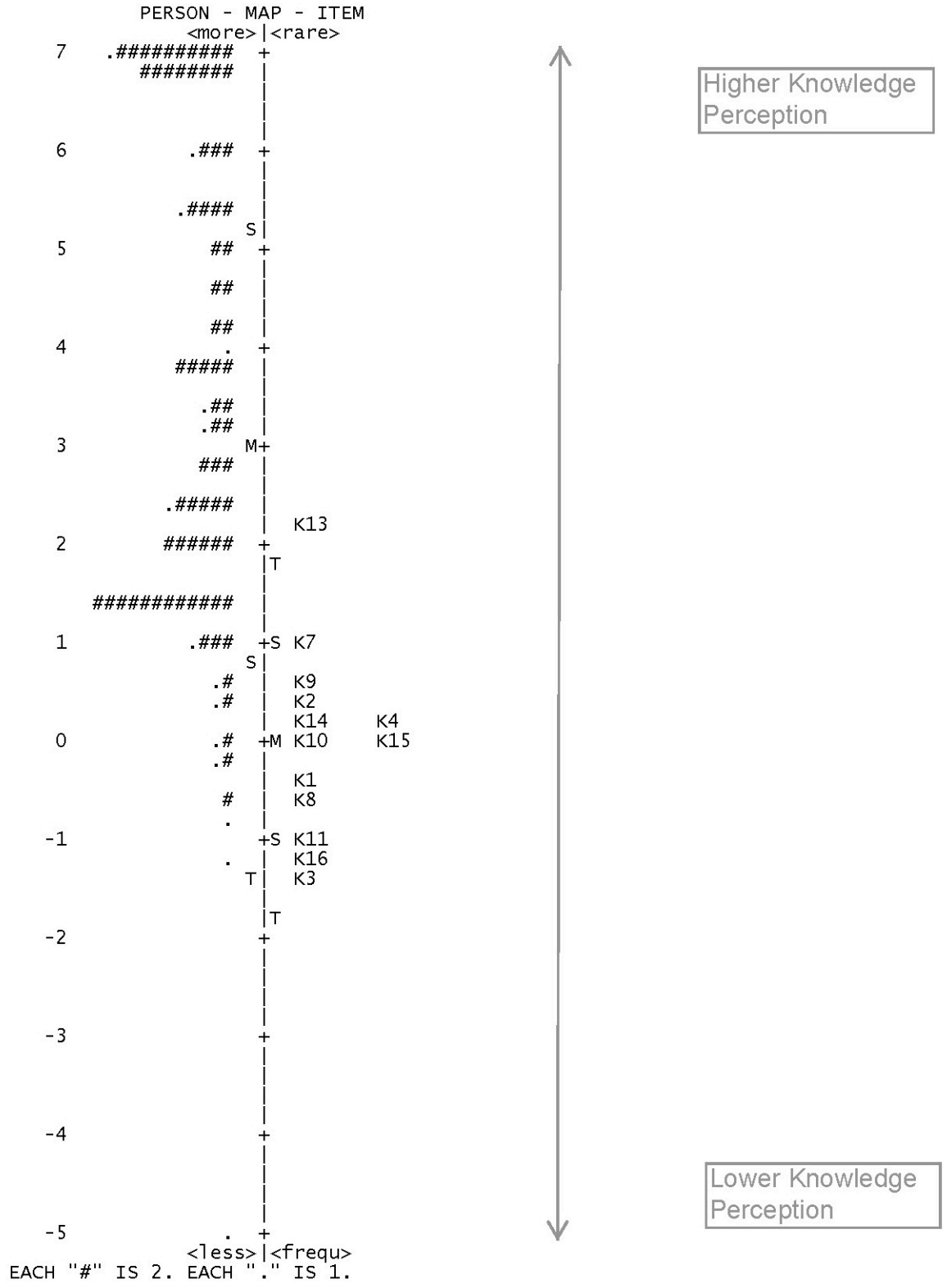

Figure 10. Item Map for *Knowledge* domain

3) Rating scale structure

Research Question 1d: *What is the functioning of the rating scale?*

Table XXIII illustrates the results of the functioning of the rating scale of the *Knowledge* domain. The OBSVD AVRGE measure column shows average measures of the four response categories. The response categories, as expected, are increasing monotonically, in proper order and have steps approximately >1.0 logits. The step calibrations are also shown in Table XXIII under the STRUCTURE CALIBRATN column and the difference between the steps is >1.0 logit. Outfit MNSQ for the rating scale is less than 2 for each category.

TABLE XXIII

SUMMARY OF RATING SCALE STEPS FOR 13 ITEM KNOWLEDGE DOMAIN

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE	
1	1	23	1	-2.71	-3.13	1.40	1.92	NONE	(-4.08)	1 Strongly disagree
2	2	115	5	.21	.08	1.06	1.02	-2.87	-1.99	2 Disagree
3	3	1020	48	2.07	2.13	.94	.86	-1.10	1.45	3 Agree
4	4	953	45	5.19	5.13	.94	.93	3.97	(5.07)	4 Strongly agree
MISSING		8	0	.47						

The probability curve diagram for *Knowledge* domain is shown in Figure 11. Visual examination of the probability curves also illustrates expected four independent peaks, one for each category.

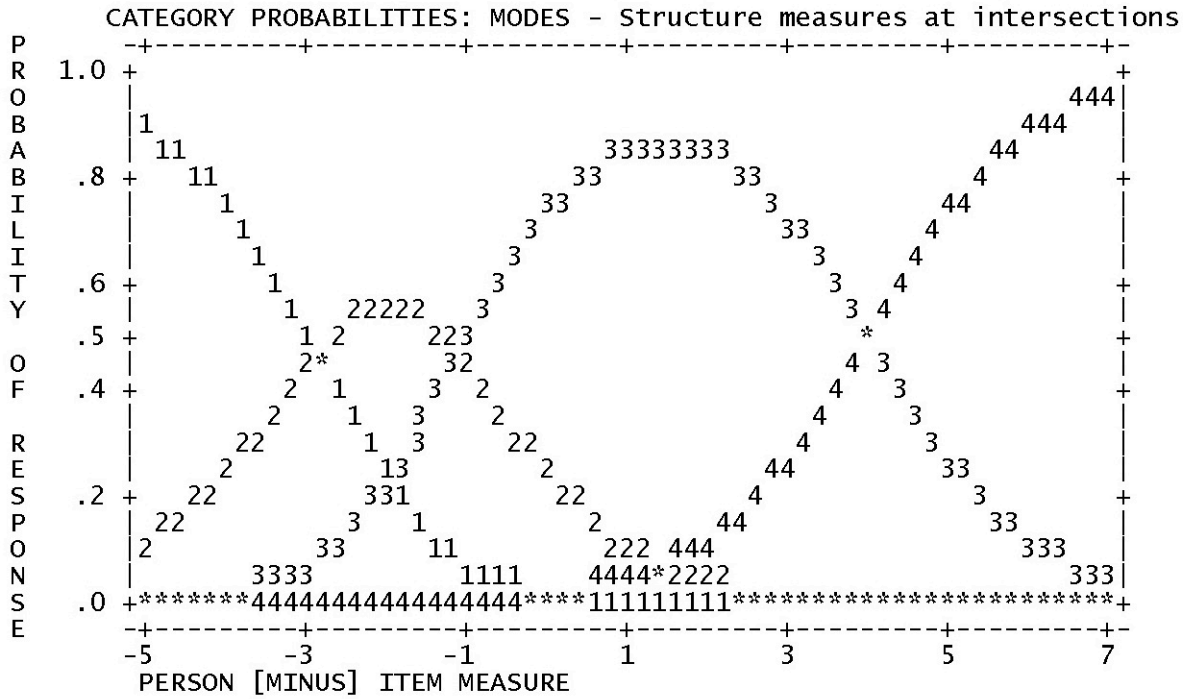

Figure 11. Probability curves for *Knowledge* domain

4) Reliability

Research Question 1e: *What is the reliability of the scale?*

Reliability of the *Knowledge* domain subscale was evaluated using conventional measures of Cronbach's alpha and person and item reliability of the Rasch Measurement Model.

i. Using Conventional Measures

Using classical measurement of Cronbach's Alpha, the reliability of *Knowledge* domain was .94 indicating a "excellent" reliability of the scale.

ii. Using Rasch Analysis

The *model Person reliability index* of the *Knowledge* domain was .90 while *real* was .88. The *model* reliability for items was .95 and *real* was .95. Similarly to Cronbach's alpha, a value of >.80 is considered acceptable for both *item* and *person reliability.*

The Person and Item separation index was calculated for the *Knowledge* domain. Person separation of the 13 items was 2.66 which indicates that the item differentiate between 3.88 statistically distinct groups [based on the calculation for Gp=(4*2.66+1)/3]. The item separation was 4.27, which points out that people discriminate 6.02 distinct groups of the items.

d. Results: Cultural Values and Lifestyles Domain

1) Dimensionality and Model Fit

Research Question 1a: *Do the items fit the Rasch model? Do the items clearly represent the concept of nutritional support?*

Research Question 1b: *What is the dimensional structure of the instrument?*

Dimensionality of *Cultural Values and Lifestyles* domain subscale was examined by Model Fit, Principal Component Analysis (PCA), and Factor Analysis.

i. Model fit

Individual MNSQ Infit and Outfit were examined for each item. Table XXIV presents the items that did not meet the fit statistics criteria for Infit and Outfit of 1.33. Before analyzing this subscale, item CL3 (*I rely on convenience foods when I cook*) was reverse coded because reliance on convenience foods was perceived as lower level of nutrition support compared to ability to make all meals from scratch. In the first iteration recoded CL3 misfitted and was deleted from the scale. The subscale was evaluated again with the 7 remaining items. Another item, CL1, misfitted in the second iteration and was deleted from the scale. *Cultural Values and Lifestyles* contained six final items after the deletions which were used for the subsequent analyses. The overall MNSQ for items produced Infit of .98 and Outfit of 1.01 indicating a good general fit of the domain subscale.

TABLE XXIV
MOST MISFITTING ITEMS OF CULTURAL VALUES AND LIFESTYLES DOMAIN SUBSCALE

Iteration #	Logits	Infit MNSQ	Outfit MNSQ	Item(s)	
1	.44	1.25	1.43	CL3_RE	I rely on convenience foods when I cook.
2	.72	1.30	1.36	CL1	I eat the same meal with individuals I support.

ii. Principal Component Analysis

PCA was evaluated using the same criteria as the *Financial* domain subscale. Table XXV presents the results of PCA for *Cultural Values and Lifestyles* domain. PCA of the six items of the *Cultural Values and Lifestyles* subscale demonstrated that the variance explained by the measure was acceptable, 46.2%. Unexplained variance explained by the first factor was 13.3% which was less than recommended criteria. Further, eigenvalue of unexplained variance explained by the first contrast was 1.5 which was lower than recommended eigenvalue of 2. The PCA evaluation of *Cultural Values and Lifestyles* domain indicates acceptable PCA for three out of three criteria. Further dimensionality of *Cultural Values and Lifestyles* domain will be examined with Factor Analysis in the next section to determine dimensionality of the scale.

TABLE XXV
STANDARDIZED RESIDUAL VARIANCE (IN EIGENVALUE UNITS)
FOR CULTURAL VALUES AND LIFESTYLES DOMAIN

	Empirical			Modeled
Total variance in observations	11.2	100.0%		100.0%
Variance explained by measures	5.2	46.2%*		46.3%
Unexplained variance (total)	6.0	53.8%	100.0%	53.7%
Unexplained variance in 1st contrast	1.5‡	13.3%†	25.7%	

* >40% recommended.
† <15% recommended.
‡ <2 optimal.

iii. Factor Analysis

Factor analysis of the remaining six items produced only one significant factor that was explaining 42.55% of the variance and had an eigenvalue of 2.6. Eigenvalue for the secondary component was 1.003 which indicates that may be a possible another factor with greater than 1 eigenvalue extracted using classical methodology. As described above, we used Varimax Rotated Component Matrix to examine the factor loadings on the two factors. Table XXVI presents the item loadings on the two potential factors of *Cultural Values and Lifestyles* domain. Examining item loadings, in Table XXVI five out of six items loaded on the second factor, however, there were three items that loaded on the first factor. Items CL2, CL5, and CL8 seem to be items that are related to internal nutritional cultural values and are loading together. Since the number of items for this domain is small and eigenvalue of the second factor is just above 1, it was not practical to divide this domain into two but treat it as one unidimensional scale. Additionally, upon examination of Figure 12, which indicates a graphical representation of *Cultural Values and Lifestyles* domain, the Scree plot also points to only one factor that represents *Cultural Values and Lifestyles* domain.

TABLE XXVI
FACTOR LOADINGS FOR CULTURAL VALUES AND LIFESTYLES DOMAIN SUBSCALE

	Factor	
	1	2
CL2 I like to cook.	**.885**	-.072
CL4 Family members support healthy food choices for individuals with ID.	.107	**.732**
CL5 I include fruits and vegetables in most meals.	**.652**	**.407**
CL6 My coworkers and I communicate between shifts about food and meals.	.105	**.699**
CL7 I seek nutrition advice from a dietitian or nurse.	.217	**.649**
CL8 Nutrition is a priority when I support individuals with ID.	**.711**	**.395**

Bolded – significant loading.
Underlined – stronger loading.

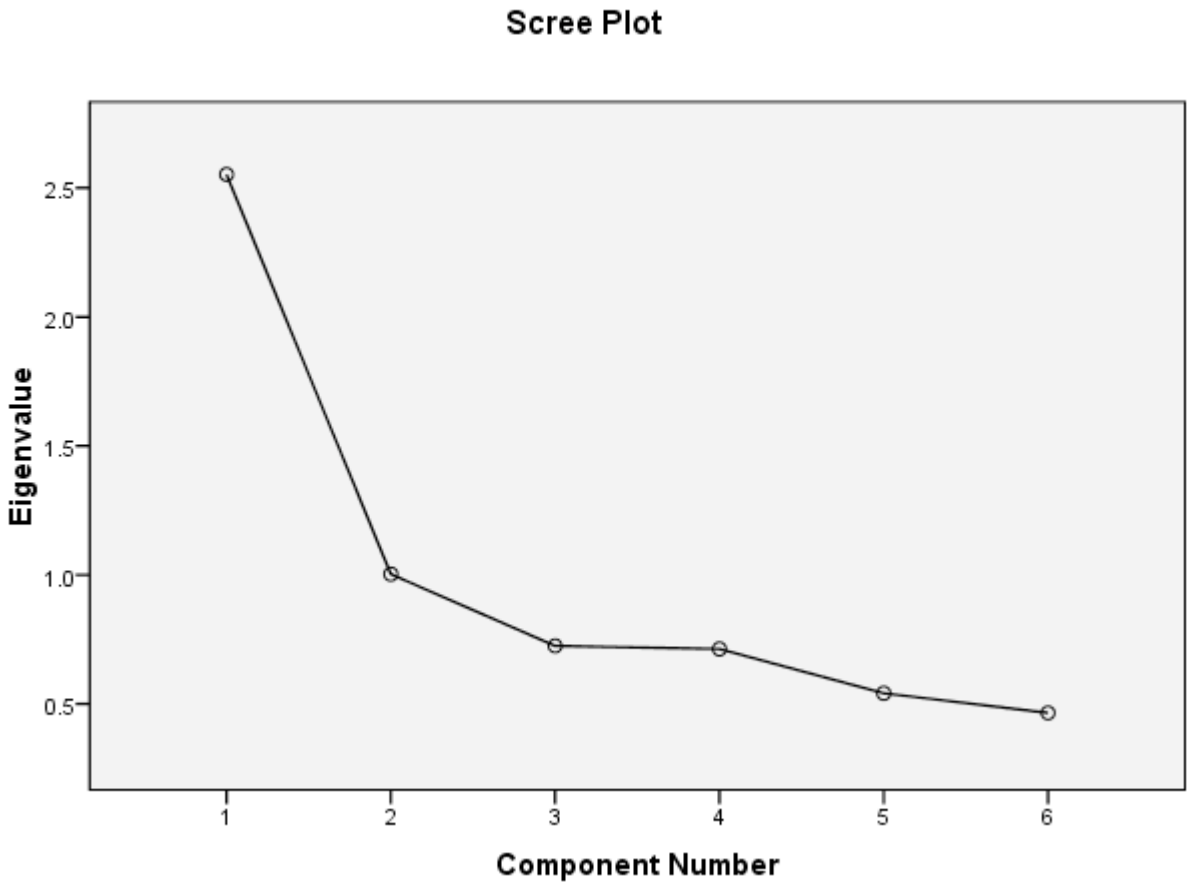

Figure 12. Scree Plot for *Cultural Values and Lifestyles* domain

2) Item hierarchy

Research Question 1c: *What is the hierarchy of the items?*

Figure 13 contains item hierarchy map for *Cultural Values and Lifestyles* domain. Looking at the hierarchy map in Figure 13 the mean of persons was 1.25 SDs greater than the item mean which indicates acceptable targeting.

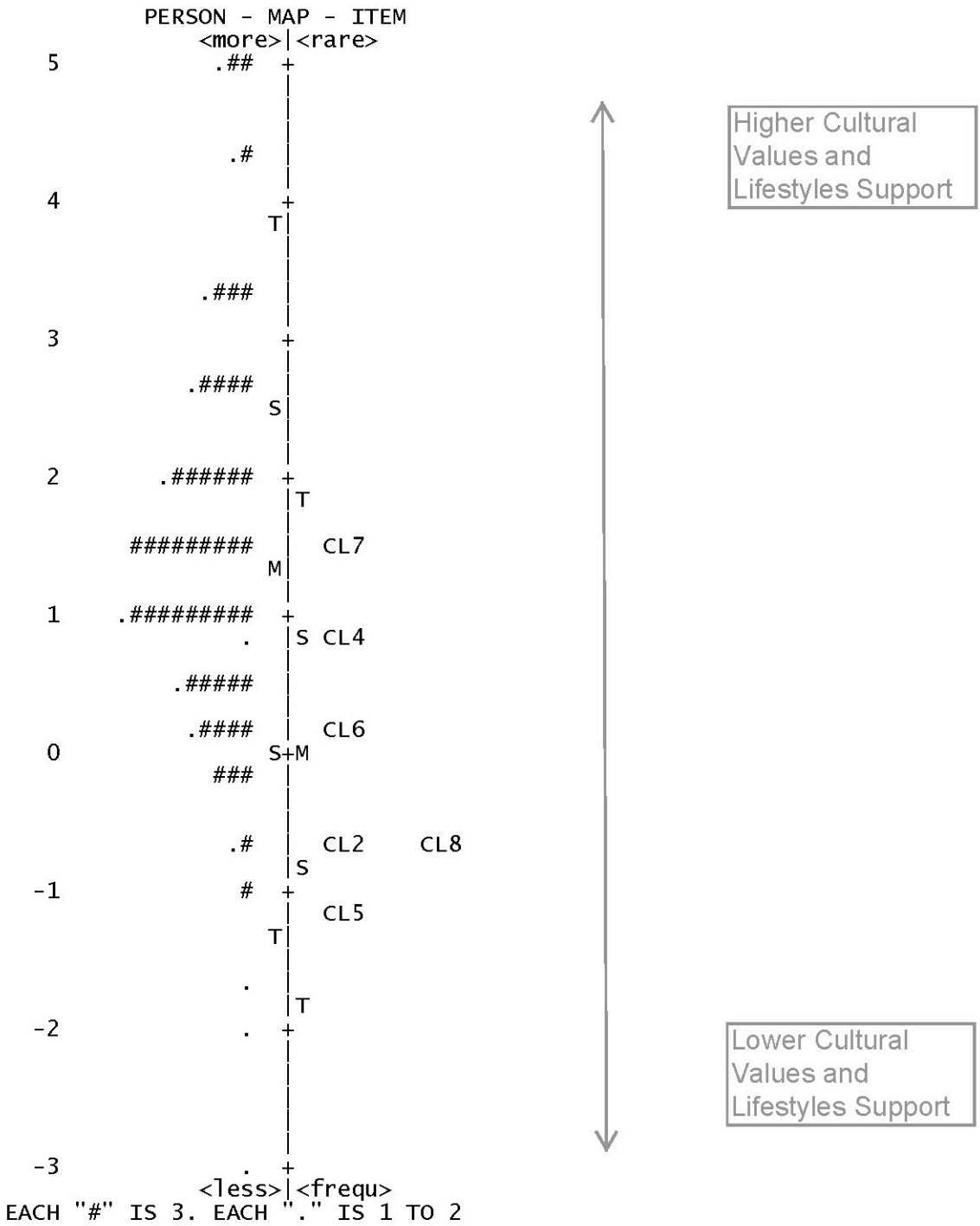

Figure 13. Item Map for *Cultural Values and Lifestyles* domain

3) Rating scale structure

Research Question 1d: *What is the functioning of the rating scale?*

Table XXVII illustrates the results of the functioning of the rating scale for the *Cultural Values and Lifestyles* domain. OBSVD AVRGE measure column shows average measures of the four response categories. The response categories, as expected, are increasing monotonically, in proper order and have steps approximately >1.0 logits. The step calibrations are also shown in Table XXVII under STRUCTURE CALIBRATN column and the difference between the steps is approximately >1.0 logit. Outfit MNSQ for the rating scale is acceptable less than 2 for each category.

TABLE XXVII
SUMMARY OF RATING SCALE STEPS FOR 6 ITEM
CULTURAL VALUES AND LIFESTYLES DOMAIN

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE	
1	1	48	5	-1.18	-1.32	1.13	1.19	NONE	(-3.00)	1 Strongly Disagree
2	2	130	13	-.11	-.08	.99	.98	-1.68	-1.25	2 Disagree
3	3	483	50	1.14	1.17	.98	1.00	-.78	.91	3 Agree
4	4	311	32	2.59	2.55	.95	.96	2.45	(3.58)	4 Strongly Agree
MISSING		6	1	.70						

The probability curve diagram for the *Cultural Values and Lifestyles* domain is shown in Figure 14. Visual examination of the probability curves also illustrates the expected four independent peaks, one for each category.

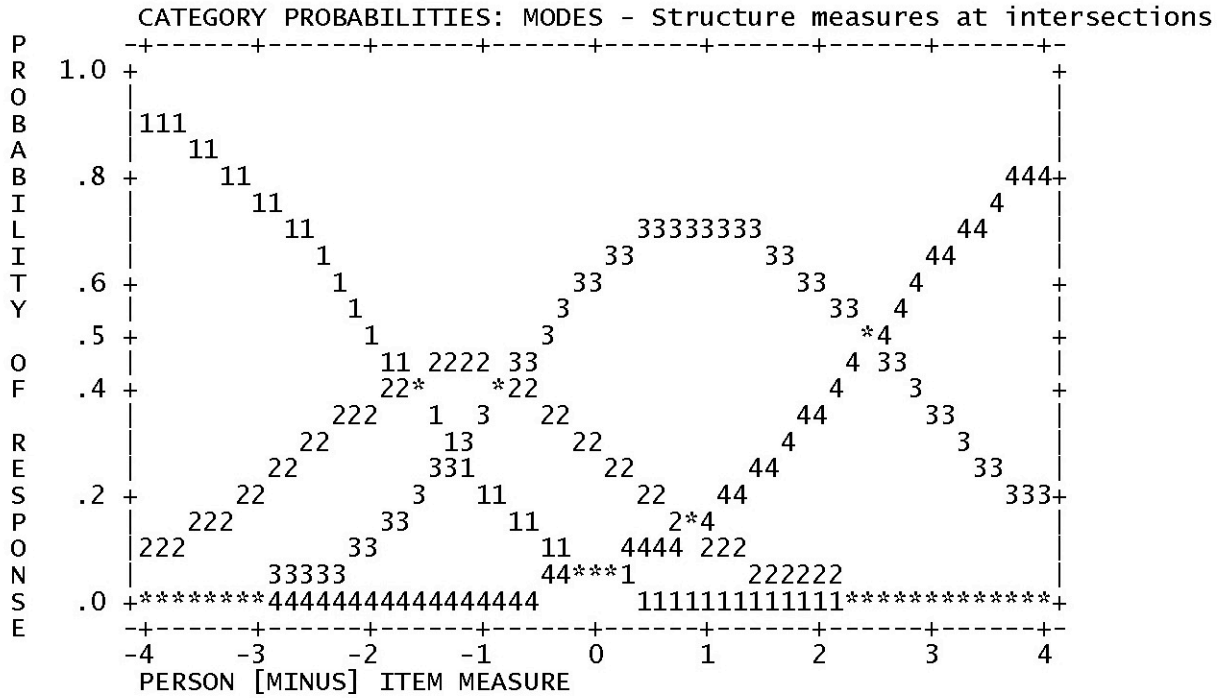

Figure 14. Probability curves for *Cultural Values and Lifestyles* domain

4) Reliability

Research Question 1e: *What is the reliability of the scale?*

Reliability of *Cultural Values and Lifestyles* domain subscale was evaluated using conventional measures of Cronbach's alpha and person and item reliability of Rasch Measurement Model.

i. Using Conventional Measures

The reliability of the *Cultural Values and Lifestyles* domain using classical measurement of Cronbach's Alpha was .71 indicating "acceptable" reliability of the scale.

ii. Using Rasch Analysis

The *model Person reliability index* of the *Cultural Values and Lifestyles* domain was .66 while *real* was .56. The *model* reliability for items was .98 and *real* was .97. Similarly to Cronbach's alpha, a value of >.80 is considered acceptable for both *item* and *person reliability.* Person and item reliability using Rasch analyses indicate poor reliability of the subscale.

The Person and Item separation index was calculated for the *Cultural Values and Lifestyles* domain. Person separation of the 6 items was 1.13 which indicates that the item differentiate between 1.84 statistically distinct groups [based on the calculation for Gp=(4*1.39+1)/3]. A scale is useful if it reaches at least two item difficulty strata, which this domain did not attain. The item separation was 6.12, which points out that people discriminate 8.49 distinct groups of the items.

e. Results: Organizational Culture Domain

1) Dimensionality and Model Fit

Research Question 1a: *Do the items fit the Rasch model? Do the items clearly represent the concept of Organizational Culture support?*

Research Question 1b: *What is the dimensional structure of the instrument?*

Dimensionality of *Organizational Culture* domain subscale was examined by Model Fit, Principal Component Analysis (PCA), and Factor Analysis.

i. Model fit

Individual MNSQ Infit and Outfit were examined for each of the 11 items of *Organizational Culture* domain. Item K19 was moved to the *Organizational Culture* domain before any of the analyses. Table XXVIII presents the items that did not meet the fit statistics criteria for Infit and Outfit of 1.33. Three items, OC10, OC9, and OC8 out of 11 items in *Organizational Culture* domain were deleted since their Infit and Outfit MNSQ scores were higher than 1.33. The item fit was evaluated again with the remaining eight items. In the second iteration, two additional items, OC7 and OC2 misfitted. Five misfitting items were closely examined to determine if some of the deleted items could fit under another domain or still be kept in the analyses. Since OC2 misfitted only because of it's higher Outfit (Outfit is not as large of a threat to dimensionality compared to Infit), the item was kept in the scale. Seven items remained in *Organizational Culture* domain and these items were used in the further analyses. The overall MNSQ for items produced Infit of .97 and Outfit of 1.03 which indicates a good fit for the *Organizational Culture* domain subscale.

TABLE XXVIII
MOST MISFITTING ITEMS OF ORGANIZATIONAL CULTURE DOMAIN SUBSCALE

Iteration #	Logits	Infit MNSQ	Outfit MNSQ		Item(s)
1	-.42	2.45	2.53	OC10	I can access recipes online (computer).
1	-1.67	**1.45**	1.30	OC9	My organization has a nurse on staff.
1	.32	**1.35**	1.31	OC8	My organization has a dietitian on staff.
2	-.77	1.48	1.51	OC7	Staffing patterns in the community home where I work are consistent.
2	-1.42	1.24	**1.38**	OC2	I have support from my coworkers to improve nutrition for people with ID.

ii. Principal Component Analysis

PCA was evaluated using the same criteria as the *Financial* domain subscale. Table XXIX presents the results of PCA for the *Organizational Culture* domain. PCA of the 7 items of the *Organizational Culture* subscale demonstrated that the variance explained by measure was acceptable, 62.7%. Unexplained variance explained by the first factor was 15.5% which was slightly higher than the recommended criteria. Further, eigenvalue of unexplained variance explained by the first contrast was 2.9 which was higher than recommended eigenvalue of 2 and indicates potential presence of another factor. The PCA evaluation of *Organizational Culture* domain indicates acceptable PCA for one out of three criteria. Dimensionality of *Organizational Culture* domain will be examined further with Factor Analysis in the next section to determine dimensionality of the scale.

TABLE XXIX
STANDARDIZED RESIDUAL VARIANCE (IN EIGENVALUE UNITS)
FOR ORGANIZATIONAL CULTURE DOMAIN

	Empirical			Modeled
Total variance in observations	18.8	100.0%		100.0%
Variance explained by measures	11.8	62.7%*		60.7%
Unexplained variance (total)	7.0	37.3%	100.0%	39.3%
Unexplained variance in 1st contrast	2.9‡	15.5%†	41.5%	

* >40% recommended.
† <15% recommended.
‡ <2 optimal.

iii. Factor Analysis

Factor analysis of the remaining seven items produced only one significant factor that was explaining 55.81% of the variance and had an eigen value of 3.9. Eigen value for the secondary component was 1.37 which indicates that there may be another factor with greater than 1 eigenvalue extracted. Figure 15 indicates a graphical representation of *Organizational Culture* domain. Examining the Scree plot (Figure 15) it also points to only one factor that represents *Organizational Culture* domain.

In order to evaluate the presence of the secondary factor, we used Varimax Rotated Component Matrix and examined the factor loadings on the two possible factors. Table XXX presents the item loadings on the two potential factors of *Organizational Culture* domain. Upon examining the item loadings in Table XX, it is evident that items with one common stem (i.e. "My workplace offers trainings") were loading on one factor, while items with another common

stem (i.e. “I have support from my”) were loading on the second factor. Further, an item (K19) that did not share a common stem loaded significantly (>.3) on both factors. It is possible that *Organizational Culture* domain has two significant factors. Further, Figure 15 indicates a graphical representation of *Organizational Culture* domain. Examining the Scree plot (Figure 15) it also points to two possible significant factor that represents *Organizational Culture* domain.

TABLE XXX
FACTOR LOADINGS FOR THE ORGANIZATIONAL CULTURE DOMAIN SUBSCALE

	Factor	
	1	2
OC1 I have support from my manager to improve nutrition for people with ID.	.126	**.848**
OC2 I have support from my coworkers to improve nutrition for people with ID.	.061	**.835**
OC3 My workplace offers trainings on food purchase.	**.920**	.120
OC4 My workplace offers trainings on food budgeting.	**.884**	.117
OC5 My workplace offers trainings on meal planning.	**.911**	.140
OC6 My workplace offers trainings on meal preparation.	**.900**	.111
K19 My organization has a list of resources available related to food and nutrition.	**.537**	**.474**

Bolded – significant loading.
Underlined – stronger loading.

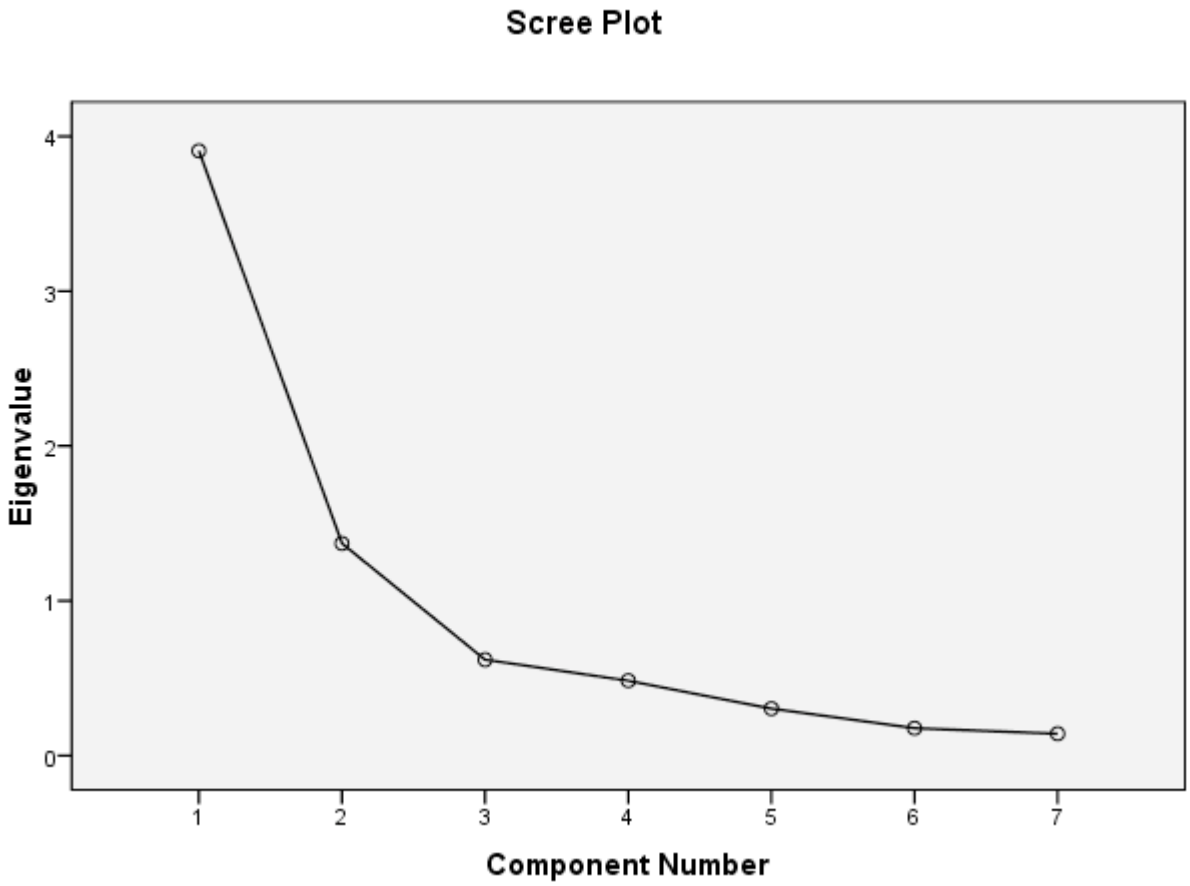

Figure 15. Scree Plot for *Organizational Culture* domain

2) Item hierarchy

Research Question 1c: *What is the hierarchy of the items?*

Variable map in Figure 16 was examined to determine item hierarchy for *Organizational Culture* domain subscale. Looking at the hierarchy map in Figure 16 the mean of persons was .22 SDs greater than the item mean which indicates proper targeting for item and person sample.

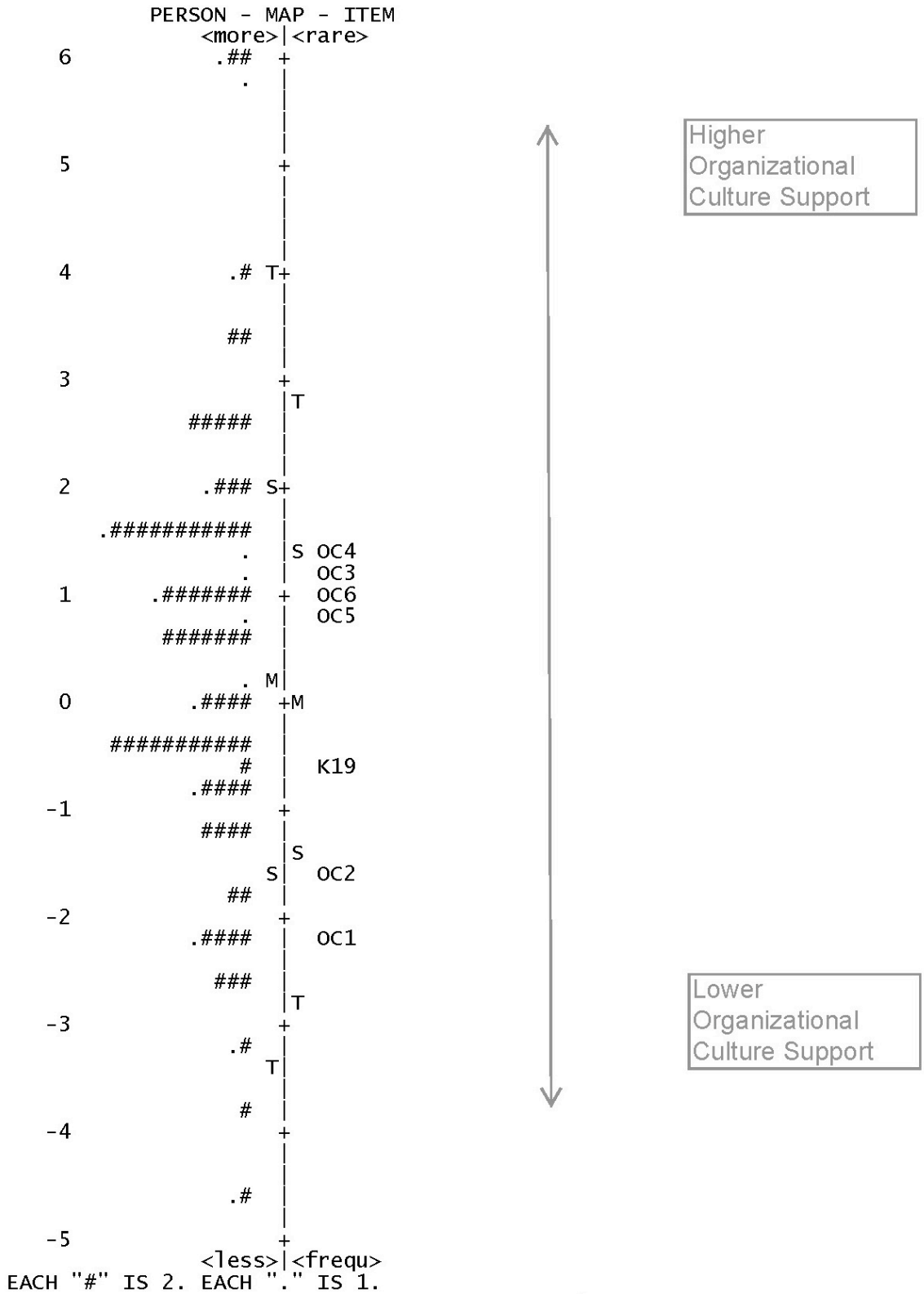

Figure 16. Item Map for *Organizational Culture* domain

3) Rating scale structure

Research Question 1d: *What is the functioning of the rating scale?*

Table XXXI illustrates the results of the functioning of the rating scale of the *Organizational Culture* domain. The OBSVD AVRGE measure column shows average measures of the four response categories. The response categories, as expected, are increasing monotonically, in proper order and have steps approximately >1.0 logits. The step calibrations are also shown in Table XXXI under the STRUCTURE CALIBRATN column and the difference between the steps is >1.0 logit. Outfit MNSQ for the rating scale is less than 2 for each category.

TABLE XXXI
SUMMARY OF RATING SCALE STEPS FOR 7 ITEM
ORGANIZATIONAL CULTURE DOMAIN

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE	
1	1	122	11	-3.47	-3.07	.64	.70	NONE	(-4.19)	1 Strongly Disagree
2	2	331	30	-.94	-1.04	.91	1.00	-3.04	-1.73	2 Disagree
3	3	492	44	1.19	1.03	.90	1.04	-.42	1.53	3 Agree
4	4	171	15	2.88	3.34	1.41	1.33	3.46	(4.57)	4 Strongly Agree
MISSING		25	2	.00						

The *Organizational Culture* domain probability curve diagram is shown in Figure 17. Visual examination of the probability curves illustrates the expected four independent peaks, one for each category.

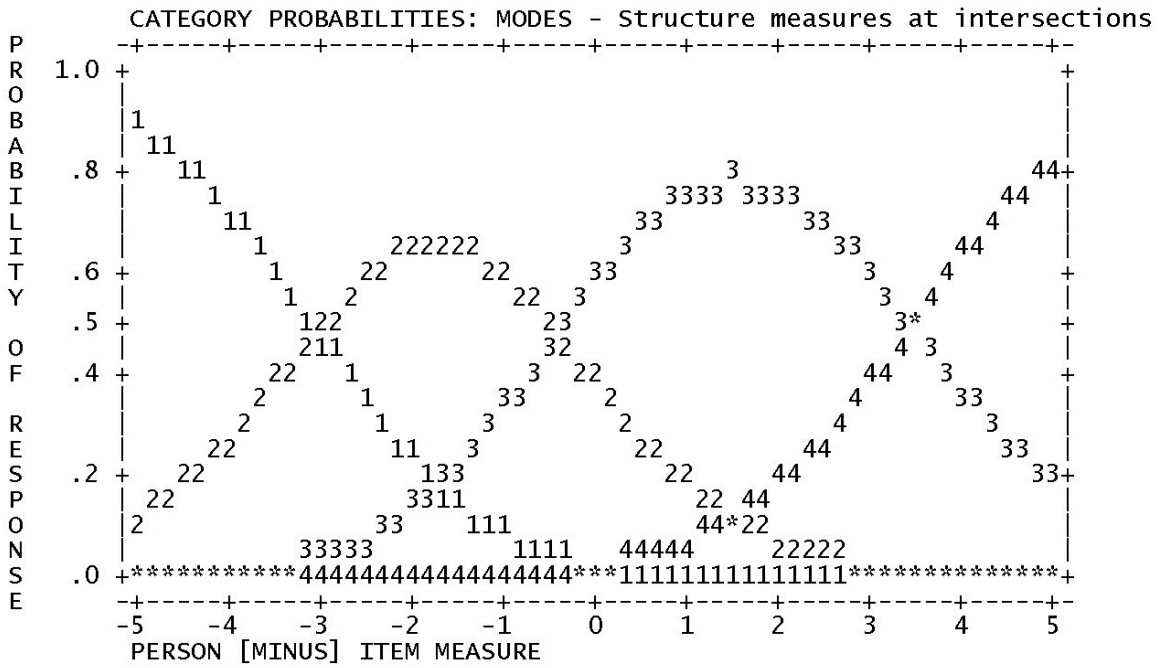

Figure 17. Probability curves for *Organizational Culture* domain

4) Reliability

Research Question 1e: *What is the reliability of the scale?*

Reliability of the *Organizational Culture* domain subscale was evaluated using conventional measures of Cronbach's alpha and person and item reliability of Rasch Measurement Model.

i. Using Conventional Measures

Using classical measurement of Cronbach's Alpha, the reliability of *Organizational Culture* domain was .86 indicating a "good" reliability of the scale.

ii. Using Rasch Analysis

The *model Person reliability index* of the *Organizational Culture* domain was .83 while *real* was .78. The *model* reliability for items was .99 and *real* was .99. Similarly to Cronbach's alpha, a value of >.80 is considered acceptable for both *item* and *person reliability.*

The Person and Item separation index was calculated for *Organizational Culture* domain. Person separation of the 7 items was 1.86 which indicates that the item differentiate between 2.81 statistically distinct groups [based on the calculation for Gp=(4*1.86 +1)/3]. The item separation was 8.28, which points out that people discriminate 11.37 distinct groups of the items.

f. Results: Time Domain

1) Dimensionality and Model Fit

Research Question 1a: *Do the items fit the Rasch model? Do the items clearly represent the concept of Time support?*

Research Question 1b: *What is the dimensional structure of the instrument?*

The dimensionality of *Time* domain subscale was examined by Model Fit, Principal Component Analysis (PCA), and Factor Analysis.

i. Model fit

Individual MNSQ Infit and Outfit were examined for each of the 11 items of the *Time* domain. Table XXXII presents the items that did not meet the fit statistics criteria for Infit and Outfit of 1.33. Two items, T6 and T5, out of six in the *Time* domain were deleted since their Infit and Outfit MNSQ scores were higher than 1.33. The item fit was evaluated again with the remaining four items. In the second iteration, two additional items, T2 and T4 misfitted. Since T2 and T4 misfitted only because of their higher Outfit (Outfit is not as large of a threat to dimensionality compared to Infit), the items were kept in the scale. Four items remained in the *Time* domain and these items were used in the further analyses. The overall MNSQ for items produced Infit of .89 and Outfit of 1.07 which indicates not an ideal fit and needs to be explored further.

TABLE XXXII
MOST MISFITTING ITEMS OF TIME DOMAIN SUBSCALE

Iteration #	Logits	Infit MNSQ	Outfit MNSQ		Item(s)
1	.17	2.04	2.01	T6	I follow a menu in the community home where I work.
1	-1.30	1.34	1.39	T5	I usually make a list before going grocery shopping.
2	-.37	1.16	**1.83**	T2	I have enough time to grocery shop.
2	2.05	.96	**1.54**	T4	I have enough time to make a meal from scratch (homemade).

ii. Principal Component Analysis

PCA was evaluated using the same criteria as the *Financial* domain subscale. Table XXXIII presents the results of PCA for the *Time* domain. PCA of the 4 items of the *Time* subscale demonstrated that the variance explained by measure was acceptable, 67.5%. Unexplained variance explained by the first factor was 13.6% which was less than the recommended criteria. Further, the eigenvalue of unexplained variance explained by the first contrast was 1.7 which was less than 2. The PCA evaluation of *Time* domain indicates acceptable subscale unidimensionality.

TABLE XXXIII
STANDARDIZED RESIDUAL VARIANCE (IN EIGENVALUE UNITS)
FOR TIME DOMAIN

	Empirical			Modeled
Total variance in observations	12.3	100.0%		100.0%
Variance explained by measures	8.3	67.5%*		64.0%
Unexplained variance (total)	4.0	32.5%	100.0%	36.0%
Unexplained variance in 1st contrast	1.7‡	13.6%†	41.9%	

* >40% recommended
† <15% recommended
‡ <2 optimal

iii. Factor Analysis

Factor analysis of the remaining four items produced only one significant factor that was explaining 76.0% of the variance and had an eigenvalue of 3.04. There were no other factors with greater than 1 eigen value extracted using classical methodology. Figure 18 indicates a graphical representation of *Time* domain. Examining the Scree plot (Figure 18) also points to only one factor that represents *Time* domain.

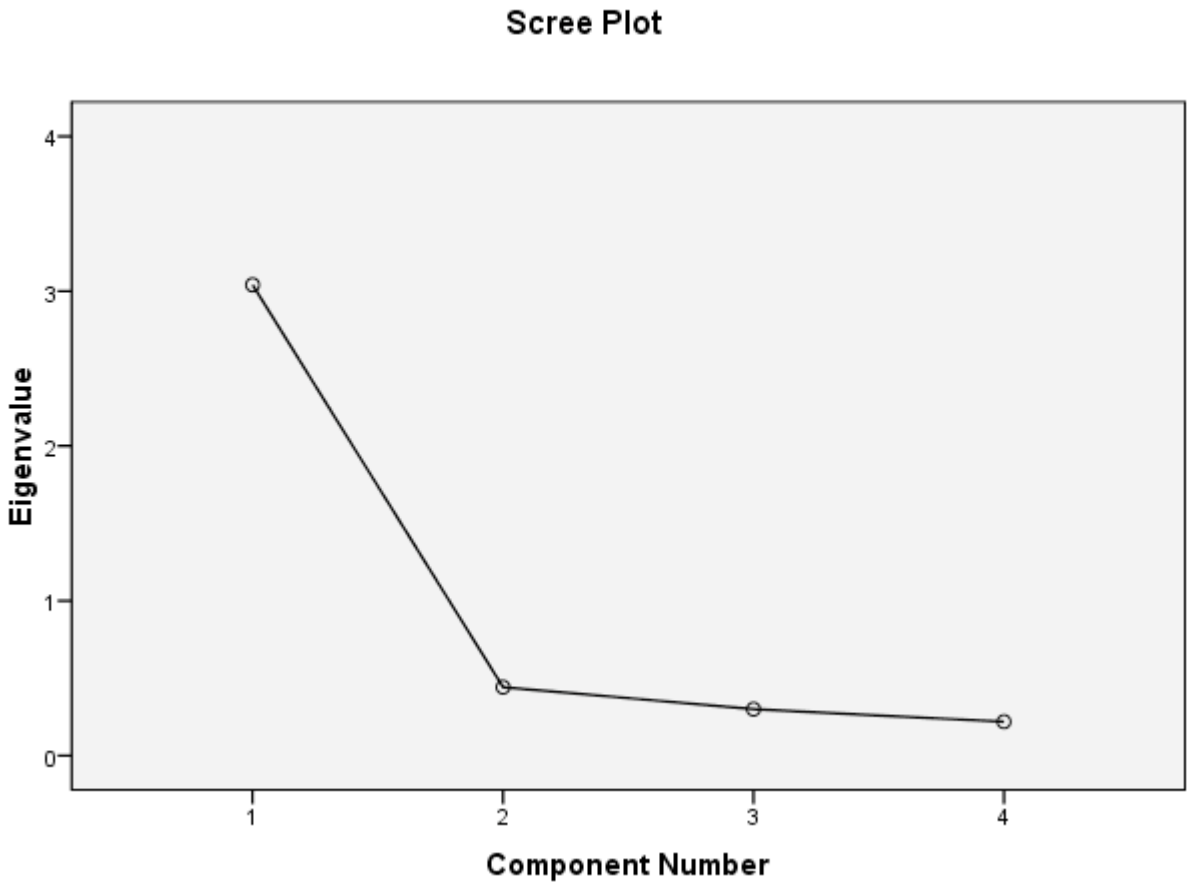

Figure 18. Scree Plot for *Time* domain

2) Item hierarchy

Research Question 1c: *What is the hierarchy of the items?*

Item hierarchy was evaluated using variable maps. Figure 19 contains the item hierarchy map for *Time* domain subscale. Examining the hierarchy map in Figure 19, mean of persons was 1.74 SDs greater than the item mean which indicates acceptable targeting.

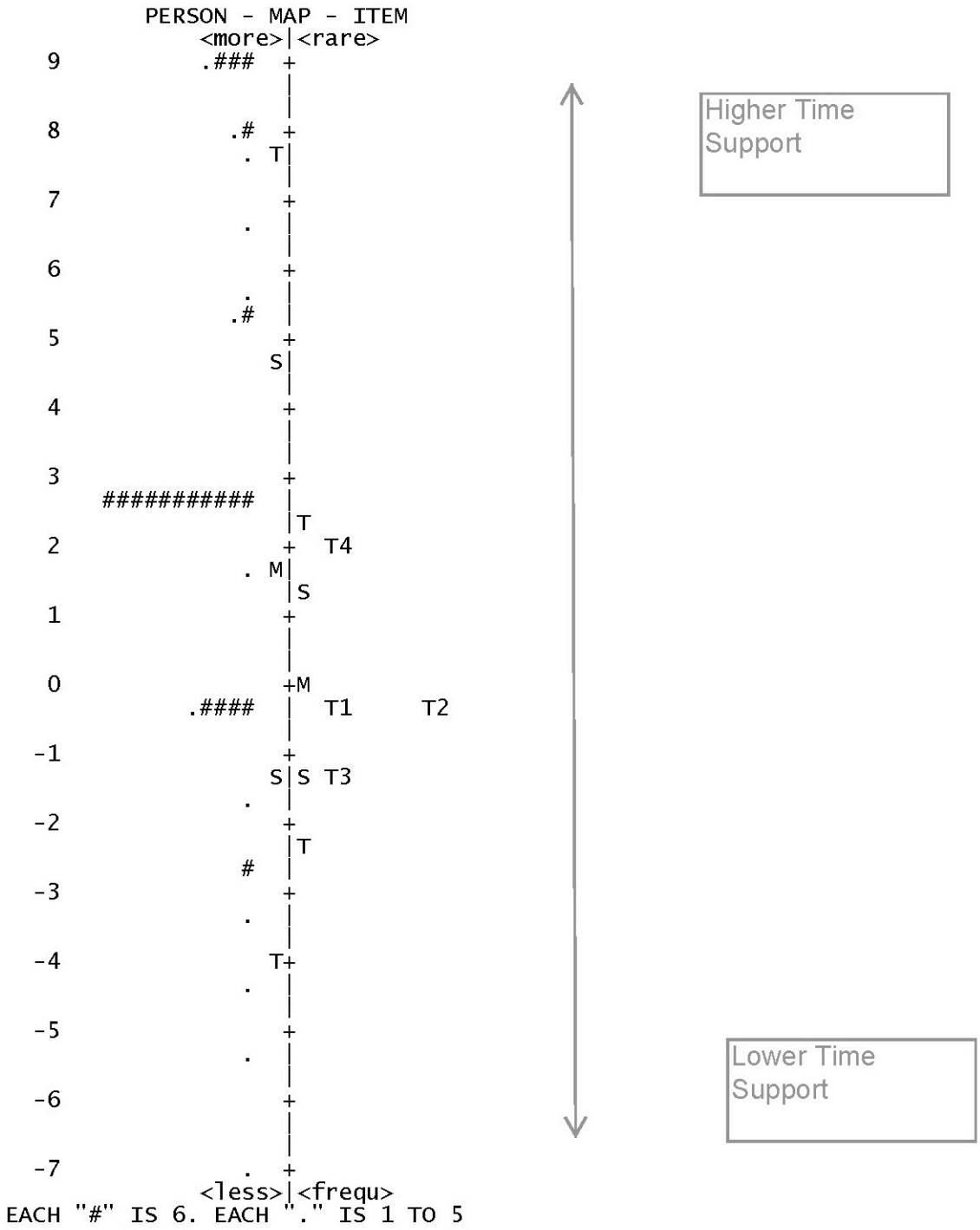

Figure 19. Item Map for *Time* domain

3) Rating scale structure

Research Question 1d: *What is the functioning of the rating scale?*

Table XXXIV illustrates the results of the functioning of the rating scale. The OBSVD AVRGE measure column shows average measures of the four response categories. The response categories, as expected, are increasing monotonically, in proper order and have steps approximately >1.0 logits. The step calibrations are also shown in Table XXXIV under the STRUCTURE CALIBRATN column and the difference between the steps is >1.0 logit. Outfit MNSQ for the rating scale is less than 2 for every category but category one (Strongly disagree).

TABLE XXXIV

SUMMARY OF RATING SCALE STEPS FOR 4 ITEM TIME DOMAIN

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE	
1	1	21	3	-4.51	-4.64	1.06	4.21	NONE	(-6.04)	1 Strongly Disagree
2	2	76	12	-2.27	-2.08	.77	.64	-4.91	-3.35	2 Disagree
3	3	408	64	2.15	2.10	.84	.85	-1.79	2.46	3 Agree
4	4	136	21	6.84	7.04	1.11	1.04	6.71	(7.80)	4 Strongly Agree
MISSING		5	1	3.36						

Probability curve diagram for the *Time* domain is shown in Figure 20. Visual examination of the probability curves illustrates expected four independent peaks, one for each category.

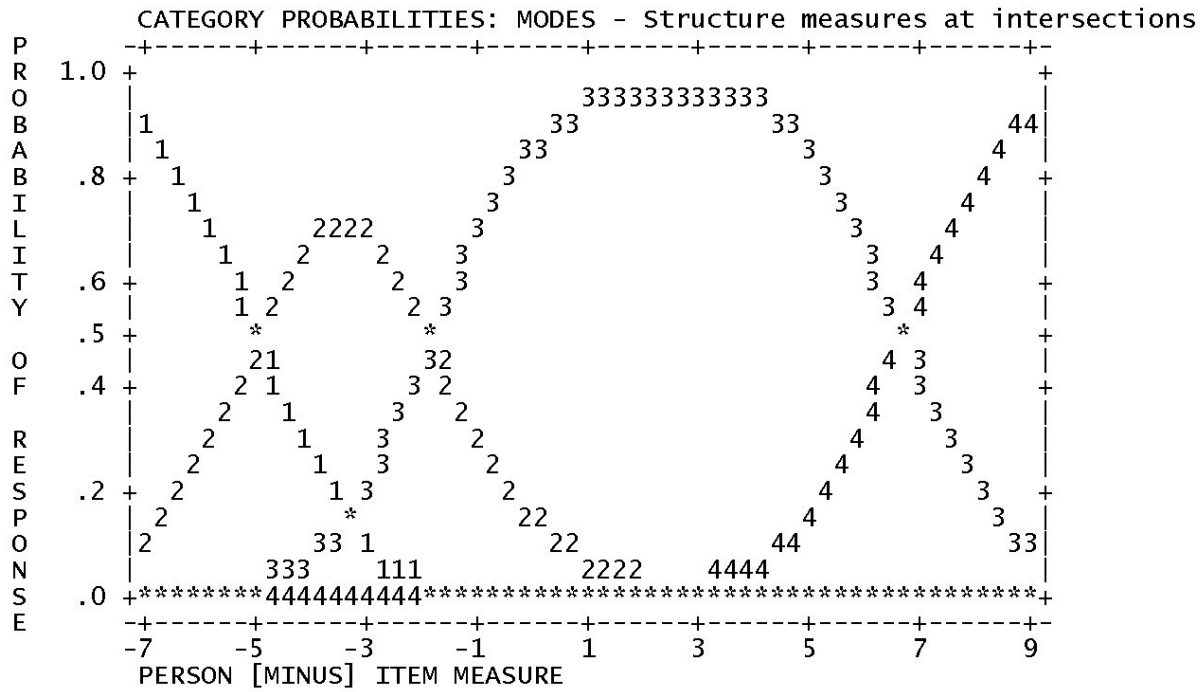

Figure 20. Probability curves for *Time* domain

4) Reliability

Research Question 1e: *What is the reliability of the scale?*

Reliability of the *Time* domain subscale was evaluated using conventional measures of Cronbach's alpha and person and item reliability of Rasch Measurement Model.

i. Using Conventional Measures

Using classical measurement of Cronbach's Alpha, the reliability of *Time* domain was .88 indicating a "good" reliability of the scale.

ii. Using Rasch Analysis

The *model Person reliability index* of the *Time* domain was .61 while *real* was .48. The *model* reliability for items was .96 and *real* was .96. Similarly to Cronbach's alpha, a value of

.80 is considered acceptable for both *item* and *person reliability.* Person and item reliability need to be examined further.

The Person and Item separation index was calculated for the *Time* domain. Person separation of the 4 items was .95 which indicates that the item differentiate between 1.6 statistically distinct groups [based on the calculation for Gp=(4*.95+1)/3]. The scale is useful if it reaches at least two item difficulty strata, which this domain did not attain. The item separation was 4.67, which points out that people discriminate 6.56 distinct groups of the items.

g. Results: Final Nutrition Supports Scale

The subscales from the sections above were combined into one Nutrition Supports Scale (*NSS*) and the same analytic procedures were applied for the 45 item *NSS*. For an overview of 45 items of *NSS* please see Table XXXV. In the next section, results for the final *NSS* analyses are presented.

1) Dimensionality and Model Fit

Research Question 1a: *Do the items fit the Rasch model? Do the items clearly represent the concept of nutrition support?*

Research Question 1b: *What is the dimensional structure of the instrument?*

Dimensionality of the *Nutrition Supports Scale* was examined by Model Fit, Principal Component Analysis (PCA), and Factor Analysis. The results are presented in the following sections.

TABLE XXXV

NUTRITION SUPPORTS SCALE FINAL 45 ITEMS

Financial Domain	
F1	I have a budget to buy fresh produce.
F2	I have access to money to purchase food for a balanced meal (getting appropriate servings from different food groups).
F4	I have access to monies to purchase quality meat/protein at all times.
F5	We have a budget to replace utensils/pots/appliances.
F6	We have enough money to buy as much food as we need.
F8	I have access to monies to purchase food from local stores.
F9	I have transportation to a grocery store.
Preparation and Storage Domain	
PS1	We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices.
PS2	We have adequate pots/pans to prepare food.
PS3	We have enough kitchen appliances (e.g. blender, toaster, fridge) to prepare food.
PS4	We have recipes to prepare food.
PS5	We have enough storage space for food.
PS6	We have enough utensils (spatula, whisks, measuring cups, etc.).
PS7	Our appliances are in good working order.
PS8	I have enough storage containers to use to keep leftover food.
Knowledge Domain	
K1	I know how to cook.
K2	I know how to prepare nutritious meals that taste good.
K3	I understand the benefits of eating fruits and vegetables.
K4	I know how to prepare a balanced meal (getting appropriate servings from different food groups).
K7	I know how to prepare fresh food quickly.
K8	I can follow recipes to make a meal.
K9	I understand portion sizes.
K10	I know how to cook fresh produce (fruits and vegetables).
K11	I understand that there are different food groups.
K13	I know how to prepare specialty diets (e.g. low salt, low fat, low cholesterol, diabetes).

TABLE XXXV (continued)

K14	I know where to buy fresh food locally.
K15	Fresh foods can be purchased near the community home.
K16	I know if the individuals I support are on special diets.
Cultural Values and Lifestyles Domain	
CL2	I like to cook.
CL4	Family members support healthy food choices for individuals with intellectual disabilities (ID).
CL5	I include fruits and vegetables in most meals.
CL6	My coworkers and I communicate between shifts about food and meals.
CL7	I seek nutrition advice from a dietitian or nurse.
CL8	Nutrition is a priority when I support individuals with ID.
Organizational Culture Domain	
OC1	I have support from my manager to improve nutrition for people with ID.
OC2	I have support from my coworkers to improve nutrition for people with ID.
OC3	My workplace offers trainings on food purchase.
OC4	My workplace offers trainings on food budgeting.
OC5	My workplace offers trainings on meal planning.
OC6	My workplace offers trainings on meal preparation.
K19	My organization has a list of resources available related to food and nutrition.
Time Domain	
T1	I have enough time to plan a healthy meal.
T2	I have enough time to grocery shop.
T3	I have enough time to prepare food.
T4	I have enough time to make a meal from scratch (homemade).

i. Model fit

Model fit was evaluated by the Mean Square fit ratio (MNSQ) for items and persons.

a) Item Fit

Overall MNSQ item Infit was .99 and item Outfit 1.06 for the scale. Next, individual MNSQ Infit and Outfit were examined for each item. Table XXXVI presents the items that did not meet the fit statistics criteria for Infit and Outfit of 1.33. Three items, CL7, F6, and F1 misfitted because their Infit and Outfit scores were higher than 1.33. Four items of the *NSS* had Outfit scores greater than 1.33. None of the items were deleted in the subsequent analyses.

TABLE XXXVI
MOST MISFITTING ITEMS OF NUTRITION SUPPORTS SCALE

Iteration #	Logits	Infit MNSQ	Outfit MNSQ	Item(s)	
1	2.02	1.07	**2.45**	OC4	My workplace offers trainings on food budgeting.
1	1.74	1.22	**2.27**	OC6	My workplace offers trainings on meal preparation.
1	1.31	**1.52**	**1.67**	CL7	I seek nutrition advice from a dietitian or nurse.
1	.72	**1.33**	**1.62**	F6	We have enough money to buy as much food as we need.
1	-.01	**1.33**	**1.47**	F1	I have a budget to buy fresh produce.
1	1.25	1.25	**1.46**	F5	We have a budget to replace utensils/pots/appliances.
1	.83	1.32	**1.38**	PS8	I have enough storage containers to use to keep leftover food.

b) <u>Person Fit</u>

The effect of individual responses to model fit were examined next. The total person outfit MNSQ is 1.06 indicating 6% higher respondent variability than expected. Forty seven individuals did not fit the model and had outfit higher than 1.33. This constitutes 29% of the sample. There are several possible explanations for a large sample misfit. First, since Rasch Model assumes unidimenisionality, the large person misfit shows that the scale is not unidimensional in nature. Second, there may be a presence of Differential Item Functioning (DIF). For this, the dataset was divided into persons who showed high levels of misfit (n=47)

and persons who fit the model (n=116). Demographic differences between the two samples were explored. There were no significant demographic differences in the samples with the exception of three factors: living status – number of people in household, education, and individuals who were not directly involved in meal preparation (but did do food purchase and meal planning). These differences will be explored and presented in DIF section.

ii. Principal Component Analysis

PCA was evaluated following three criteria: 1) unexplained variance >40%, 2) unexplained variance explained by the first contrast <15%, and 3) eigenvalue of unexplained variance explained by the first contrast being less than 2. Table XXXVII presents the results of PCA of the *NSS*. PCA of the 45 items of the *NSS* showed that the variance explained by measure was acceptable 42.2%. Unexplained variance explained by the first factor was 8.5% which was less than recommended criteria. Further, the eigenvalue of unexplained variance explained by the first contrast was 6.6 was higher than the recommended less than 2 eigenvalue criteria. The PCA evaluation of met two out of three criteria for unidimensionality. Further, we explored dimensionality by using classical methods of factor analysis.

TABLE XXXVII
STANDARDIZED RESIDUAL VARIANCE (IN EIGENVALUE UNITS)
FOR NUTRITION SUPPORTS SCALE

	Empirical			Modeled
Total variance in observations	77.9	100.0%		100.0%
Variance explained by measures	32.9	42.2%*		44.3%
Unexplained variance (total)	45.0	57.8%	100.0%	56.8%
Unexplained variance in 1st contrast	‡6.6	8.5%†	14.8%	

* >40% recommended.
† <15% recommended.
‡ <2 optimal.

iii. Factor Analysis

Factor analysis of the 45 item-*NSS* was performed. As expected, factor analysis showed multiple factors in the *NSS*. Table XXXVIII shows 10 factors that had eigenvalues higher than 1. Six expected factors (for six domains) contribute to 62.12% of variance. The remaining three factors had fairly small eigenvalues that were contributing about 10% of variance. Figure 21 indicates a graphical representation of the *Nutrition Supports Scale*. Examining the Scree plot (Figure 21) it also points to six factors (domains) that represents the *Nutrition Supports Scale*.

A Varimax Rotated Component Matrix was used to examine factor loadings on the six factors. Table XXXIX presents the item loadings on the six factors of *NSS*. Scores that were marked with a star were expected loadings, bolded scores indicate all loadings >.3, and bold and underline scores indicate the strongest loadings. Overall, the items loaded on the expected factors. Seven items in the *Financial* domain loaded most strongly on the expected domain with the exception of item F5 (*We have a budget to replace utensils/pots/appliances*). The strongest

loading for item F5 was on *Cultural Values and Lifestyles* domain and then on *Preparation and Storage.* Further, item F9 (*I have transportation to a grocery store*) loaded on *Knowledge* and *Preparation and Storage* domains.

Eight items in the *Preparation and Storage* domainloaded on the expected domain. There were three items that also loaded on other domains. For example, items PS1 (*We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices*) also loaded on the *Knowledge* and *Financial* domains; item PS4 (*We have recipes to prepare food*) loaded strongest on *Organizational Culture*, and item PS5 (*We have enough storage space for food*) loaded on the *Knowledge* domain.

TABLE XXXVIII

FACTOR ANALYSIS VARIANCE EXPLAINED FOR NUTRITION SUPPORTS SCALE

	Initial Eigenvalues		
Factor	Total	% of Variance	Cumulative %
1	14.797	32.882	32.882
2	4.441	9.869	42.751
3	3.181	7.069	49.820
4	2.102	4.671	54.491
5	1.963	4.361	58.852
6	**1.465**	**3.255**	**62.107**
7	1.333	2.963	65.070
8	1.267	2.815	67.885
9	1.080	2.400	70.285
10	1.004	2.232	72.517

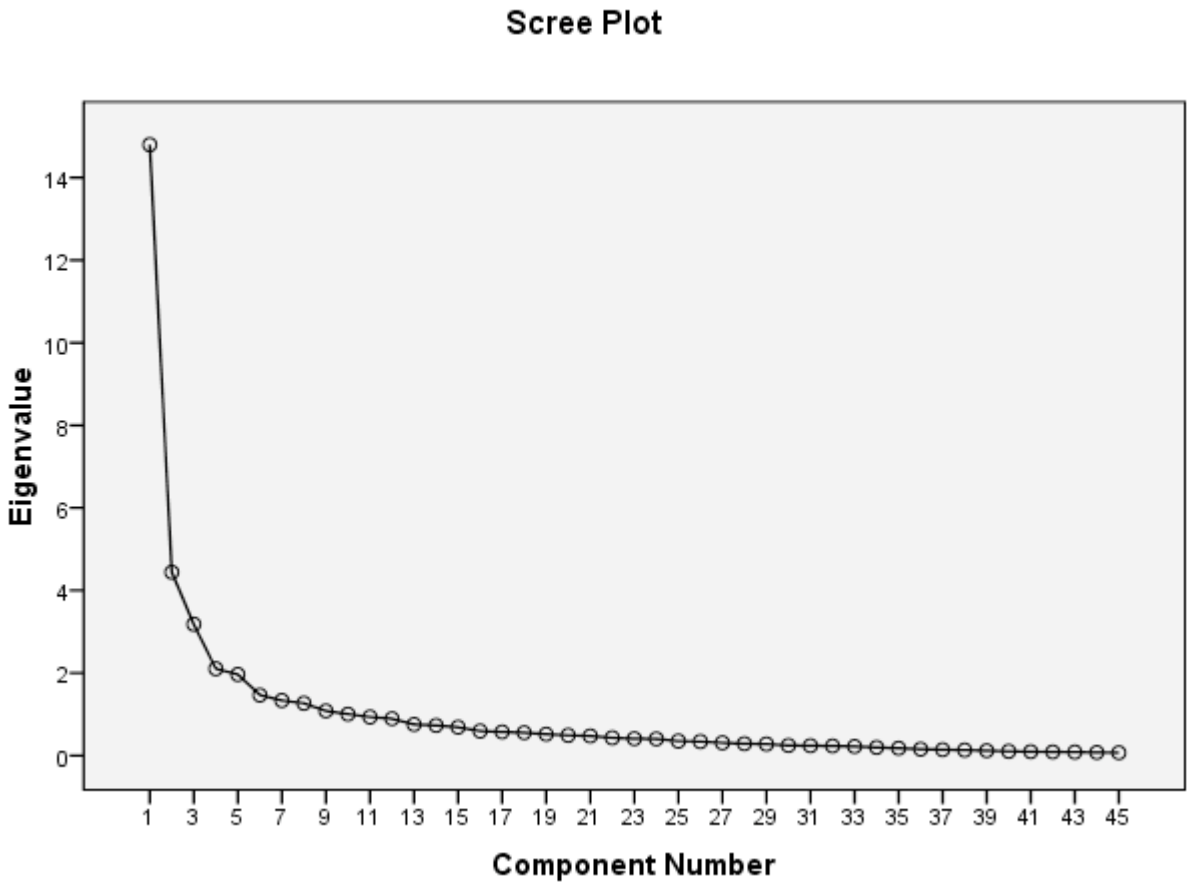

Figure 21. Scree Plot for *Nutrition Supports Scale*

All thirteen *Knowledge* domain items loaded on the expected domain. Two items, K13, K15 weakly loaded on the unexpected domain of *Cultural Values and Lifestyles* and item K15 loaded on the *Time* domain (Table XXXIX).

Six items that were expected to load on the *Cultural Values and Lifestyles* domain had most problematic loadings. Four out of six items loaded as expected, however, item CL2 (*I like to cook*) did not load on the expected domain at all. Instead, it loaded on the *Knowledge* domain.

Further, item CL5 (*I include fruits and vegetables in most meals*) did not load strongly on the expected factor but on the *Knowledge* domain.

Seven items in the *Organizational Culture* domain also had some unexpected loadings. Five out of seven items loaded on the expected factor. However, two items, OC1 loaded on the *Knowledge* and the *Cultural Values and Lifestyles* and OC2 loaded on the *Cultural Values and Lifestyles* domain.

Lastly, four items from the *Time* domain loaded most strongly on the expected factor. However, items T1, T2, and T3 loaded on the *Knowledge* domain.

Person product moment correlation (PPMC) between the six domains and a complete scale was calculated. Table XL shows the PPMC results. PPMC between the six domains ranged from .344-.624. All of the correlations were significant at the $p<0.001$ level. The results indicate moderate but significant level of correlation which is expected since each subscale is designed to represent a different domain of nutrition support. Further, PPMC between the domains and the complete *NSS* ranged from .653-.809 with every correlation significant at the $p<0.001$ level.

TABLE XXXIX
FACTOR LOADINGS FOR THE NUTRITION SUPPORTS SCALE

Rotated Component Matrix

	Domains					
Financial Domain Items	**Knowledge**	**Preparation and Storage**	**Org. Culture**	**Financial**	**Time**	**Cultural Values and Lifestyles**
F1 I have a budget to buy fresh produce.	.163	.004	.133	**.708***	-.080	.236
F2 I have access to money to purchase food for a balanced meal.	.230	.114	.057	**.794***	.042	.205
F4 I have access to monies to purchase quality meat/protein at all times.	.160	.166	-.011	**.838***	.146	.109
F5 We have a budget to replace utensils/pots/appliances.	-.140	**.352**	.121	**.325***	.161	**.501**
F6 We have enough money to buy as much food as we need.	-.017	.280	.183	**.511***	.165	.195
F8 I have access to monies to purchase food from local stores.	.170	.207	.042	**.680***	.148	-.104
F9 I have transportation to a grocery store.	**.416**	**.302**	-.016	**.494***	.103	.011

* expected loading.

Bold – loading >.3.
Underline – strongest loading.

TABLE XXXIX (continued)

Preparation and Storage Domain Items	Domains					
	Knowledge	Preparation and Storage	Org. Culture	Financial	Time	Cultural Values and Lifestyles
PS1 We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices.	**.420**	**.482***	.040	**.497**	-.042	-.073
PS2 We have adequate pots/pans to prepare food.	.063	**.802***	.072	.186	.144	.157
PS3 We have enough kitchen appliances to prepare food.	.241	**.765***	.079	.127	.087	.109
PS4 We have recipes to prepare food.	.159	**.469***	**.484**	**.316**	-.151	.089
PS5 We have enough storage space for food.	**.353**	**.550***	.039	.161	.127	.136
PS6 We have enough utensils.	.280	**.725***	.236	.071	.070	.037
PS7 Our appliances are in good working order.	.144	**.753***	.013	.074	.065	.024
PS8 I have enough storage containers to use to keep leftover food.	.035	**.516***	.218	.237	.154	.278

* expected loading

Bold – loading >.3

Underline – strongest loading

TABLE XXXIX (continued)

	Domains					
Knowledge Domain Items	**Knowledge**	**Preparation and Storage**	**Org. Culture**	**Financial**	**Time**	**Cultural Values and Lifestyles**
K1 I know how to cook.	**.749***	.080	.071	.111	.142	-.068
K2 I know how to prepare nutritious meals that taste good.	**.811***	.040	.117	.082	.249	-.114
K3 I understand the benefits of eating fruits and vegetables.	**.739***	.137	-.063	.053	.006	.247
K4 I know how to prepare a balanced meal.	**.769***	.069	.122	-.053	.129	.283
K7 I know how to prepare fresh food quickly.	**.753***	.055	.105	.186	.252	.034
K8 I can follow recipes to make a meal.	**.816***	.103	.064	.149	.043	.022
K9 I understand portion sizes.	**.780***	.131	.068	.127	.063	.184
K10 I know how to cook fresh produce.	**.665***	.101	.171	.065	.160	-.077
K11 I understand that there are different food groups.	**.711***	.283	.013	.088	.064	.056
K13 I know how to prepare specialty diets.	**.641***	.010	.160	-.032	-.004	**.378**
K14 I know where to buy fresh food locally.	**.666***	.147	-.088	.185	**.399**	.135

TABLE XXXIX (continued)

	Domains					
Knowledge Domain Items	**Knowledge**	**Preparation and Storage**	**Org. Culture**	**Financial**	**Time**	**Cultural Values and Lifestyles**
K15 Fresh foods can be purchased near the community home.	**.586***	.269	-.040	.139	**.322**	.131
K16 I know if the individuals I support are on special diets.	**.662***	.189	.007	.226	.084	.129
Cultural Values and Lifestyles Domain Items	**Knowledge**	**Preparation and Storage**	**Org. Culture**	**Financial**	**Time**	**Cultural Values and Lifestyles**
CL2 I like to cook.	**.654**	.052	.036	.107	.109	-.008*
CL4 Family members support healthy food choices for individuals with ID.	.111	**.333**	**.301**	.179	.071	**.343***
CL5 I include fruits and vegetables in most meals.	**.547**	.213	.046	.143	.190	.214*
CL6 My coworkers and I communicate between shifts about food and meals.	.176	.074	.267	.103	.157	**.594***
CL7 I seek nutrition advice from a dietitian or nurse.	.162	-.068	**.433**	.201	-.145	**.399***
CL8 Nutrition is a priority when I support individuals with ID.	**.525**	.142	.155	.138	-.041	**.408***

* expected loading

Bold – loading >.3
Underline – strongest loading

TABLE XXXIX (continued)

Organizational Culture Domain Items	Domains					
	Knowledge	Preparation and Storage	Org. Culture	Financial	Time	Cultural Values and Lifestyles
OC1 I have support from my manager to improve nutrition for people with ID.	**.507**	.194	.161*	.216	.159	**.472**
OC2 I have support from my coworkers to improve nutrition for people with ID.	.265	.249	.055*	.080	.112	**.625**
OC3 My workplace offers trainings on food purchase.	.086	.082	**.876***	.009	.180	.106
OC4 My workplace offers trainings on food budgeting.	-.042	-.030	**.848***	.036	.144	.169
OC5 My workplace offers trainings on meal planning.	.080	.175	**.882***	.028	.111	.019
OC6 My workplace offers trainings on meal preparation.	.012	.114	**.872***	.001	.045	.039
K19 My organization has a list of resources available related to food and nutrition.	.239	.200	**.575***	.144	.056	.158

* expected loading

Bold – loading >.3

Underline – strongest loading

TABLE XXXIX (continued)

Time Domain Items	Domains					
	Knowledge	Preparation and Storage	Org. Culture	Financial	Time	Cultural Values and Lifestyles
T1 I have enough time to plan a healthy meal.	**.382**	-.027	.138	.167	**.772***	.058
T2 I have enough time to grocery shop.	**.344**	.126	.077	.224	**.718***	.182
T3 I have enough time to prepare food.	**.344**	.220	.179	.118	**.744***	.125
T4 I have enough time to make a meal from scratch.	.198	.193	.145	-.062	**.763***	.032

* expected loading

Bold – loading >.3

Underline – strongest loading

TABLE XL
CORRELATION TABLE OF SIX DOMAINS AND *NSS*

	Financial	**Preparation and Storage**	**Knowledge**	**Cultural Values and Lifestyles**	**Organizational Culture**	**Time**	***NSS***
Financial	1.000						
Preparation and Storage	.574**	1.000					
Knowledge	.413**	.449**	1.000				
Cultural Values and Lifestyles	.491**	.501**	.624**	1.000			
Organizational Culture	.354**	.445**	.367**	.548**	1.000		
Time	.344**	.361**	.546**	.465**	.430**	1.000	
NSS	.708**	.778**	.809**	.798**	.684**	.653**	1.000

**Correlation is significant at the p<0.001 level (2-tailed).

2) Item hierarchy

Research Question 1c: *What is the hierarchy of the items?*

Item hierarchy was examined using variable maps. Figure 22 contains the item hierarchy map for the *NSS*. Targeting of items to the sample is observed in the variable map where item and person targeting is determined by examining the mean of person relative to the mean of items. If the person mean is greater than 2 standard deviations (SD) of the item mean the instrument is considered mistargeted. Examining the hierarchy map in Figure 22 the mean of persons was 1.33 SDs greater than the item mean, which indicates acceptable targeting.

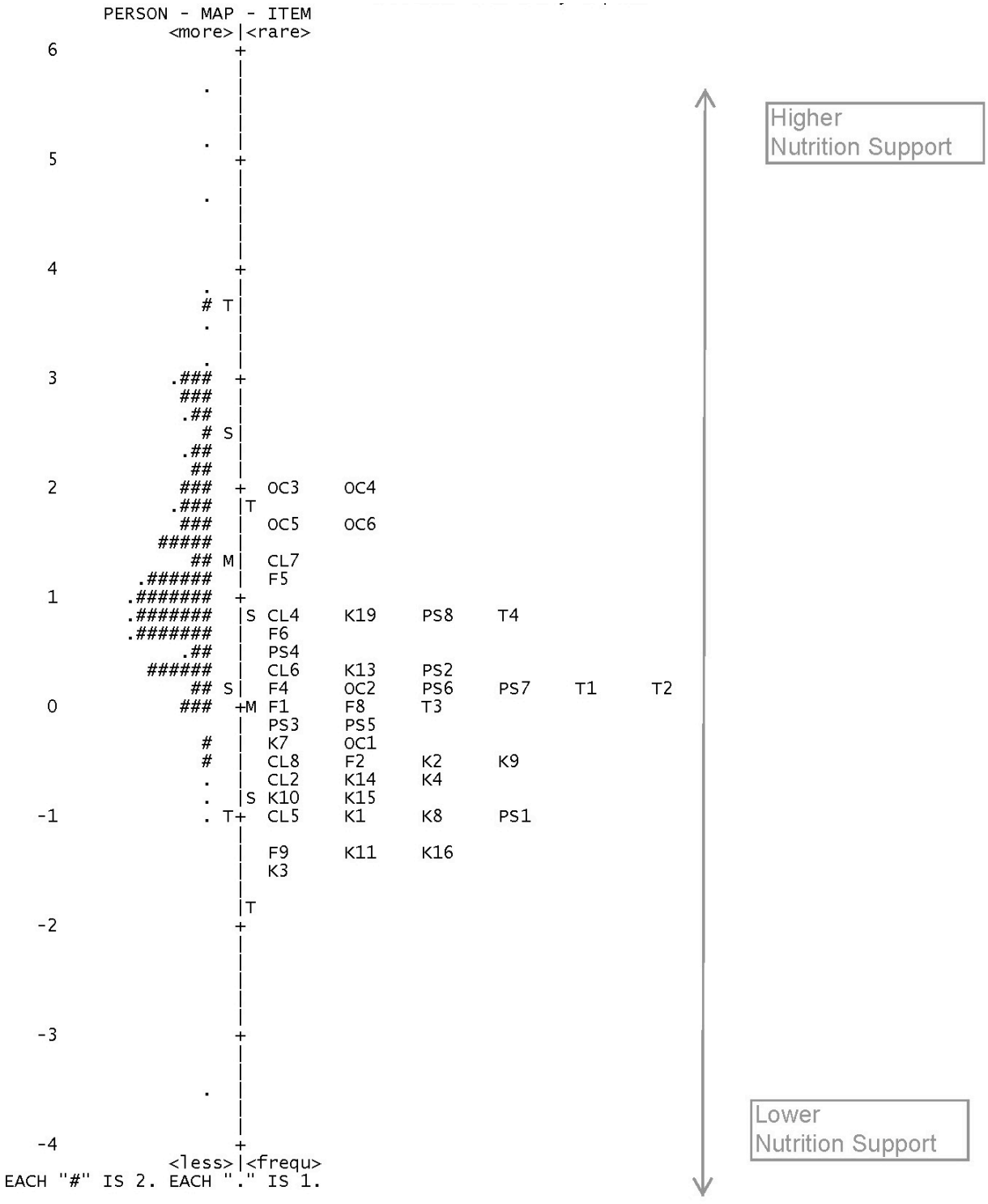

Figure 22. Item Map for *Nutrition Supports Scale*

3) Rating scale structure

Research Question 1d: *What is the functioning of the rating scale?*

Table XLI presents the results of the functioning of the rating scale of the *NSS*. The OBSVD AVRGE measure column shows average measures of the four response categories. The response categories, as expected, are increasing monotonically, in proper order and have steps approximately >1.0 logits. The step calibrations are also shown in Table XLI under the STRUCTURE CALIBRATN column and the difference between the steps is approximately >1.0 logit. Lastly, Outfit MNSQ for the rating scale is less than 2 for each category.

TABLE XLI
SUMMARY OF RATING SCALE STEPS FOR 45 ITEMS
NUTRITION SUPPORTS SCALE

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE	
1	1	325	4	-.81	-1.10	1.28	1.46	NONE	(-2.87)	1 Strongly Disagree
2	2	977	13	.10	.12	.99	1.01	-1.54	-1.14	2 Disagree
3	3	3619	50	1.09	1.16	.97	1.06	-.67	.85	3 Agree
4	4	2325	32	2.53	2.45	.92	.94	2.21	(3.35)	4 Strongly Agree
MISSING		89	1	.98						

The *NSS* probability curve diagram is shown in Figure 23. Visual examination of the probability curves illustrates expected four independent peaks, one for each category.

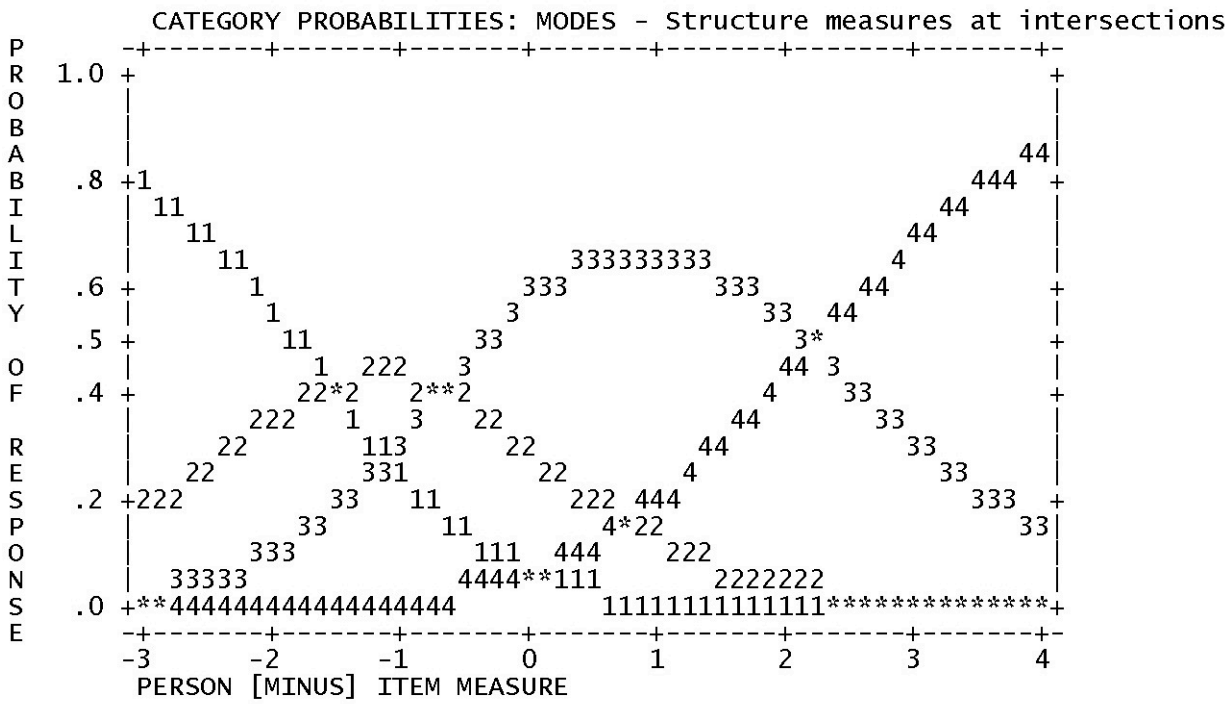

Figure 23. Probability curves for *Nutrition Supports Scale*

4) Reliability

Research Question 1e: *What is the reliability of the scale?*

Reliability of the *NSS* was evaluated using the conventional measures of Cronbach's alpha and person and item reliability of Rasch Measurement Model. For a quick overview of domain and complete *NSS* reliabilities please see Table XLII.

i. Using Conventional Measures

Using classical measurement of Cronbach's Alpha, the reliability of the *NSS* was .95. According to George and Mallery (2003), Cronbach's Alpha >.90 is considered "excellent" reliability for the scale.

ii. Using Rasch Analysis

The *model Person reliability index* of the *NSS* was .95 while *real* was .93. The *model* reliability for items was .98 and *real* was .98. Similarly to Cronbach's alpha, a value of .80 is considered acceptable for both *item* and *person reliability*.

The Person and Item separation index was calculated for the *NSS*. A scale must reach out to at least two item difficulty strata to be useful for scale definition. Person separation of the 45 items was 3.62 which indicates that the item differentiate between 5.16 statistically distinct group [based on the calculation for Gp=(4*3.62+1)/3]. The item separation was 6.38, which points out that people discriminate 8.84 distinct groups of the items.

TABLE XLII
SUMMARY OF RELIABILITIES FOR SUBSCALE DOMAINS AND NUTRITION SUPPORTS SCALE

Domain	Cronbach's Alpha	Person Reliability		Item Reliability	
		Real	Model	Real	Model
Financial	.82	.75	.80	.97	.98
Preparation and Storage	.87	.77	.82	.95	.96
Knowledge	.94	.88	.90	.95	.95
Cultural Values and Lifestyles	.71	.56	.66	.97	.98
Organizational Culture	.86	.78	.83	.99	.99
Time	.88	.48	.61	.96	.96
NSS	.95	.93	.95	.98	.98

5) Differential Item Functioning

Research Question 3: *How are staff's sociodemographic factors related to Nutrition Supports Scale? (Pathway C and D in Figure 1)*

Respondents from different groups with the same ability/skill may have a different probability of endorsing a certain response on the item. Differential Item Functioning may arise in individuals with different sociodemographic factors. In order to explore this phenomenon further, we examined person fit and sociodemographic differences between the misfitting sample versus the sample that fit the model. There were a total of 46 individuals out of 163 who misfitted. Upon close examination, it became evident that the two sub-samples differed on three sociodemographic variables. Three Differential Item Functioning (DIF) analyses were done for three comparisons using the following variables: 1) individuals who prepare meals compared to those who do not, 2) living status, individuals who live alone versus individuals who live with at least one other person, and 3) job tenure, individuals who had less than 5 years of experience in working with individuals with ID and individuals who had 5 or more years of experience. Finally, due to small sample sizes these analyses were solely explorative.

Item calibration was calculated for individuals who were involved in meal preparation versus individuals who were not. There were only 12 individuals out of 163 who were not involved in meal preparation. However, these individuals still fit the study participant criteria because they were involved in either meal planning and/or food purchase. Figure 24 shows the visual differences of item difficulty across individuals who prepare meals versus individuals who do not. Six out of 45 NSS items had logit difference >.58, which indicates that a significant DIF is present. Table XLIII shows the magnitude of the differences in logit measures between these

two groups. The negative sign indicates that the item is much easier to endorse for the first group (individuals who prepare meals) than the second group (individuals who do not prepare meals). The items with negative logit difference DIF belong to the *Knowledge* and *Time* domains and specifically deal with meal preparation skills. Therefore, individuals who prepare meals are more likely to "know how to prepare nutritious meals that taste good," "know how to cook fresh produce," "understand that there are different food groups," and "have enough time to make a meal from scratch".

Further, item calibration was calculated for individuals who lived alone and individuals who lived with at least one more person. There were 32 individuals out of 163 who lived on their own. Figure 25 shows the visual differences of item difficulty across individuals who prepare meals versus individuals who do not. Seven out of 45 NSS items had logit difference >.58, which indicates that a significant DIF is present. Table XLIV shows the magnitude of the differences in logit measures between these two groups. The negative sign indicates that the item is much easier to endorse for the first group (individuals who live alone) than the second group (individuals who do not live alone). Individuals who live alone were more likely to endorse "have transportation to a grocery store," "we have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices," to "understand the benefits of eating fruits and vegetables," and "know how to prepare a balanced meal."

Lastly, DIF item calibrations were calculated for two categories of job tenure (individuals with less than 5 years of experience and individuals with 5 or more years of experience). There were 73 individuals out of 163 who had less than 5 years of experience of working with individuals with ID. Figure 26 shows the visual differences of item difficulty across individuals who worked less than 5 years and individuals who worked five or more years with people with

ID. There was only one item, item T4 (*I have enough time to make a meal from scratch*) that exhibited the presence of DIF. DIF contrast for this item was -0.74 which indicates that individuals with less job tenure "have enough time to make a meal from scratch."

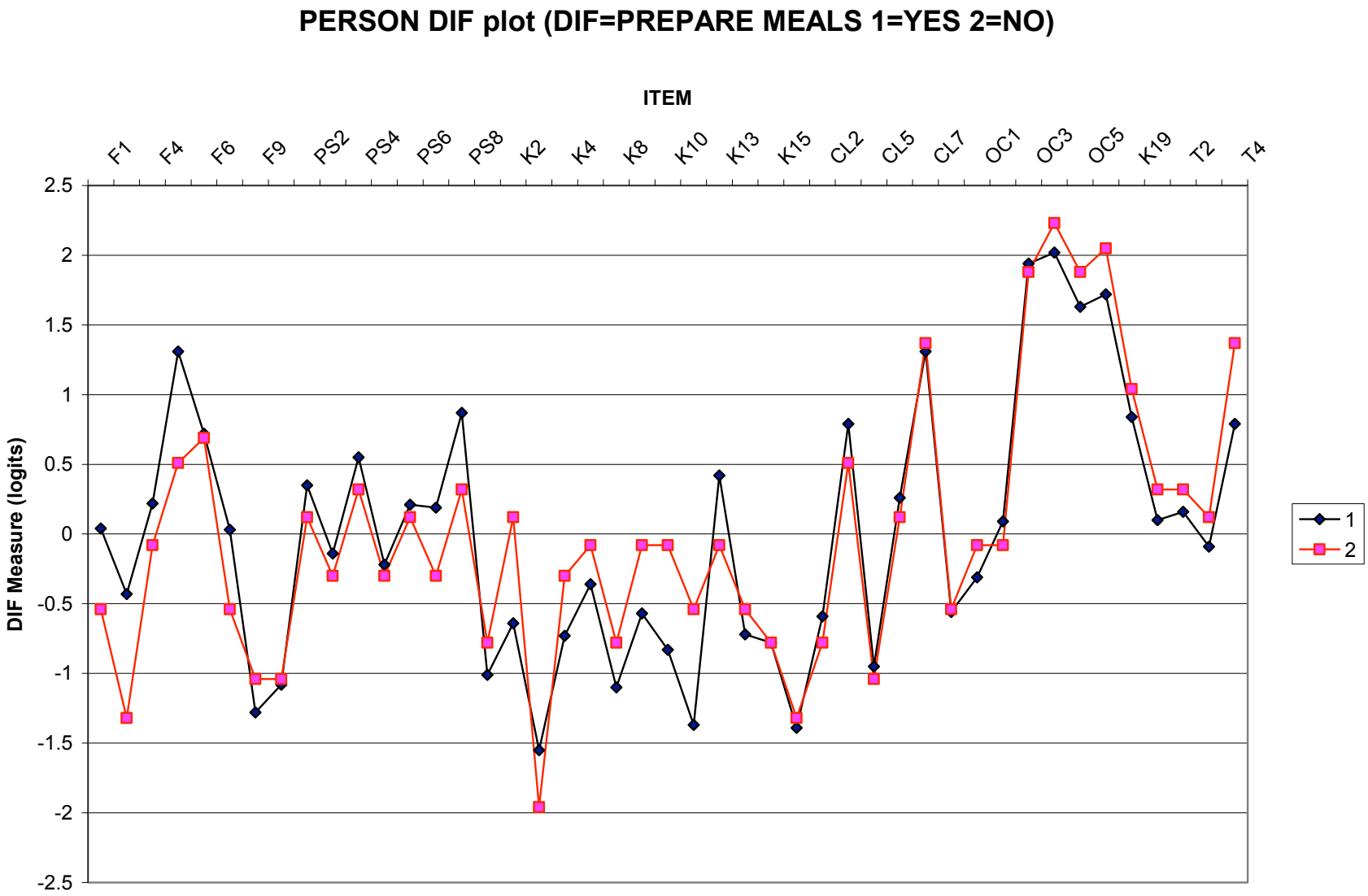

Figure 24. DIF plot by meal preparation

TABLE XLIII

SIGNIFICANT DIF MEASURE AND CONTRAST BY MEAL PREPARATION

Item	DIF Measure Meal preparation = Yes	DIF Measure Meal preparation = No	DIF Contrast
F1 I have a budget to buy fresh produce.	0.04	-0.54	.58
F2 I have access to money to purchase food for a balanced meal.	-0.43	-1.32	0.89
K2 I know how to prepare nutritious meals that taste good.	-0.64	0.12	-0.76
K10 I know how to cook fresh produce.	-0.83	-0.08	-0.75
K11 I understand that there are different food groups.	-1.37	-0.54	-0.83
T4 I have enough time to make a meal from scratch.	.79	1.37	-.58

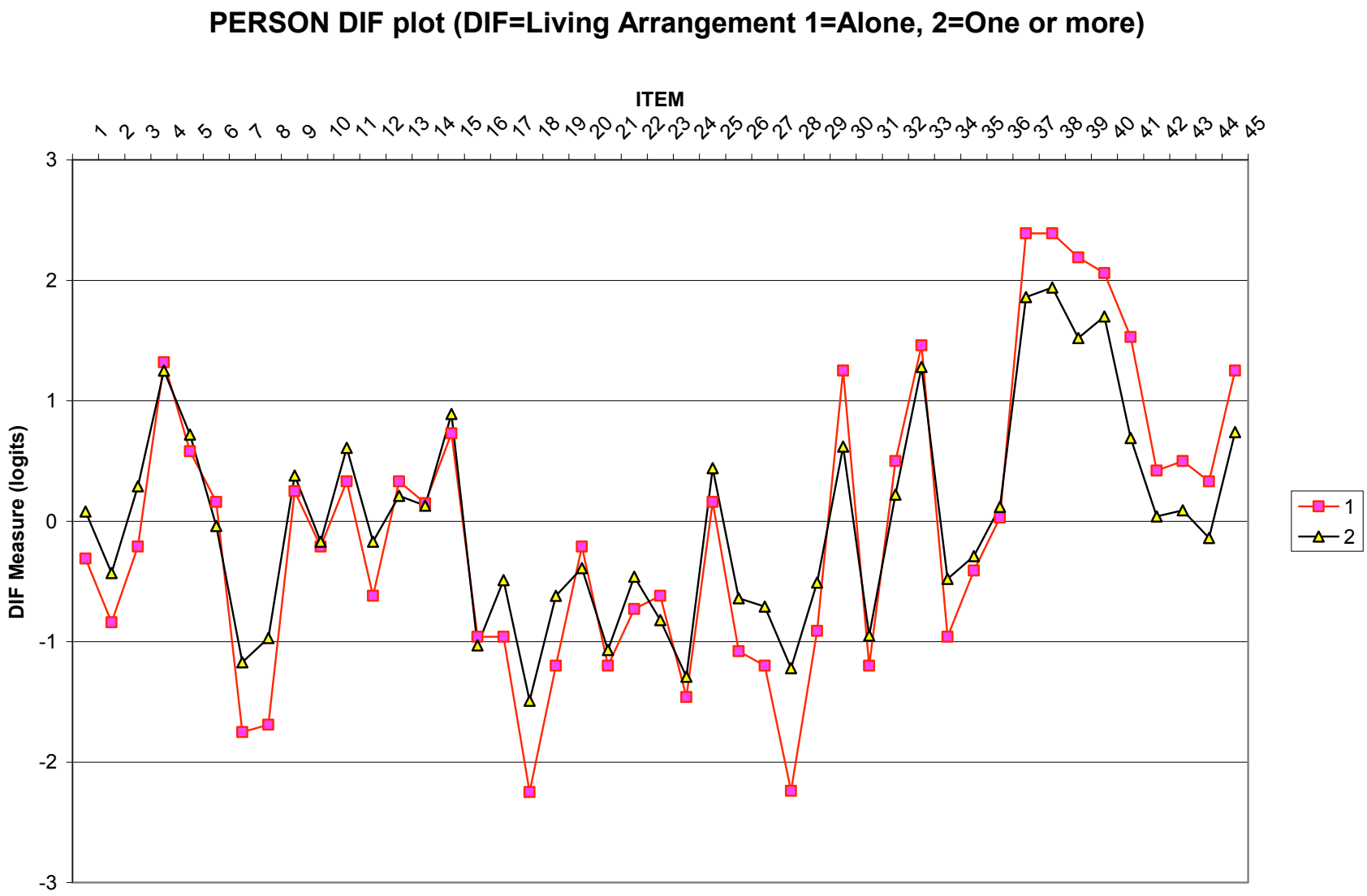

Figure 25. DIF plot by living arrangement

TABLE XLIV

SIGNIFICANT DIF MEASURE AND CONTRAST BY LIVING ARRANGEMENT

Item		DIF Measure Living Arrangement = Alone	DIF Measure Living Arrangement = One or more	DIF Contrast
F9	I have transportation to a grocery store.	-1.75	-1.17	-0.58
PS1	We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices.	-1.69	-0.97	-0.72
K3	I understand the benefits of eating fruits and vegetables.	-2.25	-1.49	-0.76
K4	I know how to prepare a balanced meal (getting appropriate servings from different food groups).	-1.2	-0.62	-0.58
CL4	Family members support healthy food choices for individuals with intellectual disabilities (ID).	1.25	0.62	0.63
OC5	My workplace offers trainings on meal planning.	2.19	1.52	0.67
K19	My organization has a list of resources available related to food and nutrition.	1.53	0.69	0.84

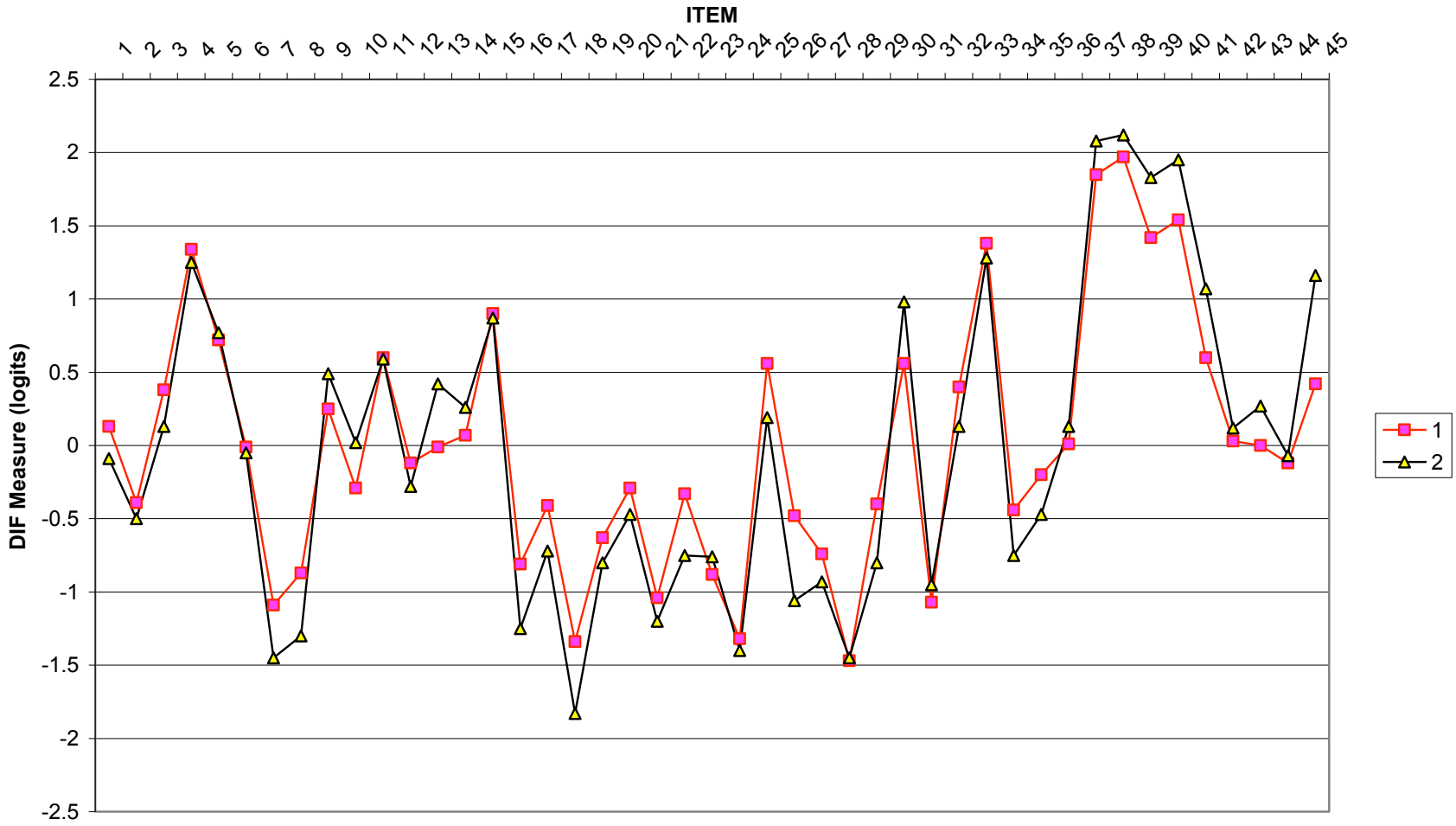

Figure 26. DIF plot by job tenure

6) Predictive Validity

Research Questions:

2) *What is the predictive validity of the Nutrition Supports Scale?*

   a. *How is the Nutrition Supports Scale related to External Resources (Health Promotion Policies and Organizational Commitment to Health Promotion)? (Pathway A in Figure 1)*

   b. *How is the Nutrition Supports Scale related to Internal Resources (Self-Efficacy, Perceived Workload and Nutrition Knowledge) (Pathway B in Figure 1)*

i. External Resources: Health Promotion Policies

Research Question: *How is the Nutrition Supports Scale related to Health Promotion Policies?*

A Pearson's product-moment correlation coefficient was computed to assess the relationship between the *NSS,* six subscale domains and the *Health Promotion Policies* scale. An analysis using Pearson's correlation coefficient between the *NSS* and *Health Promotion Policies* scale does not indicate a statistically significant linear relationship ($r=.157$, $p<0.077$). However, a statistically significant weak positive relationship is found between the *Health Promotion Policies* and the *Cultural Values and Lifestyles* subscale ($r=.197$, $p<0.05$) and a moderate positive relationship between *Health Promotion Policies* and *Organizational Culture* ($r=.377$, $p<0.001$). There were no other statistically significant relationships. Please see Table XLV for correlations of *NSS*, subscales, and the *Health Promotion Policies* scale.

TABLE XLV

CORRELATION TABLE OF *NSS,* SIX DOMAINS AND EXTERNAL AND INTERNAL RESOURCES

	Financial	Preparation and Storage	Knowledge	Cultural Values and Lifestyles	Organizational Culture	Time	*NSS*
External Resources							
Health Promotion Policies	.045	.150	.024	.197*	.377***	.063	.157
Organizational Commitment to Health Promotion	.150	.290***	.236**	.411***	.471***	.185*	.375***
Internal Resources							
Self-Efficacy	.303***	.113	.507***	.457***	.182*	.326***	.426***
Perceived Workload	.027	-.110	.022	-.103	-.150	-.143	-.096
Nutrition Knowledge	.164*	.158*	.279***	.097	.008	.006	.213*

*p<0.05 **p<0.01 ***p<0.001 level (2-tailed).

ii. External Resources: Organizational Commitment to Health Promotion

How is the Nutrition Supports Scale related to Organizational Commitment to Health Promotion?

A Pearson's product-moment correlation coefficient was computed to assess the relationship between the *NSS,* six subscale domains and the *Organizational Commitment to Health Promotion* scale. An analysis indicates a statistically significant moderate positive linear relationship between the *NSS* and the *Organizational Commitment to Health Promotion* scale ($r=0.375$, $p<0.001$). Additionally, the correlation between *Organizational Commitment to Health Promotion* and subscale domains also indicate statistically significant positive linear relationships. The only subscale that does not exhibit statistically significant correlation was the *Financial* domain (refer to Table XLV).

iii. Internal Resources: Self-Efficacy

How is the Nutrition Supports Scale related to Self-Efficacy?

An analysis using Pearson's correlation coefficient between the *NSS* and the *Self-Efficacy* scale indicates a statistically significant strong positive linear relationship ($r=0.426$, $p<0.001$). Each subscale with the exception of *Preparation and Storage* shows a statistically significant positive linear relationships (refer to Table XLV).

iv. Internal Resources: Perceived Workload

How is the Nutrition Supports Scale related to Perceived Workload?

An analysis using Pearson's correlation coefficient between the *NSS,* six subscale domains and the *Perceived Workload* scale does not indicate any statistically significant linear relationship ($r= -0.096$, $p<0.267$). Please see Table XLV.

v. Internal Resources: Nutrition Knowledge

How is the Nutrition Supports Scale related to Nutrition Knowledge?

An analysis using Pearson's correlation coefficient indicates a statistically significant positive linear relationship between the *NSS* and the *Nutrition Knowledge* scale ($r=0.213$, $p<0.05$). Additionally, subscale domains of *Financial*, *Preparation and Storage*, and perceived *Knowledge* show statistically significant positive linear relationships with the *Nutrition Knowledge* scale (see Table XLV).

VI. DISCUSSION

This study aimed to develop a reliable and valid measurement scale of nutrition support to evaluate the needs of direct support professionals (DSPs) providing services to individuals with ID residing in community homes. The findings demonstrate that the Nutrition Supports Scale meets psychometric criteria for reliability and construct validity. This measure should provide a useful tool for assessing level of nutrition support available and the type (domains) of nutrition support that is needed. A clearer understanding of nutrition supports in community homes and their relationship to internal and external factors is now possible.

This final chapter will present a discussion of the study findings and contributions from the results of the three study phases. Specifically, the primary study findings from the three phases of the study will be presented. Implications for research, practice, and education related to nutrition support among direct care providers supporting people with ID will be discussed. Lastly, the scope and limitations of this research study will conclude this chapter.

To address the aim of the study, three phases were incorporated: Phase 1: Item Generation; Phase 2: Content Validity, and Phase 3: Construct Validity. The focus of Phase 1 was to generate items around the concept of nutrition supports in community homes, specifically related to meal planning, food purchase and preparation through multiple focus groups with key stakeholders. In Phase 2, the item bank for nutrition supports generated by the focus group and the literature were reviewed through two processes, Expert Panel Review and Cognitive Interviews. These processes aimed to ensure that the themes were appropriate and reflected the concept of nutrition support and that they accurately revealed what was discussed in the focus

groups. Lastly, Phase 3 aimed to evaluate the scale for reliability and construct and predictive validity through a pilot psychometric testing of the Nutrition Supports Scale.

A. Summary of Main Study Findings

Direct support professionals are key personnel charged with menu planning, food purchasing, and meal preparation. Understanding supports to nutrition in community homes can lead to greater understanding of how to target nutrition trainings for staff and improve dietary intake and subsequently decrease health disparities of people with ID who live in community settings. This study provides an initial step in developing a valid and reliable scale that can assess the levels of nutrition supports available for DSPs within their community-based organization.

The meaning of nutrition supports was explored from stakeholders generating an item bank of 89 items within eight domains or topical areas. The initial scale developed through focus groups was reduced to a 64-item scale with six domains following review of the scale by five experts, and seven cognitive interviews. Upon completion of statistical analyses of psychometric properties of the NSS, the scale was further reduced to 45 items and 6 domains. Please see Table XLV.

TABLE XLVI

NUMBER OF ITEMS IN NUTRITION SUPPORTS SCALE AT EACH PHASE

Phase 1	**Phase 2**		**Phase 3**
	Expert Panel Review	**Cognitive Interview**	
89 items (8 domains)	92 items (8 domains)	64 items (6 domains)	45 items (6 domains)

Construct validity for the Nutrition Support Scale (NSS) was demonstrated though Rasch analysis and exploratory factor analysis which extracted six significant factors. Unlike typical reliance on classical approaches to evaluating psychometric properties in scale development, the use of Rasch analysis deviates from True Score Theory by assuming that every item is not created equal nor is it easily answered by all (Bond & Fox, 2007). Rasch analysis is interplay of item difficulty versus person's ability to answer that item and provides information that is not achievable in classical psychometric analysis approaches (Bond & Fox, 2007). Conversely, in evaluating the item loading across each of the domains (subscales) of the NSS, Factor Analysis was used as this cannot be assessed using Rasch Analyses (Linacre, n.d.-c; Thurstone, 1931). Incorporating both approaches, Classical and Rasch, provided results that were unique but complimentary in terms of understanding of the functioning of the NSS subscale and the entire combined NSS. The following section will summarize the prevailing themes for both analytic approaches.

1. Dimensionality and Model Fit

Research Questions:

Do the items fit the Rasch model? Do the items clearly represent the concept of nutritional support?

What is the dimensional structure of the instrument?

Domain subscales of the NSS scale were first explored in order to optimize the functioning of the entire scale. Dimensionality and model fit of the scale were assessed using two Rasch approaches including model fit and Principal Component Analysis (PCA). Further, a classical approach of factor analysis to assess item loadings and evaluate the number of extracted factors was utilized. These analyses were performed within each domain subscale and the final combined NSS.

a. Model fit

Twenty items misfitted during individual domain subscale analyses. This section will present an overview of future steps for the misfitted items. For a list of items and actions taken please see Table XLVII. Two items from the *Financial* domain did not fit the Rasch model. Item F3 (*I can buy fresh foods with food assistance coupons/cards*) may not be appropriate for this subscale because over half of our sample did not use food assistance coupons or cards. Item F7 (*I usually buy food items that are on sale*) upon closer examination did not fit the definition of nutrition support instead was describing staff's purchasing habits and this item is permanently deleted.

Four items in the *Preparation and Storage* domain subscale did not fit the Rasch model. These items seem to have been rather awkward or poorly written therefore they may still fit the definition of nutrition support but further examination and wording clarification may be

necessary to make these items more understandable to respondents. For example, several respondents during survey taking asked the survey administrator to define the term "inventory" in item PS9 (*We keep an inventory of food items in a community home*). Additionally, items PS11 (*I move food with closest expiration date to the front of fridge or cabinet*) and PS12 (*I leave a note on the food that is close to being expired*) had the highest number of re-writes during Phase 2 (Cognitive Interviews and Expert Panel Review). Lastly, item PS10 (*We eat all the food that we purchase*) also had some clarification questions during survey administration since some respondents were confused with the use of "we" in the item. Some organizations do not allow their staff to eat the food that was purchased for the community home for residents with ID.

Six items from the *Knowledge* subscale misfitted using Rasch analysis. Items K17 (*Individuals whom I support ask for fresh fruits and vegetables*) and K18 (*I use measuring utensils to measure portions when serving meals*) did not fit the definition of nutrition support and are permanently deleted. Item K19 (*My organization has a list of resources available related to food and nutrition*) was moved to *Organizational Culture* domain subscale because it represented the domain better. This decision was made upon consultation with the two dissertation committee members. However, items K5 (*I am familiar with the Dietary Guidelines for Americans*), K6 (*I am familiar with MyPyramid*), and K12 (*I know how to make a food budget for a household*) may need to be re-written to reflect knowledge of these two topics more cogently as it is not completely clear why these three items misfitted.

Two items from the *Cultural Values and Lifestyles* domain subscale misfitted. Item CL3 (*I rely on convenience foods*) did not reflect the definition of nutrition support but more the staff's food preparation habits. Further, item CL1 (*I eat the same meal with individuals I*

support) misfitted because many respondents raised an issue of not being allowed to eat the food that is purchased for individuals with ID in the community home due to CBO's rules. Interestingly, during focus groups, participants discussed the importance of staff and individuals with ID eating the same meal together. Participants expressed that congregate meals gave the community home a sense of a family unit. This item presents an interesting concept in need of exploration especially since some focus group participants discussed reasons why meals should not be eaten together. For example, the Management Focus Group discussed financial implications of feeding staff meals during their shifts and the focus group of individuals with ID discussed how some housemates do not necessarily get along (i.e. behavioral issues). This item will be moved into the demographic section and should be explored further in the future.

Four items from the *Organizational Culture* domain did not fit the Rasch model. Two of the items, OC8 (*My organization has a dietitian on staff*) .and OC9 (*My organization has a nurse on staff*) most likely misfitted because the answer tag (Strongly Disagree, Disagree, Agree, Strongly Agree) was not appropriate in this case. The answers to this question should be in a dichotomous Yes/No format. Further, this item tag should be re-written and in the future analyzed as a Partial Credit Rasch Model. Further, wording issues were noticed for item OC7 (*Staffing patterns in the community home where I work are consistent*). During Phase 2 and survey administration this item required further clarification. The item should be re-written and retested.

Finally, two items in the *Time* domain misfitted. Items T5 (*I usually make a list before going grocery shopping*) and T6 (*I follow a menu in the community home where I work*) did not fit the definition of nutrition support and were permanently deleted.

TABLE XLVII
MISFITTED ITEMS FROM PHASE 3

Item		Action
F3	I can buy fresh foods with food assistance coupons/cards.	Deleted
F7	I usually buy food items that are on sale.	Deleted
PS9	We keep an inventory of food items in a community home.	Re-write/Retest
PS12	I leave a note on the food that is close to being expired.	Re-write/Retest
PS11	I move food with closest expiration date to the front of fridge or cabinet.	Re-write/Retest
PS10	We eat all the food that we purchase.	Re-write/Retest
K17	Individuals whom I support ask for fresh fruits and vegetables.	Deleted
K18	I use measuring utensils to measure portions when serving meals.	Deleted
K19	My organization has a list of resources available related to food and nutrition.	Moved to Organizational Culture domain
K5	I am familiar with the Dietary Guidelines for Americans.	Re-write/Retest
K6	I am familiar with MyPyramid.	Re-write/Retest
K12	I know how to make a food budget for a household.	Re-write/Retest
CL3_RE	I rely on convenience foods.	Deleted
CL1	I eat the same meal with individuals I support.	Demographic item
OC8	My organization has a dietitian on staff.	Re-write/Retest
OC9	My organization has a nurse on staff.	Re-write/Retest
OC10	I can access recipes online (computer).	Deleted
OC7	Staffing patterns in the community home where I work are consistent.	Re-write/Retest
T5	I usually make a list before going grocery shopping.	Deleted
T6	I follow a menu in the community home where I work.	Deleted

b. Principal Component Analysis

PCA for most domain subscales and a combined NSS demonstrate acceptable psychometric properties. Two out of three PCA criteria were met for the *Knowledge* domain and NSS. Only one domain, *Organizational Culture* met one out of three PCA criteria, however, factor loadings during the factor analysis portion of these analyses discovered that items with a common stem were loading on the same factor.

c. Factor Analysis

The relationship structure of the items was examined using factor analysis. Most items loaded on their expected factors but some items loaded on multiple factors. Cross loading of these items suggests that the concepts may not be independent concepts. Because of the small sample size, the stability of the factors is in question. Further study is warranted to interpret the relationship of the items that cross loaded on two or three factors. Specifically, items from the *Cultural Values and Lifestyles* subscale should be further examined and the concept definition of *Cultural Values and Lifestyles* needs further clarification. Initially, during Phase 2, this domain was defined as the staff's personal characteristics and habits. During the analyses, it has become evident that this domain should be re-defined to describe the values of the organization and not necessarily that of staff. This is supported with cross loading of items from *Cultural Values and Lifestyle*s and *Organizational Culture* domains, specifically items *I have support from my manager to improve nutrition for people with ID* and *I have support from my coworkers to improve nutrition for people with ID*. In future analyses, combining the two subscales and re-analyzing them may provide us with a better understanding of the interplay between the two

domains. Lastly, future research could also examine cross loaded items for use as a mini screening tool for the entire scale since they may represent multiple domains of nutrition support.

Analysis of the six domain subscales and the NSS demonstrated that each of the final six domains had unidimensional psychometric properties through Rasch and factor analyses and can be used as independent scales. However, a combined NSS, as expected, measures a multidimensional construct and in the future should be examined multidimensional measurement model (M. Wilson & Briggs, 2003).

2. Item hierarchy

Research Question: *What is the hierarchy of the items?*

Item hierarchy was investigated using variable maps. Variable maps determine how well items are targeted to the sample looking at the mean of persons relative to the mean of items. The instrument is mistargeted when person mean is greater than 2 SD of the item mean.

Item hierarchy was acceptable for every subscale including the entire NSS scale with the exception of the *Knowledge* domain. This domain shows scale mistargeting where items in the domain were easily endorsed by this sample. Therefore, the items are too easy for the sample. Further exploration and development of this subscale is needed where development of harder items is warranted. Also, there may be a slight social desirability bias present since individuals were answering questions about their own perception of nutrition knowledge.

3. Rating scale structure

Research Question: *What is the functioning of the rating scale?*

Four criteria used to assess the functioning of the rating scale structure included the following: 1) four response categories were expected to increase monotonically, in proper order, and have steps >1.0 logit; 2) step calibrations are supposed to be in an order that is consistent with the ordering of the rating scale categories with the >1.0 logit difference between steps; 3) Outfit MNSQ should be less than 2 for each category; and 4) probability curves when visually examined must show independent peaks of the rating scale probability curve diagram. Examining rating scale structure for the scale and subscales, all four criteria were met except Outfit MNSQ for the *Time* domain for the "strongly disagree" category was greater than 2.

4. Reliability

Research Question: *What is the reliability of the scale?*

a. Using Conventional Measures

Reliability of the scale and subscales using the conventional measure of Cronbach's Alpha resulted in acceptable reliabilities (refer to Table XLI). The CA ranges for the measures ranged from .71 (acceptable) to .95 (excellent).

b. Using Rasch Analysis

In reviewing the reliabilities using Rasch *person* and *item reliability* for subscale domains (refer to Table XLI) and the entire NSS, a few issues emerged. The *real person reliabilities* ranged from .48 to .93. While four domains, Financial, Preparation and Storage, Knowledge, and Organizational Culture, had acceptable reliability scores, the Cultural Values and Lifestyles and

Time domains had low *Person Reliability.* The *person reliability index* is analogous to Cronbach's alpha, with scores closer to 1 characterizing better ability of the measure to discriminate between different people in the sample. *Person reliability index* is dependent on the length of a measure and the rating scale (the longer the measure the higher person reliability). The Cultural Values and Lifestyles and Time domains had six and four items respectively. Therefore it is possible that the *person reliability index* may improve if the number of items is increased.

5. Differential Item Functioning

Research Question: *How are staff's sociodemographic factors related to Nutrition Supports Scale? (Pathway D and C in Figure 1)*

Differential item functioning was most noted among individuals who live alone versus individuals who live with one or more people. Individuals who lived alone were more likely to endorse the following items: *have transportation to a grocery store*, *we have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices*, to *understand the benefits of eating fruits and vegetables*, and *know how to prepare a balanced meal*. The endorsement of these items was somewhat surprising. The expectation was that individuals who have families (individuals who live with one or more people) would endorse the items related to the benefits of eating fruits and vegetables and would know how to prepare a balanced meal due to more experience with these tasks.

Some differential item functioning was noted among individuals who do not prepare meals versus individuals who do. The items with significant DIF were primarily in the *Knowledge* and *Time* domains and specifically dealt with meal preparation skills. As expected, individuals who prepared meals were more likely to *know how to prepare nutritious meals that*

taste good, *know how to cook fresh produce*, *understand that there are different food groups*, and *have enough time to make a meal from scratch* versus individuals who did not prepare meals. Since many items that exhibited DIF were related to food preparation, one possible solution would be to remove DIF items when evaluating staff who are not involved in meal preparation. However, these implications are exploratory since the sample size limits inferences from these findings. The tentative nature of this analysis only prepares us to investigate DIF further with larger samples sizes.

6. Predictive Validity

Research Questions

2) *What is the predictive validity of the Nutrition Supports Scale?*

   a. *How is the Nutrition Supports Scale related to External Resources (Health Promotion Policies and Organizational Commitment to Health Promotion)? (Pathway A in Figure 1)*

   b. *How is the Nutrition Supports Scale related to Internal Resources (Self-Efficacy, Perceived Workload and Nutrition Knowledge) (Pathway B in Figure 1)*

Pearson's product-moment correlations were calculated for External Resources and Internal Resources and the Nutrition Supports Scale and its subscales. Specifically, we examined a relationship between NSS, subscales and *Health Promotion Policies*, *Organizational Commitment to Health Promotion*, *Self-Efficacy*, *Perceived Workload*, and *Nutrition Knowledge*. While *Health Promotion Policies* were not correlated with the full NSS, they were correlated with *Organizational Culture* domain subscale. This correlation is somewhat expected since *Health Promotion Policies* also reflect the presence of formal policies towards nutrition as well (Marks, Sisirak, Riley et al., 2008). The NSS and the subscales were correlated with *Organizational Commitment to Health Promotion.*

Looking at Internal Resources, Self-Efficacy was correlated with the NSS and subscales except the Preparation and Storage. It was most strongly correlated with subscales that were more internal to respondents such as perceptions of time and knowledge, cultural values and lifestyle. Further, there was no correlation between the NSS, subscales, and Perceived Workload. The most surprising finding related to the Perceived Workload scale was that the *Time* subscale was not correlated with it. This needs further exploration as reducing job duties may not result in increased overall nutrition support and supports related to time. Instead caregivers may need targeted intervention aimed at specifically increasing this nutrition support as attitudes about workload may not relate to perceptions of time. Finally, nutrition knowledge was correlated with the NSS and most highly, as expected correlated with the perceived *Knowledge* support subscale.

The Nutrition Supports Scale exhibits acceptable predictive validity with External (*Health Promotion Policies*, and *Organizational Commitment to Health Promotion*) and Internal Resources (*Self-Efficacy*, *Perceived Workload*, and *Nutrition Knowledge*). Although, the causality of the correlation cannot be assessed with Pearson's product-moment correlations, future analyses should explore the directionality of relationships between the NSS and External and Internal Resources using regression analysis. Research shows that institutional factors of the organization including formal and informal rules and regulations influence individual behavior (McLeroy, Bibeau, Steckler, & Glanz, 1988). Specifically, External Resources of organizational health promotion policies and commitment to health promotion may have an effect on the level of nutrition support in community homes. Organizations with more formal nutrition and health promotion policies and higher commitment towards health promotion may be perceived as having higher nutrition supports in community homes.

Further, Bandura (1982) posits a multi-level causal relationship between self-efficacy, perceptions of environment (supports and barriers), outcome expectations, motivation, behavior and a health outcome. According to this theory, high nutrition support in community homes may help staff become more self-efficacious in doing health promoting activities, including encouraging healthier nutrition habits among individuals with ID. Lastly, identifying the gaps in nutrition support (e.g. training, knowledge, etc.) may directly improve nutrition knowledge.

B. Implications for Practice and Policy

The following section discusses the implications of the study and uses for the Nutrition Supports Scale (NSS). Specifically, implications will be presented in terms of practice and policy.

1. Practice

Six factors including financial and time supports, preparation and storage of food, environmental distribution of food, knowledge and education, cultural values and lifestyles, fulfillment of government nutrition standards, and organizational/service culture (Local Foods Connection, n.d.) were initially identified from the literature to help guide the development of the Nutrition Supports Scale. The factors found in the literature were consistent with the domains that were developed for evaluating nutrition support in community homes.

Understanding available nutrition supports among staff working in community homes can lead to greater understanding of how to improve dietary intake and subsequently decrease health disparities of people with ID who live in community settings. The Nutrition Supports Scale provides staff in community homes a voice to communicate to CBO management the resources that are needed to improve nutrition for individuals with ID. Since food preparation, menu

planning, and grocery shopping are mainly staff responsibilities (J. Rodgers, 1998), DSPs have a major role in improving nutrition among individuals with ID as well as identifying the types of supports that are needed in homes.

Constraints regarding group living, service structures, unclear policy guidelines, and resource limitations may predetermine and limit nutrition support of staff and individuals with ID who reside in community homes (Harris et al., 2003; Messent et al., 1999). Rodgers (1998) reports that many people living in group homes felt they had no choice over what they were eating by having to accommodate their roommates and follow the requirements of state meal plans. Additionally, people had limited or no involvement in grocery shopping while barriers to meal preparation included staff concerns about safety and breaking organizational rules that limited involvement with cooking (J. Rodgers, 1998). Limited time for food preparation and menu planning have caused increased purchasing of processed and convenience foods which are usually higher in sodium, fat, and calories, but easier to prepare (Nestle et al., 1998).

Staff's responses to the individual Nutrition Supports subscales can help CBOs focus their initiatives, prioritize their approaches, and restructure the environment to improve nutrition in community homes. The *Financial* domain subscale may inform CBO management whether staff feels that there is sufficient monetary support for nutrition. For example, management will learn whether there are enough funds to buy fresh produce or replace utensils and appliances. It may help organizations determine whether training on household budgets is necessary in order to improve and optimize the monies allotted for food. It may also help them brainstorm new ideas on how to "stretch the dollar" by, for example, utilizing food coupons/stamps and/or a food bank.

The *Preparation and Storage* domain subscale informs CBO management whether each community home has adequate cooking supplies, recipes, and appliances and whether the

appliances are in working order. This domain may help CBOs determine if a system should be developed to ensure that the appliances are fixed and working properly and whether food inventory lists at each home should be developed to aid in communication between shifts and among staff designated to grocery shop and staff who prepares meals. Further, developing ways to communicate items that need to be used up would also help reduce food waste and save money.

The perceptions of the *Knowledge* domain subscale are helpful in understanding the knowledge related to food purchase and meal preparation. The information learned could be used to develop nutrition trainings. For example, responses related to the perceptions of the *Knowledge* subscale may inform CBO that many staff do not know portion sizes which would lead to developing training to teach staff how to estimate portion sizes.

The *Cultural Values and Lifestyles* domain subscale informs the organization about the characteristics of the workforce, and their strengths and weaknesses. It gives management an idea about whether staff likes to cook, whether they seek advice from nurse or dietitian, and whether they communicate between shifts about nutrition in community homes. The information gained can help management implement communication strategies to increase support. For example, if a CBO has a nurse or dietitian on staff, they may have an in-service informing staff that the nurse/dietitian can be used as a resource.

The *Organizational Culture* domain subscale informs CBO management about management and coworker support and the trainings that may be developed. Also it informs the management whether staff in community homes are aware of resources that are available to them in relation to nutrition. It may lead to development of new trainings and/or organizational nutrition policies.

The *Time* domain subscale conveys issues related to time constrains to plan, purchase, and prepare a healthful meal. If staff is reporting time limitations CBOs can develop strategies to optimize time efficiency.

Lastly, development of training initiatives to improve support for nutrition in community homes may improve staff's health and increase long-term stability of the workforce. Research suggests that caregivers often have low health knowledge and poor health habits themselves (J. Rodgers, 1998). The few studies that have looked at health promotion interventions for direct support professionals indicate that staff benefit from educational seminars (White et al., 2006).

2. Policy

Improving nutrition support in community homes necessitates strong organizational and management commitment. Evidence shows that organizations often look at cost-effectiveness, worker productivity, and human resource development as their "bottom lines" in implementing systemic processes and new policies aimed at sustainable health promotion practices (Mullen et al., 1994). Improving cost-effectiveness, worker productivity, and workforce development in community homes can be accomplished by implementing solutions that correspond to identified needs for nutrition support. Community based organizations may begin evaluating nutritional supports needed by staff in community homes; developing tailored trainings; modifying organizational policies; improving communications; and developing structures that provide staff with the knowledge, skills, and resources to support improved nutrition for people with ID.

DSP training is mandated by individual states (Hewitt & Larson, 2007). The training requirements differ from state to state but usually require 40 hours of training immediately after a DSP is hired. However, these state mandated trainings lack the type of nutrition information needed to be covered. The current training is mainly related to emergency procedures, blood

borne pathogens, consumer rights, introduction to developmental disabilities, CPR, and fist aid. It is oftentimes the responsibility of the CBO to develop these trainings and only a few states have developed useful training materials (Hewitt & Larson, 2007). Further, training programs often lag behind in new topical areas and are focused on basic health and safety training used in large care facilities and institutional settings. In 1998 the *Core Residential Community Competencies* (CRCC) (Hewitt, 1998) were developed in order to identify the core skills DSPs need when working in community homes. The CRCC contain 14 competency areas and 113 specific competency statements including Competency Area 1: Household Management (*Assists the individual with household management (e.g. meal preparation, laundry, cleaning, decorating) and transportation needs to maximize his or her skills, abilities, and independence*). Understanding nutrition supports in community homes can be used for CBOs to optimize their training and workforce development by focusing only on the competencies and supports communicated through the Nutrition Supports Scale and in turn meet the CRCC competencies.

Toward Independence was published in 1988 by the National Council on Disability and for the first time has identified that prevention of secondary conditions and health promotion for people with disabilities was a key national goal. This goal continues to grow in importance and has even been incorporated in *Healthy People 2010*. Goal 6.0 in *Healthy People 2010* focuses on promoting *the health of people with disabilities, preventing secondary conditions, and eliminating disparities between people with and without disabilities in the U.S. population*). Still, this goal is far from being realized and concerns exist that nutrition needs for people with ID remain underserved and their nutritional support remains largely unmet. At the time of this writing, *Healthy People 2020* objectives were still in proposal/public comment form and have not been finalized. One of the first steps in providing better nutrition support for people with ID

is to engage direct support professionals in the process of identifying the types of supports that are needed. If staff do not feel supported, they do not necessarily have the ability to advocate and to support individuals with ID.

C. Future Research

The results reported in this study provide preliminary support for continuing to explore the role of nutrition support in community homes. Future research steps should aim at testing of the nutrition supports construct in other geographic settings and with larger sample. Interest in health promotion and nutrition for individuals with ID is increasing and measures such as this one could provide insights for developing interventions and targeted trainings aimed at staff working in community homes. Further, exploring the relationship between nutrition support and staff skills for meal planning, food purchase, and meal preparation are needed. Hypothesis testing that measures how high levels of nutrition support may lead to improved nutrition skills among staff that will ultimately lead to improved health of individuals with ID that staff support should be the next step in this line of research.

D. Study Limitations

This study has several limitations. Overall, the research findings from the current study provide evidence for the use of the NSS in community homes for people with ID. Examination of the NSS among direct support professionals has demonstrated that supports can be measured validly and reliably. While the reliability and validity for the NSS was acceptable, results concerning the reliability and construct validity of two subscales, *Cultural Values and Lifestyles* and *Time*, remain in question. Thus, the need for further instrument development and psychometric testing exists in that the conceptual definition of the *Cultural Values and Lifestyles*

domain needs further development and its relationship to *Organizational Culture* domain needs clarification. Furthermore, the *Time* domain may require additional item generation to improve *Person Reliability*; however, concern for the addition of more items on the scale is warranted as more items may increase respondent burden. Lastly, this study assessed the dimensional structure of the scale under the assumptions of unidimensionality. While the assumption of unidimensionality did hold for domain subscales, it did not hold for the NSS and the future application of the multidimensional measurement model such as the Multidimensional Random Coefficient Multinomial Logit (MRCML) may be more appropriate and informative (M. Wilson & Briggs, 2003). MRCML is an extension of the unidimensional Rasch model. The form of the model is the same "except that the scoring vector $\mathbf{b}_{ik}$, and ability vector θ (theta) are modeled as scalar values" (M. Wilson & Briggs, 2003, p. 90). Marginal maximum likelihood method is used to estimate item parameters, population means, and variances.

1. Sample Size

The sample was limited to 163 participants which met the upper end recommendation of Rasch analysis for less well targeted individuals (more extreme than 15/85% endorsement) (Linacre, 1994) which was enough to estimate item calibration stability within .5 logits, (SE is ± .5/1.96) at 95% confidence interval. Further, inferences from the DIF section of this study are explorative since detecting moderate uniform DIF a sample size of 200 is required per each group (Scott et al., 2009).

For classical approaches to testing of an instrument (i.e., reliability and factor analysis), each test item should have at least five to ten subjects (Ferketich, 1991). Following these guidelines, a sample size of 215-430 participants would be considered sufficient for establishing reliability and validity using True Score Theory approaches. Further, Comrey and Lee (1992)

include the following guidelines regarding sample size: 50 cases is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good, and 1000 or more is excellent. Therefore, the findings of this study must be considered to be preliminary and evaluated with care.

Developing and establishing instrument validity and reliability is an iterative process that requires testing, revision, and re-testing until adequate information is collected to sustain acceptable degree of confidence that the instrument is measuring a specific construct. This study is the first step in this development and the results and discussion point to the areas that require further examination and revision. The relatively small sample size especially for specific analytic processes (i.e. DIF and factor analysis) limits generalizations of the findings, but preliminary results support the initial efforts to examine the complex construct of nutrition support among staff that work and provide services to individuals with ID in community homes.

2. Sample representativeness

The research was conducted in the two regions of the U.S. The demographic profiles of DSPs, organizational characteristics, and the political culture of the two states (New Mexico and Illinois) and their fiscal policy may affect the revenue, spending, and programmatic trends differently compared to the other states. It is possible that some of the supports may not be identified due to these differences and generalizability of the developed measure to other parts of the country and internationally may not be possible. Further, the study was performed with only non-profit CBOs, which may differ in their food delivery characteristics compared to the for-profit CBOs. Lastly, this instrument development study was limited only to staff providing services to people with ID living in community homes and the measure may not be useful to people living at home, alone, or in large congregate settings.

3. Self-report

Self-report studies related to nutrition and health often rely on self-report measures. Reports on nutritional behavior require cognitive, perceptual, and emotional processes that may affect validity and reliability (Hebert et al., 1997). Participants may underestimate socially-undesirable or overestimate socially acceptable traits (Hebert et al., 1997; Hebert et al., 2001). The tendency to respond in a way that is consistent with group beliefs and norms (social desirability) and a predisposition to seek praise from others (social approval) are significant sources of biases in nutrition research.

E. Conclusion

The prevalence of adults with I/DD in the U.S. is expected to double from 641,000 adults in 2000 to 1.2 million by 2030. With an increasing number of aging adults living in community homes, major health concerns are emerging and more attention is given to decreasing health disparities. The development of a valid and reliable measure of nutrition support in community homes may be used by the research and practice arenas to reveal supports to meal planning, food purchase and preparation within the financial, preparation and storage, knowledge, organizational culture, and time domains. Furthermore, this study was participatory in nature where as the NSS was generated from people with ID, their direct staff, families that have to work through the system, and management of CBOs. The issues of nutrition support were heard from every perspective.

The intent of this study was to develop a reliable and valid scale that will be used as a tool in community based organizations to benchmark their needs for training and education of the workforce, and develop action plans for combating environmental barriers (i.e., lack of utensils, cookbooks, etc.) for improving nutrition of residents with I/DD. This better

understanding of supports will help target and allocate resources aimed at encouraging health promotion initiatives and assist in developing appropriate, accessible, and effective health promotion and education programs to support community living for individuals with I/DD.

Dissemination of the results of this research among CBOs, service industry, and academic circles will contribute to developing strategies such as innovative interventions and trainings that may combat the disparities related to nutrition among people with I/DD. Additionally, the findings from this study will aid in making recommendations for the development of policies and programs to address nutritional status.

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APPENDICES

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Approval Notice
Initial Review (Response To Modifications)

March 2, 2010

Jasmina Sisirak, BS
Disability and Human Development
1640 W. Roosevelt Rd
M/C 626
Chicago, IL 60611
Phone: (312) 996-3982 / Fax: (312) 996-6942

RE: **Protocol # 2009-1201**
"Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale"

Dear Ms. Sisirak:

Your Initial Review application (Response To Modifications) was reviewed and approved by the Expedited review process on February 8, 2010. You may now begin your research.

Please note the following information about your approved research protocol:

Please remember to submit any materials and/or revisions needed for subsequent phases of this research prior to engaging in those phases. Materials must be accompanied by an Amendment form when submitted to the UIC IRB.

Protocol Approval Period: February 8, 2010 - February 7, 2011
Approved Subject Enrollment #: 182
Additional Determinations for Research Involving Minors: These determinations have not been made for this study since it has not been approved for enrollment of minors.

APPENDIX A (continued)

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Performance Sites:	UIC, Northpointe Resources, ARCA Community Services
Sponsor:	Midwest Roybal Center for Health Promotion
PAF#:	Not applicable
Grant/Contract No:	P30AG02284
Grant/Contract Title:	Midwest Roybal Center for Health Promotion and Behavior

Research Protocol:

a) Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale

Recruitment Materials:

a) Email Announcement; Version 1; 12/17/2009
b) NSS Flyer; Version 1; 12/17/2009

Informed Consents:

a) NSS Consent, Interview; Version 2; 01/22/2010
b) NSS Consent, Focus Group; Version 2; 01/22/2010
c) NSS Participant Information Sheet, Pilot Testing; Version 1; 01/25/2010
d) A waiver of documentation has been granted under 45 CFR 46.117 for the pilot testing phase of this research

Assent:

a) NSS Assent, Focus Group; Version 2; 01/22/2010

Parental Permission:

a) NSS Legal Guardian Permission, Focus Group; Version 2; 01/22/2010

Your research meets the criteria for expedited review as defined in 45 CFR 46.110(b)(1) under the following specific categories:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes., (7) Research on individual or group characteristics or behavior (including but not limited to research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

APPENDIX A (continued)

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
12/18/2009	Initial Review	Expedited	01/12/2010	Modifications Required
01/26/2010	Response To Modifications	Expedited	02/08/2010	Approved

Please remember to:

→ Use your **research protocol number** (2009-1201) on any documents or correspondence with the IRB concerning your research protocol.

→ Review and comply with all requirements on the enclosure,
"**UIC Investigator Responsibilities, Protection of Human Research Subjects**"

Please note that the UIC IRB has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Please be aware that if the scope of work in the grant/project changes, the protocol must be amended and approved by the UIC IRB before the initiation of the change.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact OPRS at (312) 996-1711 or me at (312) 996-2014. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Sandra Costello
Assistant Director, IRB # 2
Office for the Protection of Research Subjects

APPENDIX A (continued)

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Enclosures:

1. **UIC Investigator Responsibilities, Protection of Human Research Subjects**
2. **Informed Consent Documents:**
   a) NSS Consent, Interview; Version 2; 01/22/2010
   b) NSS Consent, Focus Group; Version 2; 01/22/2010
   c) NSS Participant Information Sheet, Pilot Testing; Version 1; 01/25/2010
3. **Assent Document:**
   a) NSS Assent, Focus Group; Version 2; 01/22/2010
4. **Parental Permission:**
   a) NSS Legal Guardian Permission, Focus Group; Version 2; 01/22/2010
5. **Recruiting Materials:**
   a) Email Announcement; Version 1; 12/17/2009
   b) NSS Flyer; Version 1; 12/17/2009

cc: Tamar Heller, Disability and Human Development, M/C 626
Beth Marks, Disability and Human Development, M/C 626

APPENDIX B

CONSENT DOCUMENTS

CONSENT FOR PARTICIPATION IN RESEARCH

[FOCUS GROUP]

Community Supports for People with Intellectual and Developmental Disabilities: Development of Nutrition Supports Scale

You are being asked to participate in a research study to develop a Nutrition Supports Scale for staff supporting people with intellectual and developmental disabilities (I/DD) in community homes. This study is a part of dissertation requirement and is conducted by Jasmina Sisirak, MPH, who is a PhD candidate in the School of Public Health at the University of Illinois at Chicago (UIC). The Faculty Sponsor for this study is Beth Marks, RN, PhD. In this Consent Document we will tell you about the research, explain that taking part is voluntary, describe the risks and benefits of participation, and help you make an informed decision. You should feel free to ask the researcher any questions you may have.

Principal Investigator: Jasmina Sisirak, MPH
Department of Disability and Human Development,
University of Illinois at Chicago
Address: 1640 W Roosevelt RD, Chicago, IL 60608-6904
Sponsor: UIC Midwest Roybal Center for Health Promotion and Behavior, Office of the Vice Chancellor for Research

Why am I being asked?

1. You are being asked to participate in a research study to develop a Nutrition Supports Scale (NSS) for staff supporting people with intellectual and developmental disabilities (I/DD) that live in community homes.

APPENDIX B (continued)

CONSENT DOCUMENTS

NSS is a tool that Community Based Organizations (CBO) can use to look at nutrition practices within community homes. People with I/DD have poor health status, high rates of obesity, and increased risk of heart disease. Diet is one of the major factors of poor health status. Currently, little is known on diet and nutrition practices in community homes, specifically meal planning, food purchase and preparation.

You are being asked to participate in this research because you are one of the following: 1) staff working in a community home providing diet and nutrition supports for people with I/DD, or 2) person with I/DD that lives in community home, or 3) manager at a CBO that provides residential services to people with I/DD, or 4) family member of person with I/DD. You are also 18 years or older. As a part of this study, you will participate in 1-3 focus groups.

What is the purpose of this research study?

The specific aim of this project is to develop a Nutrition Support Scale. This scale will look at nutrition practices within community homes where people with I/DD live and ask you about your perceptions of meal planning, food purchase and preparation in community homes. In the future, we hope this scale will help community-based organizations in delivering targeted nutrition programs to people with I/DD living in community homes.

What procedures are involved?

2. This study has three phases
    a. Phase 1: Focus Group (about 32 participants)
    b. Phase 2: Interview (about 10 participants)
    c. Phase 3: Pilot Test of the Scale (about 140 participants)
3. You are participating in **Phase 1** of the study.
4. We want you to participate in **one to three** focus groups to discuss your perceptions of meal planning, food purchase and preparation in community homes. We will also give you a demographic form to complete information about your age, gender, ethnicity, marital status, level of education, and occupation.
5. Focus group data will be **audio taped** and transcribed by trained personnel. We will organize this data into topics for the Nutrition Supports Scale.
6. The focus groups will be held within the first month of your consent the administrative building at Northpointe Resources Inc. located at 3441 Sheridan Rd., Zion, Illinois.
7. Each focus group will have **6-8 participants** and last about **60-90 minutes**.

Approximately 182 participants may be involved in this research at the University of Illinois at Chicago.

What are the potential risks and discomforts?

You may feel that some of the questions are uncomfortable for you to answer or discuss. If you do, you do not have to answer any questions that make you uncomfortable. You may say

APPENDIX B (continued)

CONSENT DOCUMENTS

something on the tape that may make you uncomfortable. You have the right to review and edit transcripts of the focus groups. Please respect each other's privacy and do not talk to anyone not in the focus group about the things that are discussed. Also, there is a chance that other members of the focus group may tell other people, either by accident or on purpose, what is said during the discussion.

Are there benefits to taking part in this study?

There are no direct benefits to you if you participate in this research. However, your input will help us develop a Nutrition Supports Scale that may be used by CBOs in delivering targeted nutrition programs to clients with I/DD living in community homes and nutrition trainings for staff.

What about privacy and confidentiality?

The only people who will know that you are in this study are members of the research team and members of the UIC Institutional Review Board. No information about you, or provided by you during the study, will be told to others without your written permission, except if required by law. However, your co-workers in the research study and management of Northpointe Resources Inc. may know that you are in this study. Nothing that you say in a focus group will be discussed outside of the focus group. However, due to the nature of the focus group, complete confidentiality cannot be guaranteed.

We (members of the research team) will do the following to maintain your **privacy** and **confidentiality**.

1. Keep your responses and participation safe and private to maintain your personal rights.
2. Use an identification number instead of your name on information entered into the computer.
3. Store tape recordings in a computer that can only be used by research team members.
4. Transcribe taped recordings and code them so your privacy is protected.
5. Give a password to the computer that is only accessible by authorized research team members.
6. Store the questionnaires, personal information, and audio tapes in locked filing cabinets in a locked office in the Department of Disability and Human Development for five years.
7. Destroy tape recordings, questionnaires, and personal information after a five-year period.

You as participant in a focus group have the right to review and edit transcripts of the focus groups. We will use the data derived from this study in written reports, brochures, and presentations. Your name **will not be included** in any reports or presentations.

Will I be reimbursed for any of my expenses or paid for my participation in this study?

For your time, you will be given $10 in cash for every focus group you attend. You will be reimbursed up to $30.

APPENDIX B (continued)

CONSENT DOCUMENTS

Can I withdraw or be removed from the study?

You can choose at any time to be in this study or not. If you decide not to be in this study, you may stop at any time without any problem. The researchers may also decide to have you stop the study if confidentiality and respectful conduct is not maintained.

Who should I contact if I have questions?

The researcher conducting this study is Jasmina Sisirak, MPH. You may ask any questions you have now. If you have questions later, you may contact the researcher at 312-996-3982 or toll-free at 800-996-8845. You may also email researcher at jsisirak@uic.edu. You may also contact Beth Marks, RN, PhD, Faculty Sponsor at 312-413-4097 or bmarks1@uic.edu.

What are my rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or you have any questions about your rights as a participant in this study, you may call the Office for the Protection of Research Subjects at 312-996-1711 or toll-free at 866-789-6215. You may also e-mail OPRS at uicirb@uic.edu. **Remember:** You have the right to be in this study or not to be in the study. Again, your decision whether or not to be in this study will not affect your current or future relations with the University or Northpointe Resources Inc. If you decide to be in the study, you may stop at any time without affecting that relationship. You will be given a copy of this form to keep.

Signature of Participant

I have read (or _____has read to me) the above information. I was allowed to ask questions and understand the answers to my questions. I was also given a copy of this form.

_____ _____

Signature Date

_____

Printed Name

_____ _____

Signature of Researcher Date (must be same as Participant's)

APPENDIX B (continued)

CONSENT DOCUMENTS

LEGAL GUARDIAN PERMISSION FOR PARTICIPATION IN RESEARCH

[FOCUS GROUP]

Community Supports for People with Intellectual and Developmental Disabilities: Development of Nutrition Supports Scale

You are being asked to have _____ *[print participant's name]* participate in a research study to develop a Nutrition Supports Scale for staff supporting people with intellectual and developmental disabilities (I/DD) in community homes. This study is a part of dissertation requirement and is conducted by Jasmina Sisirak, MPH, who is a PhD candidate in the School of Public Health at the University of Illinois at Chicago (UIC). The Faculty Sponsor for this study is Beth Marks, RN, PhD. In this Permission Document we will tell you about the research, explain that taking part is voluntary, describe the risks and benefits of participation, and help you make an informed decision. You should feel free to ask the researcher any questions you may have.

Principal Investigator: Jasmina Sisirak, MPH
Department of Disability and Human Development,
University of Illinois at Chicago
Address: 1640 W Roosevelt RD, Chicago, IL 60608-6904
Sponsor: UIC Midwest Roybal Center for Health Promotion and Behavior,
Office of the Vice Chancellor for Research

Why am I being asked?

You are being asked to give permission for *[say participant's name]* to participate in a research study to develop a Nutrition Supports Scale (NSS) for staff supporting people with I/DD in community homes. NSS is a tool that Community Based Organizations (CBO) can use to look at nutrition practices within community homes. People with I/DD have poor health status, high rates of obesity, and increased risk of heart disease. Diet is one of the major factors of poor health status. Currently, little is known on diet and nutrition practices in community homes, specifically meal planning, food purchase and preparation.

APPENDIX B (continued)

CONSENT DOCUMENTS

He/she is being asked to participate in this research because he/she is a person with I/DD that lives in community home and is also 18 years or older. As a part of this study, he/she will participate in 1-3 focus groups.

What is the purpose of this research study?

The specific aim of this project is to develop a Nutrition Support Scale. This scale will look at nutrition practices within community homes where people with I/DD live and ask *[say participant's name]* about his/her perceptions of meal planning, food purchase and preparation in community homes. In the future, we hope this scale will help community-based organizations in delivering targeted nutrition programs to people with I/DD living in community homes.

What procedures are involved?

8. This study has three phases
    a. Phase 1: Focus Group (about 32 participants)
    b. Phase 2: Interview (about 10 participants)
    c. Phase 3: Pilot Test of the Scale (about 140 participants)
9. *[Say participant's name]* is participating in **Phase 1** of the study.
10. We want him/her to participate in **one to three** focus groups to discuss his/her perceptions of meal planning, food purchase and preparation in community homes. We will also give him/her a demographic form to complete information about his/her age, gender, ethnicity, marital status, level of education, and occupation.
11. Focus group data will be **audio taped** and transcribed by trained personnel. We will organize this data into topics for the Nutrition Supports Scale.
12. The focus groups will be held within the first month of your permission at the administrative building at Northpointe Resources Inc. located at 3441 Sheridan Rd., Zion, Illinois.
13. Each focus group will have **6-8 participants** and last about **60-90 minutes**.
14. Approximately 182 participants may be involved in this research at the University of Illinois at Chicago.

What are the potential risks and discomforts?

He/She may feel that some of the questions are uncomfortable for him/her to answer or discuss. If he/she does, he/she does not have to answer any questions that make him/her uncomfortable. He/She may say something on the tape that may make him/her uncomfortable. He/She has the right to review and edit transcripts of the focus groups. We will ask participants to respect each other's privacy and do not talk to anyone not in the focus group about the things that are discussed. Also, there is a chance that other members of the focus group may tell other people, either by accident or on purpose, what is said during the discussion.

Are there benefits to taking part in this study?

There are no direct benefits to *[say participant's name]* if he/she participates in this research. However, his/her input will help us develop a Nutrition Supports Scale that may be used by

APPENDIX B (continued)

CONSENT DOCUMENTS

CBOs in delivering targeted nutrition programs to clients with I/DD living in community homes and nutrition trainings for staff.

What about privacy and confidentiality?

The only people who will know that *[say participant's name]* is in this study are members of the research team and members of the UIC Institutional Review Board. No information about him/her, or provided by him/her during the study, will be told to others without your written permission, except if required by law. However, other participants in the research study and management of Northpointe Resources Inc. may know that he/she is in this study. Nothing that he/she says in a focus group will be discussed outside of the focus group. However, due to the nature of the focus group, complete confidentiality cannot be guaranteed.

We (members of the research team) will do the following to maintain his/her **privacy** and **confidentiality**.

8. Keep his/her responses and participation safe and private to maintain his/her personal rights.
9. Use an identification number instead of his/her name on information entered into the computer.
10. Store tape recordings in a computer that can only be used by research team members.
11. Transcribe taped recordings and code them so his/her privacy is protected.
12. Give a password to the computer that is only accessible by authorized research team members.
13. Store the questionnaires, personal information, and audio tapes in locked filing cabinets in a locked office in the Department of Disability and Human Development for five years.
14. Destroy tape recordings, questionnaires, and personal information after a five-year period.

[Say participant's name] as participant in a focus group has the right to review and edit transcripts of the focus groups. We will use the data derived from this study in written reports, brochures, and presentations. His/her name **will not be included** in any reports or presentations.

Will he/she be reimbursed for any of my expenses or paid for my participation in this study?

For his/her time, he/she will be given $10 in cash for every focus group you attend. He/She will be reimbursed up to $30.

Can he/she withdraw or be removed from the study?

He/She can choose at any time to be in this study or not. If he/she decides not to be in this study, he/she may stop at any time without any problem. The researchers may also decide to have him/her stop the study if confidentiality and respectful conduct is not maintained.

APPENDIX B (continued)

CONSENT DOCUMENTS

Who should I contact if I have questions?

The researcher conducting this study is Jasmina Sisirak, MPH. You may ask any questions you have now. If you have questions later, you may contact the researcher at 312-996-3982 or toll-free at 800-996-8845. You may also email researcher at jsisirak@uic.edu. You may also contact Beth Marks, RN, PhD, Faculty sponsor at 312-413-4097 or bmarks1@uic.edu.

What are the rights of a research participant?

If you feel *[say participant's name]* has not been treated according to the descriptions in this form, or you have any questions about his/her rights as a participant in this study, you may call the Office for the Protection of Research Subjects at 312-996-1711 or toll-free at 866-789-6215. You may also e-mail OPRS at uicirb@uic.edu. **Remember:** He/She has the right to be in this study or not to be in the study. Again, your decision whether or not to have him/her be in this study will not affect his/her current or future relations with the University or Northpointe Resources Inc. If you decide to have him/her be in the study, he/she may stop at any time without affecting that relationship. You will be given a copy of this form to keep.

Signature of Participant

I have read (or _____has read to me) the above information. I was allowed to ask questions and understand the answers to my questions. I was also given a copy of this form.

_____
Printed Name of **Participant**

_____ _____
Signature of **Legal Guardian** Date

_____
Printed Name of **Legal Guardian**

_____ _____
Signature of **Researcher** Date (must be same as Guardian's)

APPENDIX B (continued)

CONSENT DOCUMENTS

ASSENT FOR PARTICIPATION IN RESEARCH

[FOCUS GROUP]

Community Supports for People with Intellectual and Developmental Disabilities: Development of Nutrition Supports Scale

1. My name is *[identify yourself to the participant by name]* _____ .
2. We are asking you to be in a research study to learn about diet and nutrition practices in your home. If you agree to be in this study, we will ask you to be in a group. We will talk about your meal planning, grocery shopping, and cooking at your home.
3. The group will meet for 1-3 times for about an hour each time.
4. We will audio tape the group meetings. You may listen to these tapes or read the transcripts and tell us if you did not like something that you said on them. If there is something that you don't like about the tape, we will not include what you said in our report.
5. We will try to keep anything you talk about private. Everyone in your group will be told not to talk about each other or say anyone's name outside of the group. However, we can not promise you that people will not talk about you.
6. You will be given $10 in cash for every meeting you attend. You may have the opportunity to attend 1, 2, or 3 focus groups. You may be given up to $30.
7. You will not benefit from being in this study. However, your participation will help us develop a materials to help your staff promote healthier eating habits in your home.
8. There is a chance you may feel uncomfortable in talking about some topics. If you do, please let us know and we will find ways to make it better for you.

APPENDIX B (continued)

CONSENT DOCUMENTS

9. Please talk this over with your parent/legal guardian before you decide whether or not to be in this study. We will ask your parent/legal guardian to give their permission for you to be in this study. But even if your parent/legal guardian says "yes" you can still decide not to do this.
10. Remember, being in this study is up to you. If you don't want to be in this study, you can change your mind at any time and stop.
11. You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can call me at 312-996-3982 or ask me next time.
12. Signing your name at the bottom means that you agree to be in this study. You and your parent/guardian will be given a copy of this form after you have signed it.

Signature of Participant

Please sign your name or make a mark, if you understand what we have talked about and would like to participate in this program.

_____ _____

Signature or mark of **Participant** Date

_____

Printed Name of **Participant**

APPENDIX B (continued)

CONSENT DOCUMENTS

PARTICIPANT INFORMATION SHEET

[PILOT TESTING]

Community Supports for People with Intellectual and Developmental Disabilities: Development of Nutrition Supports Scale

You are being asked to participate in a research study to develop a Nutrition Supports Scale for staff supporting people with intellectual and developmental disabilities (I/DD) in community homes. This study is a part of dissertation requirement and is conducted by Jasmina Sisirak, MPH, who is a PhD candidate in the School of Public Health at the University of Illinois at Chicago (UIC). The Faculty Sponsor for this study is Beth Marks, RN, PhD. In this Participant Information Sheet we will tell you about the research, explain that taking part is voluntary, describe the risks and benefits of participation, and help you make an informed decision. You should feel free to ask the researcher any questions you may have.

Principal Investigator: Jasmina Sisirak, MPH
Department of Disability and Human Development,
University of Illinois at Chicago
Address: 1640 W Roosevelt RD, Chicago, IL 60608-6904
Sponsor: UIC Midwest Roybal Center for Health Promotion and Behavior,
Office of the Vice Chancellor for Research

Why am I being asked?

You are being asked to participate in a research study to develop a Nutrition Supports Scale (NSS) for staff supporting people with intellectual and developmental disabilities (I/DD) that live in community homes. NSS is a tool that Community Based Organizations (CBO) can use to look at nutrition practices within community homes. People with I/DD have poor health status, high rates of obesity, and increased risk of heart disease. Diet is one of the major factors of poor health status. Currently, little is known on diet and nutrition practices in community homes, specifically meal planning, food purchase and preparation.

APPENDIX B (continued)

CONSENT DOCUMENTS

You are being asked to participate in this research because you are staff working in a community home providing diet and nutrition supports for people with I/DD. You are also 18 years or older. As a part of this study, you will fill out a survey related to food and nutrition in a community home.

What is the purpose of this research study?

The specific aim of this project is to develop a Nutrition Support Scale. This scale will look at nutrition practices within community homes where people with I/DD live and ask you about your perceptions of meal planning, food purchase and preparation in community homes. In the future, we hope this tool will help community-based organizations in delivering targeted nutrition programs to people with I/DD living in community homes.

What procedures are involved?

15. This study has three phases
    a. Phase 1: Focus Group (about 32 participants)
    b. Phase 2: Interview (about 10 participants)
    c. Phase 3: Pilot Test of the Scale (about 200 participants)
16. You are participating in **Phase 3** of the study.
17. We want you to fill out an anonymous survey to discuss your perceptions of nutrition supports related to meal planning, food purchase and preparation in community homes, and your confidence and CBO's commitment for doing health promotion activities with adults with I/DD. We will also ask you to give us information about your age, gender, ethnicity, marital status, level of education, and occupation. We will not ask for your name and your responses are completely anonymous.
18. It may take about **15-20 minutes** to fill out the questionnaire.
19. Approximately 242 participants may be involved in this research at the University of Illinois at Chicago.

What are the potential risks and discomforts?

You may feel that some of the questions may be uncomfortable for you to answer. You do not have to answer questions that make you uncomfortable. A risk of this research is a loss of privacy (revealing to others that you are taking part in this study) and confidentiality (revealing information about you to others to whom you have not given permission to see this information). Your responses are anonymous and we will not know your name.

Are there benefits to taking part in the research?

There are no direct benefits to you if you participate in this research. However, your input will help us develop a Nutrition Supports Scale that may be used by CBOs in delivering targeted nutrition programs to clients with I/DD living in community homes and nutrition trainings for staff.

APPENDIX B (continued)

CONSENT DOCUMENTS

What about privacy and confidentiality?

Your responses are anonymous and we will not know your name. The only people who will know that you are in this study are members of the research team who will administer the questionnaire. However, your co-workers in the research study and management of your CBO may know that you are in this study.

We (members of the research team) will do the following to maintain your **privacy** and **confidentiality**.

15. Keep your responses and participation safe and private to maintain your personal rights.
16. We will not know your name. We will use an identification number instead of your name to enter information into the computer.
17. Give a password to the computer that is only accessible by authorized research team members.
18. Store the questionnaires in locked filing cabinets in a locked office in the Department of Disability and Human Development for five years.
19. Destroy questionnaires after a five-year period.

We will use the data derived from this study in written reports, brochures, and presentations.

Will I be reimbursed for any of my expenses or paid for my participation in this research?

For your time, you will be given $10 in cash for filling out the survey.

Can I withdraw or be removed from the study?

You can choose at any time to be in this study or not. If you decide not to be in this study, you may stop at any time without any problem. The researchers may also decide to have you stop the study if confidentiality and respectful conduct is not maintained.

Who should I contact if I have questions?

The researcher conducting this study is Jasmina Sisirak, MPH. You may ask any questions you have now. If you have questions later, you may contact the researcher at 312-996-3982 or toll-free at 800-996-8845. You may also email researcher at jsisirak@uic.edu. You may also contact Beth Marks, RN, PhD, Faculty sponsor at 312-413-4097 or bmarks1@uic.edu.

APPENDIX B (continued)

CONSENT DOCUMENTS

What are my rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or you have any questions about your rights as a participant in this study, you may call the Office for the Protection of Research Subjects at 312-996-1711 or toll-free at 866-789-6215. You may also e-mail OPRS at uicirb@uic.edu. **Remember:** You have the right to be in this study or not to be in the study. Again, your decision whether or not to be in this study will not affect your current or future relations with the University or your CBO. If you decide to be in the study, you may stop at any time without affecting that relationship. You will be given a copy of this form to keep.

APPENDIX C

RECRUITMENT MATERIALS

Flyer

Volunteers Wanted for a Research Study

Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale

A research study focused on developing Nutrition Supports Scale (NSS) for staff supporting people with intellectual and developmental disabilities (I/DD) that live in community homes. NSS is a tool that Community Based Organizations (CBO) can use to evaluate nutrition practices in community homes. This scale will look at nutrition practices within community homes where people with I/DD live and will assess staff's perceptions of meal planning, food purchase and preparation.

Who can participate?

1. Staff working in a community home providing diet and nutrition supports for people with I/DD
2. People with I/DD who live in community homes
3. Managers at a CBOs that provides residential services to people with I/DD
4. Family members of person with I/DD.

You must be 18 years or older.

What will you do?

The study has three (3) phases. Every phase of the study will take place in your organization.

Phase 1: Focus Group (about 32 participants). You may participate in 1-3 focus groups. Each focus group will last 60-90 minutes.

Phase 2: Interview (about 10 participants). You may participate in one interview which may last 30-45 minutes.

Phase 3: Pilot Test of the Scale (about 140 participants). You may take one questionnaire which may take you 15-20 minutes.

Further Questions

If you would like to learn more about this study please contact Jasmina Sisirak at 312-996-3982 or jsisirak@uic.edu.

Funding source: UIC Midwest Roybal Center for Health Promotion and Behavior (Grant #P30AG02284) and Office of the Vice Chancellor for Research

APPENDIX C (continued)

RECRUITMENT MATERIALS

Email Announcement

Volunteers Wanted for a Research Study: Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale

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If you would like to learn more about this study please contact Jasmina Sisirak at 312-996-3982 or jsisirak@uic.edu.

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APPENDIX D

FOCUS GROUP SCRIPT

Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale

Script for Focus Group

I. Set Up

Arrange furniture for focus group.
Set up tape recorders & flat mikes and test them.
Set up healthy refreshments.
Set out pencils, Informed Consent Documents, demographic questionnaires, and nametags.

II. Introduction

Greet and chat with people as they come in.
Offer refreshments.
Go over Informed Consent Document with everyone.
Encourage focus group participants to fill out demographic questionnaire.

Thanks for filling out the consents and demographic questionnaires. Please hand them all in now.

My name is *(insert name),* the focus group leader for the Community Supports for Nutrition Project. My assistant today is *(insert name)*, a researcher from the University of Illinois at Chicago. As you have already read in the Consent Document, we are trying to learn more about food and nutrition resources for people with intellectual and developmental disabilities (I/DD) who live in group homes. People with I/DD have poor health status, high rates of obesity, and increased risk of heart disease. Diet is one of the major factors of poor health status. Currently, little is known on diet and nutrition practices in community homes, specifically meal planning, food purchase and preparation.

The purpose of this project is to develop a tool that would measure supports to meal planning, food purchase and preparation in group homes. This tool may be used in the future to assess and increase ability of staff employed in community based agencies to reduce the barriers to healthy food choices and promote overall health and wellness among people with I/DD. Participants will participate in one to three focus groups to identify major topics for developing a tool that can evaluate supports to nutrition. Upon identification of the topics we will create a list of possible items that can identify supports to nutrition. We will test this tool to see if it provides us with a valid measurement of supports to nutrition.

APPENDIX D (continued)

FOCUS GROUP SCRIPT

We are here to learn from you – you are the experts – we really want your thoughts, feelings, opinions, experiences and attitudes about nutrition practices group homes.

Please respect each other's privacy and do not talk to anyone not in the focus group about the things that are discussed. Also, there is a chance that other members of the focus group may tell other people, either by accident or on purpose, what is said during the discussion.

The tape recorder is here to allow us to tape the discussion so that we can listen and study the conversation later. Everything you say is strictly confidential – your real names will not be used in any report.

Please try to speak one at a time so that we can all hear what is being said and so that we'll be able to follow the conversation on the tape.

III. Discussion

Would someone like to volunteer to begin with his or her story? Then we'll go around the table and give each one of you a chance to talk. You may ask questions or volunteer your ideas at any time. Are there any questions? Who'll start?

General inquiry questions

1. What does nutrition support mean to staff who work with and support people with I/DD in group homes?
2. What supports does staff need for meal planning for people with I/DD?
3. What supports does staff need for food purchase?
4. What supports does staff need for food preparation in group homes?

Individual Capacity for Nutrition Supports

Skills for meal planning, food purchase and preparation

1. Overall, what would you say are your strongest skills in planning a meal, grocery shopping, and cooking?
2. What would you like to improve?
3. What specific steps could you take to improve your skills?
4. How can you share what you know with others?

Commitment for meal planning, food purchase and preparation

1. Overall, how would you rate your commitment to the importance of healthy nutrition habits for you and people you support?
2. What are your strengths in this area?
3. What would you like to improve?
4. What specific steps could you take to improve your commitment?

APPENDIX D (continued)

FOCUS GROUP SCRIPT

Resources for meal planning, food purchase and preparation

1. Overall, would you say the resources you have to make sure you are planning, shopping and preparing nutritious meals are satisfactory?
2. How do you think they could be improved?
3. Is this what you can change?
4. What can others change?

Organizational Capacity for Nutrition Supports

Now, let's talk about nutrition supports in your organization.

Commitment for meal planning, food purchase and preparation

1. Overall, would you say your organization has a significant commitment to healthy nutrition practices for people with I/DD?
2. How do you think it could be improved?
3. Are there specific steps toward improvement you could take or participate in?

Culture for meal planning, food purchase and preparation

1. Overall, would you say your organizational culture is supportive of healthy nutrition practices?
2. How do you think it could be improved?
3. What specific steps could be taken for improvement? How could you participate in them?

Structures for meal planning, food purchase and preparation

1. Overall, would you say that your organization has an infrastructure and mechanisms that support effective changes related to meal planning, food purchase and preparation?
2. What specific steps could be taken to improve structures now?

Resources for meal planning, food purchase and preparation

1. Overall, would you say that your organization has adequate resources that are appropriately deployed to support effective changes related to meal planning, food purchase and preparation?
2. What specific steps could be taken to improve resources available?

IV. Wrap-up

Our time is about up. Please keep in mind that there may be one or two more additional focus group sessions. The topics that we did not cover today, we will cover in the next sessions.

You've all been very cooperative and we've learned a lot.
Thank you so much. You've been great.

APPENDIX E

EXPERT PANEL REVIEW FORM

Jasmina Sisirak
1640 W. Roosevelt RD
Chicago, IL 60608

May 3, 2010

Dear Reviewer,

Attached is a Nutrition Supports Scale for staff working in community homes* and providing supports to individuals with intellectual disabilities (ID). I would like your feedback regarding the content and the format of the instrument. The instrument contains eight subscales, which include the following: time supports; financial supports; preparation and storage of food; distribution of food; knowledge and education; government nutrition standards; cultural values and lifestyles; and, organizational culture. These subscales have been categorized from literature review and focus groups with direct support professionals, individuals with ID, residential managers, and family members of individuals with ID.

I have included a content and format form that I would like you to complete as you review the Nutrition Supports Scale. Please rate how important you feel each item is to the conceptualization of nutrition support for staff that works in a community home. If you see problems with the wording of an item or the item is difficult to understand, please note your concerns in the space for "comments". Lastly, I would appreciate any additional suggestions regarding the development of the Nutrition Supports Scale.

Thank you again for reviewing this instrument. If you have any questions, please feel free to contact me at (312) 996-3982 or jsisirak@uic.edu. Please return the survey to me by May 17, 2010.

Best Wishes,

Jasmina Sisirak

Attachment: Nutrition Supports Scale
Content and Format Survey

*Community Home is a generic term for group home or CILA (community integrated living arrangement)

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

Nutrition Supports Scale for Community Homes

Please rate how **important** you feel **each item** is to conceptualization of nutrition support for staff that work in community homes by circling the number from 1 to 4 following each item (with 1 being not important and 4 being very important). If you see problems with the wording of an item or the item is difficult to understand, please note your concerns in the space for "comments". Also, if you think there is an item missing please add it. **Again**, please note that you are **not** rating nutrition support, but you are evaluating the importance of the item as it relates to the eight subscales.

TIME SUPPORTS		*Not Important*	*Somewhat Important*	*Important*	*Very Important*
T1	I have enough time to plan a nutritious meal. **Comments:**	1	2	3	4
T2	I have enough time to grocery shop. **Comments:**	1	2	3	4
T3	I have enough time to prepare food. **Comments:**	1	2	3	4
T4	I have enough time to make a meal from scratch. **Comments:**	1	2	3	4
T5	I usually make a list before going grocery shopping. **Comments:**	1	2	3	4
T6	I follow a menu in community home. **Comments:**	1	2	3	4
T7	We make a menu to follow during the week. **Comments:**	1	2	3	4
T8	ADDITIONAL ITEM(S):	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

FINANCIAL SUPPORTS		*Not Important*	*Somewhat Important*	*Important*	*Very Important*
F1	I am able to buy fresh produce. **Comments:**	1	2	3	4
F2	I am able to purchase food for a balanced meal. **Comments:**	1	2	3	4
F3	I can buy fresh foods with food assistance coupons/cards. **Comments:**	1	2	3	4
F4	I am able to buy good quality meat/protein. **Comments:**	1	2	3	4
F5	We have a budget to replace utensils/pots/appliances. **Comments:**	1	2	3	4
F6	We have enough money to buy as much food as we need. **Comments:**	1	2	3	4
F7	I use newspaper coupons when grocery shopping. **Comments:**	1	2	3	4
F8	I usually buy food items that are on sale. **Comments:**	1	2	3	4
F9	I check online adds for grocery store sales. **Comments:**	1	2	3	4
F10	Most foods I buy are boxed, canned, and processed. **Comments:**	1	2	3	4
F11	We keep an inventory of food items in a community home. **Comments:**	1	2	3	4
F12	We use up all the food that we purchase. **Comments:**	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

FINANCIAL SUPPORTS		Not Important	Somewhat Important	Important	Very Important
F13	We rotate products in the fridge. **Comments:**	1	2	3	4
F14	I leave a note on food that needs be used up soon. **Comments:**	1	2	3	4
F15	ADDITIONAL ITEM(S):	1	2	3	4

PREPARATION AND STORAGE OF FOOD		Not Important	Somewhat Important	Important	Very Important
PS1	We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices. **Comments:**	1	2	3	4
PS2	We have adequate pots/pans to prepare food. **Comments:**	1	2	3	4
PS3	We have enough kitchen appliances to prepare food. **Comments:**	1	2	3	4
PS4	We have recipes to prepare food. **Comments:**	1	2	3	4
PS5	We have enough storage space for food. **Comments:**	1	2	3	4
PS6	We have enough utensils (spatula, whisks, measuring cups, etc.). **Comments:**	1	2	3	4
PS7	Our appliances are in good working order (e.g. fridge broken, cook-top with one working burner, etc). **Comments:**	1	2	3	4
PS8	ADDITIONAL ITEM(S):	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

DISTRIBUTION OF FOOD		*Not Important*	*Somewhat Important*	*Important*	*Very Important*
D1	I know where to buy fresh local food. **Comments:**	1	2	3	4
D2	I have transportation to a grocery store. **Comments:**	1	2	3	4
D3	Fresh food can be purchased near community home. **Comments:**	1	2	3	4
D4	I shop at local farmer's market for food. **Comments:**	1	2	3	4
D5	ADDITIONAL ITEM(S):	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

KNOWLEDGE AND EDUCATION		Not Important	Somewhat Important	Important	Very Important
K1	I know how to cook. **Comments:**	1	2	3	4
K2	I know how to make tasty nutritious food. **Comments:**	1	2	3	4
K3	I understand the benefits of eating fruits and vegetables. **Comments:**	1	2	3	4
K4	I know how to prepare a balanced meal. **Comments:**	1	2	3	4
K5	I am familiar with the Dietary Guidelines for Americans. **Comments:**	1	2	3	4
K6	I am familiar with MyPyramid. **Comments:**	1	2	3	4
K7	I know how to prepare fresh food quickly. **Comments:**	1	2	3	4
K8	I can follow most recipes to make a meal. **Comments:**	1	2	3	4
K9	My nutrition knowledge is adequate. **Comments:**	1	2	3	4
K10	My food preparation skills are good. **Comments:**	1	2	3	4
K11	I understand portion sizes. **Comments:**	1	2	3	4
K12	My coworkers share cooking tips with me. **Comments:**	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

KNOWLEDGE AND EDUCATION		Not Important	Somewhat Important	Important	Very Important
K13	I know how to cook with fresh produce (fruits and vegetables). **Comments:**	1	2	3	4
K14	I understand different food groups. **Comments:**	1	2	3	4
K15	I know how to make a food budget for a household. **Comments:**	1	2	3	4
K16	I know how to prepare specialty diets (e.g. low salt, low fat, low cholesterol, diabetes). **Comments:**	1	2	3	4
K17	ADDITIONAL ITEM(S):	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

GOVERNMENT NUTRITION STANDARDS		Not Important	Somewhat Important	Important	Very Important
G1	I am aware that the governing body for services for people with ID has nutrition standards. **Comments:**	1	2	3	4
G2	I am able to provide meals within those guidelines. **Comments:**	1	2	3	4
G3	I have to follow government nutrition standards when preparing food for individuals with ID. **Comments:**	1	2	3	4
G4	I can plan a menu that meets government nutrition standards. **Comments:**	1	2	3	4
G5	The government places restrictions on where food assistance coupons/cards can be used OR We cannot buy nutritious food because the government restricts where food assistance coupons/cards can be used. **Comments:**	1	2	3	4
G6	ADDITIONAL ITEM(S):	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

CULTURAL VALUES AND LIFESTYLES		Not Important	Somewhat Important	Important	Very Important
CL1	My cultural background influences what foods I **buy** for individuals with ID. **Comments:**	1	2	3	4
CL2	My cultural background influences how I **prepare** meals for individuals with ID. **Comments:**	1	2	3	4
CL3	I shop the same way I would for myself. **Comments:**	1	2	3	4
CL4	Individuals whom I support ask for fresh fruits and vegetables. **Comments:**	1	2	3	4
CL5	I follow a menu that my clients and I have prepared together. **Comments:**	1	2	3	4
CL6	We all sit down together during the mealtime. **Comments:**	1	2	3	4
CL7	The clients I support sit together during the mealtime. **Comments:**	1	2	3	4
CL8	I eat the same meal with individuals I support. **Comments:**	1	2	3	4
CL9	I have many individuals I support who are on special diets. **Comments:**	1	2	3	4
CL10	I like to cook. **Comments:**	1	2	3	4
CL11	I rely on convenience foods when I cook OR Convenient food is easier to prepare. **Comments:**	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

CULTURAL VALUES AND LIFESTYLES		Not Important	Somewhat Important	Important	Very Important
CL12	I use measuring cups when serving meals. **Comments:**	1	2	3	4
CL13	Family members of individuals I support are helpful with nutrition. **Comments:**	1	2	3	4
CL14	I try to incorporate fruits and vegetables in every meal. **Comments:**	1	2	3	4
CL15	My coworkers and I communicate between shifts about food and meals. **Comments:**	1	2	3	4
CL16	I seek nutrition advice from a dietitian or nurse on staff. **Comments:**	1	2	3	4
CL17	I ask for advice related to food from my coworkers. **Comments:**	1	2	3	4
CL18	Nutrition is a priority when I support individuals with ID. **Comments:**	1	2	3	4
CL19	ADDITIONAL ITEM(S):	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

ORGANIZATIONAL CULTURE		Not Important	Somewhat Important	Important	Very Important
OC1	I have support from my **manager** to improve nutrition for people with ID. **Comments:**	1	2	3	4
OC2	I have support from my **coworkers** to improve nutrition for people with ID. **Comments:**	1	2	3	4
OC3	My organization has a list of resources available related to food and nutrition. **Comments:**	1	2	3	4
OC4	My workplace offers trainings on food **purchase**. **Comments:**	1	2	3	4
OC5	My workplace offers trainings on food **budgeting**. **Comments:**	1	2	3	4
OC6	My workplace offers trainings on meal **planning.** **Comments:**	1	2	3	4
CL7	My workplace offers trainings on meal **preparation.** **Comments:**	1	2	3	4
OC8	My manager listens to me when I have suggestions related to nutrition. **Comments:**	1	2	3	4
CL9	Management recognizes my interest in providing balanced meals to individuals I support. **Comments:**	1	2	3	4
OC10	Staffing in community home where I work is consistent OR Our staffing is consistent in a community home. **Comments:**	1	2	3	4

APPENDIX E (continued)

EXPERT PANEL REVIEW FORM

ORGANIZATIONAL CULTURE		Not Important	Somewhat Important	Important	Very Important
OC11	My organization has a dietitian on staff. **Comments:**	1	2	3	4
OC12	My organization has a nurse on staff. **Comments:**	1	2	3	4
OC13	I can access recipes online (computer). **Comments:**	1	2	3	4
OC14	We receive food from food bank. **Comments:**	1	2	3	4
OC15	Most food from the food bank is boxed, canned, and processed. **Comments:**	1	2	3	4
OC16	We sometimes share food with other community homes. **Comments:**	1	2	3	4
OC17	We use government issued coupons/cards to buy food. **Comments:**	1	2	3	4
OC18	Our food delivery service provides quality meals. **Comments:**	1	2	3	4
OC19	ADDITIONAL ITEM(S):	1	2	3	4

APPENDIX F

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION	ITEM IMPORTANCE	CLARITY	CATEGORIES/FACTORS/ DIMENSIONS	REPRESENTATIVENESS
	Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 1. Not important 2. Somewhat important 3. Important 4. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 1. Item is not clear 2. Major revisions 3. Minor revisions 4. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 1. Financial 2. Preparation and Storage of Food 3. Distribution of Food 4. Knowledge 5. Cultural Values & Lifestyles 6. Org. Nutrition Policies 7. Org. Culture 8. Time	*What additional items would you recommend including? What items would you recommend deleting?* 1. Item is not representative 2. Item needs major revisions to be representative 3. Item needs minor revisions to be representative 4. Item is representative
	FINANCIAL SUPPORTS	Choose Tag: 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree	Choose Tag: 1 Yes 2 No	Other Tag:	
F1	I am able to buy fresh produce.				
F2	I am able to purchase food to make a balanced meal.				
F3	I can buy fresh foods with food assistance coupons/cards.				
F4	I am able to buy good quality meat/protein.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 5. Not important 6. Somewhat important 7. Important 8. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 5. Item is not clear 6. Major revisions 7. Minor revisions 8. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 9. Financial 10. Preparation and Storage of Food 11. Distribution of Food 12. Knowledge 13. Cultural Values & Lifestyles 14. Org. Nutrition Policies 15. Org. Culture 16. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 5. Item is not representative 6. Item needs major revisions to be representative 7. Item needs minor revisions to be representative 8. Item is representative
F5	We have a budget to replace utensils/pots/appliances.				
F6	We have enough money to buy as much food as we need.				
F7	I use newspaper coupons when grocery shopping.				
F8	I usually buy food items that are on sale.				
F9	I check online ads for grocery store sales.				
F10	Most foods I buy are boxed, canned, and processed.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 9. Not important 10. Somewhat important 11. Important 12. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 9. Item is not clear 10. Major revisions 11. Minor revisions 12. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 17. Financial 18. Preparation and Storage of Food 19. Distribution of Food 20. Knowledge 21. Cultural Values & Lifestyles 22. Org. Nutrition Policies 23. Org. Culture 24. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 9. Item is not representative 10. Item needs major revisions to be representative 11. Item needs minor revisions to be representative 12. Item is representative
F11	We keep an inventory of food items in a community home.				
F12	We use up all the food that we purchase.				
F13	We rotate products in the fridge OR We regularly and rotate products in the fridge				
F14	I leave a note on food that needs be used up soon.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

		THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 13. Not important 14. Somewhat important 15. Important 16. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 13. Item is not clear 14. Major revisions 15. Minor revisions 16. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 25. Financial 26. Preparation and Storage of Food 27. Distribution of Food 28. Knowledge 29. Cultural Values & Lifestyles 30. Org. Nutrition Policies 31. Org. Culture 32. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 13. Item is not representative 14. Item needs major revisions to be representative 15. Item needs minor revisions to be representative 16. Item is representative
F15	I have access to monies to purchase food from local stores and markets.					
PREPARATION AND STORAGE OF FOOD			Choose Tag: 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree	Choose Tag: 1 Yes 2 No	Other Tag:	
PS1	We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices.					
PS2	We have adequate pots/pans to prepare food.					
PS3	We have enough kitchen appliances to prepare food.					

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 17. Not important 18. Somewhat important 19. Important 20. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 17. Item is not clear 18. Major revisions 19. Minor revisions 20. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 33. Financial 34. Preparation and Storage of Food 35. Distribution of Food 36. Knowledge 37. Cultural Values & Lifestyles 38. Org. Nutrition Policies 39. Org. Culture 40. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 17. Item is not representative 18. Item needs major revisions to be representative 19. Item needs minor revisions to be representative 20. Item is representative
PS4	We have recipes to prepare food.				
PS5	We have enough storage space for food.				
PS6	We have enough utensils (spatula, whisks, measuring cups, etc.).				
PS7	Our appliances are in good working order (e.g. fridge broken, cook-top with one working burner, etc).				
PS8	I have enough storage containers to use to keep leftover food.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION	**ITEM IMPORTANCE**	**CLARITY**	**CATEGORIES/FACTORS/ DIMENSIONS**	**REPRESENTATIVENESS**
	Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 21. Not important 22. Somewhat important 23. Important 24. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 21. Item is not clear 22. Major revisions 23. Minor revisions 24. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 41. Financial 42. Preparation and Storage of Food 43. Distribution of Food 44. Knowledge 45. Cultural Values & Lifestyles 46. Org. Nutrition Policies 47. Org. Culture 48. Time	*What additional items would you recommend including? What items would you recommend deleting?* 21. Item is not representative 22. Item needs major revisions to be representative 23. Item needs minor revisions to be representative 24. Item is representative
	DISTRIBUTION OF FOOD	Choose Tag: 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree	Choose Tag: 1 Yes 2 No	Other Tag:	
D1	I know where to buy fresh local food. OR I know where to buy fresh food locally.				
D2	I have transportation to a grocery store.				
D3	Fresh foods can be purchased near community home where I work.				
D4	I shop at local farmer's market for food.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION	ITEM IMPORTANCE	CLARITY	CATEGORIES/FACTORS/ DIMENSIONS	REPRESENTATIVENESS
	Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 25. Not important 26. Somewhat important 27. Important 28. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 25. Item is not clear 26. Major revisions 27. Minor revisions 28. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 49. Financial 50. Preparation and Storage of Food 51. Distribution of Food 52. Knowledge 53. Cultural Values & Lifestyles 54. Org. Nutrition Policies 55. Org. Culture 56. Time	*What additional items would you recommend including? What items would you recommend deleting?* 25. Item is not representative 26. Item needs major revisions to be representative 27. Item needs minor revisions to be representative 28. Item is representative
	KNOWLEDGE	Choose Tag: 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree	Choose Tag: 1 Yes 2 No	Other Tag:	
K1	I know how to cook.				
K2	I know how to make tasty nutritious food. OR I know how to prepare nutritious meals that taste good.				
K3	I understand the benefits of eating fruits and vegetables.				
K4	I know how to prepare a balanced meal.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION	ITEM IMPORTANCE	CLARITY	CATEGORIES/FACTORS/ DIMENSIONS	REPRESENTATIVENESS
	Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 29. Not important 30. Somewhat important 31. Important 32. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 29. Item is not clear 30. Major revisions 31. Minor revisions 32. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 57. Financial 58. Preparation and Storage of Food 59. Distribution of Food 60. Knowledge 61. Cultural Values & Lifestyles 62. Org. Nutrition Policies 63. Org. Culture 64. Time	*What additional items would you recommend including? What items would you recommend deleting?* 29. Item is not representative 30. Item needs major revisions to be representative 31. Item needs minor revisions to be representative 32. Item is representative
K5	I am familiar with the Dietary Guidelines for Americans.				
K6	I am familiar with MyPyramid.				
K7	I know how to prepare fresh food quickly.				
K8	I can follow most recipes to make a meal.				
K9	My nutrition knowledge is adequate.				
K10	My food preparation skills are good.				
K11	I understand portion sizes.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 33. Not important 34. Somewhat important 35. Important 36. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 33. Item is not clear 34. Major revisions 35. Minor revisions 36. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 65. Financial 66. Preparation and Storage of Food 67. Distribution of Food 68. Knowledge 69. Cultural Values & Lifestyles 70. Org. Nutrition Policies 71. Org. Culture 72. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 33. Item is not representative 34. Item needs major revisions to be representative 35. Item needs minor revisions to be representative 36. Item is representative
K12	My coworkers share cooking tips with me.				
K13	I know how to cook with fresh produce (fruits and vegetables).				
K14	I understand different food groups. OR I understand that there are different food groups" OR "I know what the different food groups are"				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION	**ITEM IMPORTANCE**	**CLARITY**	**CATEGORIES/FACTORS/ DIMENSIONS**	**REPRESENTATIVENESS**
	Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 37. Not important 38. Somewhat important 39. Important 40. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 37. Item is not clear 38. Major revisions 39. Minor revisions 40. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 73. Financial 74. Preparation and Storage of Food 75. Distribution of Food 76. Knowledge 77. Cultural Values & Lifestyles 78. Org. Nutrition Policies 79. Org. Culture 80. Time	*What additional items would you recommend including? What items would you recommend deleting?* 37. Item is not representative 38. Item needs major revisions to be representative 39. Item needs minor revisions to be representative 40. Item is representative
K15	I know how to make a food budget for a household.				
K16	I know how to prepare specialty diets (e.g. low salt, low fat, low cholesterol, diabetes).				
K17	I know how to prepare meals following my organization's nutrition policies.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

THEORETICAL DEFINITION	**ITEM IMPORTANCE**	**CLARITY**	**CATEGORIES/FACTORS/ DIMENSIONS**	**REPRESENTATIVENESS**
Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 41. Not important 42. Somewhat important 43. Important 44. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 41. Item is not clear 42. Major revisions 43. Minor revisions 44. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 81. Financial 82. Preparation and Storage of Food 83. Distribution of Food 84. Knowledge 85. Cultural Values & Lifestyles 86. Org. Nutrition Policies 87. Org. Culture 88. Time	*What additional items would you recommend including? What items would you recommend deleting?* 41. Item is not representative 42. Item needs major revisions to be representative 43. Item needs minor revisions to be representative 44. Item is representative
CULTURAL VALUES & LIFESTYLES	Choose Tag: 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree	Choose Tag: 1 Yes 2 No	Other Tag:	
CL1 My cultural background influences what foods I **buy** for individuals with ID.				
CL2 My cultural background influences how I **prepare** meals for individuals with ID.				
CL3 I shop the same way I would for myself.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 45. Not important 46. Somewhat important 47. Important 48. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 45. Item is not clear 46. Major revisions 47. Minor revisions 48. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 89. Financial 90. Preparation and Storage of Food 91. Distribution of Food 92. Knowledge 93. Cultural Values & Lifestyles 94. Org. Nutrition Policies 95. Org. Culture 96. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 45. Item is not representative 46. Item needs major revisions to be representative 47. Item needs minor revisions to be representative 48. Item is representative
CL4	Individuals whom I support ask for fresh fruits and vegetables.				
CL5	I follow a menu that my clients and I have prepared together.				
CL6	I eat with individuals I support during mealtime				
CL7	The clients I support sit together during the mealtime.				
CL8	I eat the same meal as individuals I support.				
CL9	I have individuals I support who are on special diets.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 49. Not important 50. Somewhat important 51. Important 52. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 49. Item is not clear 50. Major revisions 51. Minor revisions 52. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 97. Financial 98. Preparation and Storage of Food 99. Distribution of Food 100. Knowledge 101. Cultural Values & Lifestyles 102. Org. Nutrition Policies 103. Org. Culture 104. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 49. Item is not representative 50. Item needs major revisions to be representative 51. Item needs minor revisions to be representative 52. Item is representative
CL10	I like to cook.				
CL11	I rely on convenience foods when I cook OR Convenient food is easier to prepare.				
CL12	I use measuring cups when serving meals. OR I use measuring cups to measure portions when serving meals				
CL13	Family members of individuals I support are helpful with nutrition.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 53. Not important 54. Somewhat important 55. Important 56. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 53. Item is not clear 54. Major revisions 55. Minor revisions 56. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 105. Financial 106. Preparation and Storage of Food 107. Distribution of Food 108. Knowledge 109. Cultural Values & Lifestyles 110. Org. Nutrition Policies 111. Org. Culture 112. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 53. Item is not representative 54. Item needs major revisions to be representative 55. Item needs minor revisions to be representative 56. Item is representative
CL14	I try to incorporate fruits and vegetables in every meal.				
CL15	My coworkers and I communicate between shifts about food and meals.				
CL16	I seek nutrition advice from a dietitian or nurse on staff.				
CL17	I ask for advice related to food from my coworkers.				
CL18	Nutrition is a priority when I support individuals with ID.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

		THEORETICAL DEFINITION	ITEM IMPORTANCE	CLARITY	CATEGORIES/FACTORS/ DIMENSIONS	REPRESENTATIVENESS
		Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 57. Not important 58. Somewhat important 59. Important 60. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 57. Item is not clear 58. Major revisions 59. Minor revisions 60. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 113. Financial 114. Preparation and Storage of Food 115. Distribution of Food 116. Knowledge 117. Cultural Values & Lifestyles 118. Org. Nutrition Policies 119. Org. Culture 120. Time	*What additional items would you recommend including? What items would you recommend deleting?* 57. Item is not representative 58. Item needs major revisions to be representative 59. Item needs minor revisions to be representative 60. Item is representative
ORG. NUTRITION POLICIES			Choose Tag: 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree	Choose Tag: 1 Yes 2 No	Other Tag:	
P1		My organization has policies about nutrition standards OR guidelines in community homes.				
P2		I know what my organization's policies on nutrition are. OR I know what is included in my organization's policies on nutrition in community homes.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION	ITEM IMPORTANCE	CLARITY	CATEGORIES/FACTORS/ DIMENSIONS	REPRESENTATIVENESS
	Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 61. Not important 62. Somewhat important 63. Important 64. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 61. Item is not clear 62. Major revisions 63. Minor revisions 64. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 121. Financial 122. Preparation and Storage of Food 123. Distribution of Food 124. Knowledge 125. Cultural Values & Lifestyles 126. Org. Nutrition Policies 127. Org. Culture 128. Time	*What additional items would you recommend including? What items would you recommend deleting?* 61. Item is not representative 62. Item needs major revisions to be representative 63. Item needs minor revisions to be representative 64. Item is representative
P3	I follow organizational nutrition policies when preparing meals for individuals with ID.				
P4	Food assistance coupons/cards allow me to purchase nutritious foods.				
P5	The organization has no restrictions on where I can buy food.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION	ITEM IMPORTANCE	CLARITY	CATEGORIES/FACTORS/ DIMENSIONS	REPRESENTATIVENESS
	Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 65. Not important 66. Somewhat important 67. Important 68. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 65. Item is not clear 66. Major revisions 67. Minor revisions 68. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 129. Financial 130. Preparation and Storage of Food 131. Distribution of Food 132. Knowledge 133. Cultural Values & Lifestyles 134. Org. Nutrition Policies 135. Org. Culture 136. Time	*What additional items would you recommend including? What items would you recommend deleting?* 65. Item is not representative 66. Item needs major revisions to be representative 67. Item needs minor revisions to be representative 68. Item is representative
	ORG. CULTURE	Choose Tag: 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree	Choose Tag: 1 Yes 2 No	Other Tag:	
OC1	I have support from my **manager** to improve nutrition for people with ID.				
OC2	I have support from my **coworkers** to improve nutrition for people with ID.				
OC3	My organization has a list of resources available related to food and nutrition.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 69. Not important 70. Somewhat important 71. Important 72. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 69. Item is not clear 70. Major revisions 71. Minor revisions 72. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 137. Financial 138. Preparation and Storage of Food 139. Distribution of Food 140. Knowledge 141. Cultural Values & Lifestyles 142. Org. Nutrition Policies 143. Org. Culture 144. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 69. Item is not representative 70. Item needs major revisions to be representative 71. Item needs minor revisions to be representative 72. Item is representative
OC4	My workplace offers trainings on food **purchase**.				
OC5	My workplace offers trainings on food **budgeting**.				
OC6	My workplace offers trainings on meal **planning.**				
CL7	My workplace offers trainings on meal **preparation.**				
OC8	My manager listens to me when I have suggestions related to nutrition.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 73. Not important 74. Somewhat important 75. Important 76. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 73. Item is not clear 74. Major revisions 75. Minor revisions 76. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 145. Financial 146. Preparation and Storage of Food 147. Distribution of Food 148. Knowledge 149. Cultural Values & Lifestyles 150. Org. Nutrition Policies 151. Org. Culture 152. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 73. Item is not representative 74. Item needs major revisions to be representative 75. Item needs minor revisions to be representative 76. Item is representative
OC9	Management recognizes my interest in providing balanced meals to individuals I support.				
oc10	Staffing patterns in community home where I work are consistent OR Our staffing is consistent in a community home.				
oc11	My organization has a dietitian on staff.				
oc12	My organization has a nurse on staff.				
oc13	I can access recipes online.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

	THEORETICAL DEFINITION	**ITEM IMPORTANCE**	**CLARITY**	**CATEGORIES/FACTORS/ DIMENSIONS**	**REPRESENTATIVENESS**
	Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	*How important you feel this item is to nutrition support for staff working in community homes?* 77. Not important 78. Somewhat important 79. Important 80. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 77. Item is not clear 78. Major revisions 79. Minor revisions 80. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 153. Financial 154. Preparation and Storage of Food 155. Distribution of Food 156. Knowledge 157. Cultural Values & Lifestyles 158. Org. Nutrition Policies 159. Org. Culture 160. Time	*What additional items would you recommend including? What items would you recommend deleting?* 77. Item is not representative 78. Item needs major revisions to be representative 79. Item needs minor revisions to be representative 80. Item is representative
oc14	We receive food from a food bank.				
oc15	Most food from the food bank is boxed, canned, and processed.				
oc16	We sometimes borrow food from other community homes.				
oc17	We sometimes borrow food from other community homes.				
oc18	Our food delivery service provides quality meals.				

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

		THEORETICAL DEFINITION Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.	**ITEM IMPORTANCE** *How important you feel this item is to nutrition support for staff working in community homes?* 81. Not important 82. Somewhat important 83. Important 84. Very important	**CLARITY** *Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 81. Item is not clear 82. Major revisions 83. Minor revisions 84. Item is clear	**CATEGORIES/FACTORS/ DIMENSIONS** *Is the item in the proper category? Can item belong to another category? Which one?* 161. Financial 162. Preparation and Storage of Food 163. Distribution of Food 164. Knowledge 165. Cultural Values & Lifestyles 166. Org. Nutrition Policies 167. Org. Culture 168. Time	**REPRESENTATIVENESS** *What additional items would you recommend including? What items would you recommend deleting?* 81. Item is not representative 82. Item needs major revisions to be representative 83. Item needs minor revisions to be representative 84. Item is representative
TIME SUPPORTS			Choose Tag: 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree	Choose Tag: 1 Yes 2 No	Other Tag:	
T1	I have enough time to plan a nutritious meal.					
T2	I have enough time to grocery shop.					
T3	I have enough time to prepare food.					
T4	I have enough time to make a meal from scratch.					
T5	I usually make a list before going grocery shopping.					

APPENDIX F (continued)

COGNITIVE INTERVIEW FORM

THEORETICAL DEFINITION		ITEM IMPORTANCE	CLARITY	CATEGORIES/FACTORS/ DIMENSIONS	REPRESENTATIVENESS
Nutrition Support in community home is defined as external environmental component and individual (staff) perceptions/observations of the environment. Nutrition support is divided in eight categories.		*How important you feel this item is to nutrition support for staff working in community homes?* 85. Not important 86. Somewhat important 87. Important 88. Very important	*Is this item well-written? Is there a problem with the wording? Is the item difficult to understand?* 85. Item is not clear 86. Major revisions 87. Minor revisions 88. Item is clear	*Is the item in the proper category? Can item belong to another category? Which one?* 169. Financial 170. Preparation and Storage of Food 171. Distribution of Food 172. Knowledge 173. Cultural Values & Lifestyles 174. Org. Nutrition Policies 175. Org. Culture 176. Time	*What additional items would you recommend including? What items would you recommend deleting?* 85. Item is not representative 86. Item needs major revisions to be representative 87. Item needs minor revisions to be representative 88. Item is representative
T6	I follow a menu in community home where I work.				
T7	We make a menu to follow during the week.				

APPENDIX G

DEMOGRAPHIC SURVEYS FOR PHASE 1 AND 2

Community Supports for Adults with Intellectual Disabilities (ID): Development of Nutrition Supports Scale (DSP Phase 1: Focus Group)

Date: _____

1. Do you buy foods for individuals you support?	Yes	No
a. **If YES,** do individuals you support participate in buying the food with you	Yes	No
2. Do you plan menus for individuals you support?	Yes	No
a. **If YES,** do individuals you support participate in menu planning?	Yes	No
3. Do you prepare meals for individuals you support?	Yes	No
a. **If YES,** do individuals you support participate in making meals	Yes	No
4. Are you the primary grocery shopper in **your** household?	Yes	No
5. Are you the primary meal planner in **your** household?	Yes	No
6. Do you cook most meals in **your** household?	Yes	No

APPENDIX G (continued)

DEMOGRAPHIC SURVEYS FOR PHASE 1 AND 2

1. Your age:_____ years

2. What is your gender?

1 Female 2 Male

3. What is your marital status? (Circle one response)

1 Single
2 Widowed
3 Divorced
4 Separated
5 Married

4. What race/ethnicity do you consider yourself? (Circle one response)

1 American Indian or Alaskan Native
2 Asian or Pacific Islander
3 Black, not of Hispanic origin
4 Hispanic/Latino
5 White, not of Hispanic origin
6 Other
(Please specify)_____

5. What is the highest grade of school that you completed? (Circle one response)

1 Less than 8th grade
2 8th grade graduate
3 Some high school (grades 9-12)
4 High school graduate
5 Some college
6 College graduate
7 Post-college or graduate school

6. Including yourself how many people live in your household?

1 One
2 Two
3 Three
4 Four
5 Five or more

7. Do you have children under the age 18 living with you?

1 Yes 2 No

8. How often do you do grocery shopping for individuals you support?

1 1-2 times **per week**
2 1-2 times **per month**
3 Rarely/Never

9. How long have you worked in this organization?

_____ Years _____ Months

10. How long have you worked with people with ID?

_____ Years _____ Month

Thank you for completing this survey.

APPENDIX G (continued)

DEMOGRAPHIC SURVEYS FOR PHASE 1 AND 2

Community Supports for Adults with Intellectual Disabilities:
Development of Nutrition Supports Scale
(Management Phase 1: Focus Group)

Date: _____

1. Your age:_____ years

2. What is your gender?

1 Female 2 Male

3. What race/ethnicity do you consider yourself? (Circle one response)

1 American Indian or Alaskan Native
2 Asian or Pacific Islander
3 Black, not of Hispanic origin
4 Hispanic/Latino
5 White, not of Hispanic origin
6 Other
(Please specify)_____

4. What is the highest grade of school that you completed? (Circle one response)

1 Less than 8th grade
2 8th grade graduate
3 Some high school (grades 9-12)
4 High school graduate
5 Some college
6 College graduate
7 Post-college or graduate school

5. How long have you worked in this organization?

_____ Years _____ Months

6. How long have you worked with people with ID?

_____ Years _____ Months

7. Your occupation: _____

Thank you for completing this survey.

APPENDIX G (continued)

DEMOGRAPHIC SURVEYS FOR PHASE 1 AND 2

Community Supports for Adults with Intellectual Disabilities:
Development of Nutrition Supports Scale
(Family Phase 1: Focus Group)

Date: _____

1. Your age:_____ years

2. What is your gender?

1 Female 2 Male

3. What is your relationship to individual with I/DD?

1 Parent
2 Sibling
3 Spouse
4 Other _____

4. What race/ethnicity do you consider yourself? (Please circle only one response)

1 American Indian or Alaskan Native
2 Asian or Pacific Islander
3 Black, not of Hispanic origin
4 Hispanic/Latino
5 White, not of Hispanic origin
6 Other

(Please specify)_____

5. What is the highest grade of school that you completed? (Please circle only one response.)

1 Less than 8th grade
2 8th grade graduate
3 Some high school (grades 9-12)
4 High school graduate
5 Some college
6 College graduate
7 Post-college or graduate school

Thank you for completing this survey.

APPENDIX G (continued)

DEMOGRAPHIC SURVEYS FOR PHASE 1 AND 2

Community Supports for Adults with Intellectual Disabilities:
Development of Nutrition Supports Scale
(Participants with ID Phase 1: Focus Group)

Date: _____

1. Your age:_____ years

2. What is your gender?

1 Female 2 Male

3. What race/ethnicity do you consider yourself? (Circle one response)

1 American Indian or Alaskan Native
2 Asian or Pacific Islander
3 Black, not of Hispanic origin
4 Hispanic/Latino
5 White, not of Hispanic origin
6 Other
(Please specify)_____

4. What is the highest grade of school that you completed? (Circle one response.)

1 Less than 8th grade
2 8th grade graduate
3 Some high school (grades 9-12)
4 High school graduate
5 Some college
6 College graduate
7 Post-college or graduate school

5. How long have you lived in a group home?

_____ Years _____ Months

Thank you for completing this survey.

APPENDIX G (continued)

DEMOGRAPHIC SURVEYS FOR PHASE 1 AND 2

Community Supports for Adults with Intellectual Disabilities (ID): Development of Nutrition Supports Scale (Cognitive Interview)

Date:

7. Do you buy foods for individuals you support?	Yes	No
a. **If YES,** do individuals you support participate in buying the food with you	Yes	No
8. Do you plan menus for individuals you support?	Yes	No
a. **If YES,** do individuals you support participate in menu planning?	Yes	No
9. Do you prepare meals for individuals you support?	Yes	No
a. **If YES,** do individuals you support participate in making meals	Yes	No
10. Are you the primary grocery shopper in **your** household?	Yes	No
11. Are you the primary meal planner in **your** household?	Yes	No
12. Do you cook most meals in **your** household?	Yes	No

APPENDIX G (continued)

DEMOGRAPHIC SURVEYS FOR PHASE 1 AND 2

1. Your age:_____ years

2. What is your gender?

1 Female 2 Male

3. What is your marital status? (Circle one response)

1 Single
2 Widowed
3 Divorced
4 Separated
5 Married

4. What race/ethnicity do you consider yourself? (Circle one response)

1 American Indian or Alaskan Native
2 Asian or Pacific Islander
3 Black, not of Hispanic origin
4 Hispanic/Latino
5 White, not of Hispanic origin
6 Other
(Please specify)_____

5. What is the highest grade of school that you completed? (Circle one response)

1 Less than 8th grade
2 8th grade graduate
3 Some high school (grades 9-12)
4 High school graduate
5 Some college
6 College graduate
7 Post-college or graduate school

6. Including yourself how many people live in your household?

1 One
2 Two
3 Three
4 Four
5 Five or more

7. Do you have children under the age 18 living with you?

1 Yes 2 No

11. How often do you do grocery shopping for individuals you support?

1 1-2 times **per week**
2 1-2 times **per month**
3 Rarely/Never

12. How long have you worked in this organization?

_____ Years _____ Months

13. How long have you worked with people with ID?

_____ Years _____ Month

Thank you for completing this survey.

APPENDIX H

PHASE 3 SURVEY

Community Supports for Adults with Intellectual Disabilities (ID): Development of Nutrition Supports Scale (Phase 3 Survey)

We are interested in learning more about nutrition supports in community homes (group homes,

Participant ID#: _____

Date/Initial Entered: _____

Date: _____ **Date/Initial 2nd Checked:** _____

CILAs) where individuals with intellectual disabilities (ID) live. Your input will help us learn more about nutrition in community homes. Information that we learn may be used to develop new nutrition trainings for staff and improve nutrition services for individuals with ID. **DO NOT PUT YOUR NAME ON THE SURVEY – Your responses are anonymous.**

Nutrition Supports

Please circle how much you agree or disagree with the following statements.		**Strongly Disagree**	**Disagree**	**Agree**	**Strongly Agree**
FINANCIAL					
F1	I have a budget to buy fresh produce.	1	2	3	4
F2	I have access to money to purchase food for a balanced meal (getting appropriate servings from different food groups).	1	2	3	4
F3	I can buy fresh foods with food assistance coupons/cards.	1	2	3	4
F4	I have access to monies to purchase quality meat/protein at all times.	1	2	3	4
F5	We have a budget to replace utensils/pots/appliances.	1	2	3	4
F6	We have enough money to buy as much food as we need.	1	2	3	4
F7	I usually buy food items that are on sale.	1	2	3	4
F8	I have access to monies to purchase food from local stores.	1	2	3	4
F9	I have transportation to a grocery store.	1	2	3	4

APPENDIX H (continued)

PHASE 3 SURVEY

Please circle how much you agree or disagree with the following statements.		Strongly Disagree	Disagree	Agree	Strongly Agree
PREPARATION AND STORAGE					
PS1	We have basic ingredients such as oil, garlic/onion, butter, milk, flour, or spices.	1	2	3	4
PS2	We have adequate pots/pans to prepare food.	1	2	3	4
PS3	We have enough kitchen appliances (e.g. blender, toaster, fridge) to prepare food.	1	2	3	4
PS4	We have recipes to prepare food.	1	2	3	4
PS5	We have enough storage space for food.	1	2	3	4
PS6	We have enough utensils (e.g. spatula, whisks, measuring cups).	1	2	3	4
PS7	Our appliances are in good working order.	1	2	3	4
PS8	I have enough storage containers to use to keep leftover food.	1	2	3	4
PS9	We keep an inventory of food items in a community home.	1	2	3	4
PS10	We eat all the food that we purchase.	1	2	3	4
PS11	I move food with closest expiration date to the front of fridge or cabinet.	1	2	3	4
PS12	I leave a note on the food that is close to being expired.	1	2	3	4
KNOWLEDGE					
K1	I know how to cook.	1	2	3	4
K2	I know how to prepare nutritious meals that taste good.	1	2	3	4
K3	I understand the benefits of eating fruits and vegetables.	1	2	3	4
K4	I know how to prepare a balanced meal (getting appropriate servings from different food groups).	1	2	3	4
K5	I am familiar with the Dietary Guidelines for Americans.	1	2	3	4
K6	I am familiar with MyPyramid.	1	2	3	4

APPENDIX H (continued)

PHASE 3 SURVEY

	Please circle how much you agree or disagree with the following statements.	**Strongly Disagree**	**Disagree**	**Agree**	**Strongly Agree**
K7	I know how to prepare fresh food quickly.	1	2	3	4
K8	I can follow recipes to make a meal.	1	2	3	4
K9	I understand portion sizes.	1	2	3	4
K10	I know how to cook fresh produce (fruits and vegetables).	1	2	3	4
K11	I understand that there are different food groups.	1	2	3	4
K12	I know how to make a food budget for a household.	1	2	3	4
K13	I know how to prepare specialty diets (e.g. low salt, low fat, low cholesterol, diabetes).	1	2	3	4
K14	I know where to buy fresh food locally.	1	2	3	4
K15	Fresh foods can be purchased near the community home.	1	2	3	4
K16	I know if the individuals I support are on special diets.	1	2	3	4
K17	Individuals whom I support ask for fresh fruits and vegetables.	1	2	3	4
K18	I use measuring utensils (e.g. cups, spoons, scales) to measure portions when serving meals.	1	2	3	4
K19	My organization has a list of resources available related to food and nutrition.	1	2	3	4
CULTURAL VALUES & LIFESTYLES					
CL1	I eat the same meal with individuals I support.	1	2	3	4
CL2	I like to cook.	1	2	3	4
CL3	I rely on convenience foods (e.g. boxed and canned meals, frozen dinners) when I cook.	1	2	3	4
CL4	Family members support healthy food choices for individuals with intellectual disabilities (ID).	1	2	3	4
CL5	I include fruits and vegetables in most meals.	1	2	3	4
CL6	My coworkers and I communicate between shifts about food and meals.	1	2	3	4

APPENDIX H (continued)

PHASE 3 SURVEY

	Please circle how much you agree or disagree with the following statements.	**Strongly Disagree**	**Disagree**	**Agree**	**Strongly Agree**
CL7	I seek nutrition advice from a dietitian or nurse.	1	2	3	4
CL8	Nutrition is a priority when I support individuals with ID.	1	2	3	4
ORGANIZATIONAL CULTURE					
OC1	I have support from my manager to improve nutrition for people with ID.	1	2	3	4
OC2	I have support from my coworkers to improve nutrition for people with ID.	1	2	3	4
OC3	My workplace offers trainings on food purchase.	1	2	3	4
OC4	My workplace offers trainings on food budgeting.	1	2	3	4
OC5	My workplace offers trainings on meal planning.	1	2	3	4
OC6	My workplace offers trainings on meal preparation.	1	2	3	4
OC7	Staffing patterns in the community home where I work are consistent.	1	2	3	4
OC8	My organization has a dietitian on staff.	1	2	3	4
OC9	My organization has a nurse on staff.	1	2	3	4
OC10	I can access recipes online (computer).	1	2	3	4
TIME					
T1	I have enough time to plan a healthy meal.	1	2	3	4
T2	I have enough time to grocery shop.	1	2	3	4
T3	I have enough time to prepare food.	1	2	3	4
T4	I have enough time to make a meal from scratch (homemade).	1	2	3	4
T5	I usually make a list before going grocery shopping.	1	2	3	4
T6	I follow a menu in the community home where I work	1	2	3	4

APPENDIX H (continued)

PHASE 3 SURVEY

External Resources

Organizational Commitment to Health Promotion

Please circle how much you agree or disagree with the following statements…	**Strongly Disagree**	**Disagree**	**Agree**	**Strongly Agree**	**Don't know**
1) Health promotion is valued by everyone in our organization.	1	2	3	4	0
2) Our policies and programs support health promotion.	1	2	3	4	0
3) We have strategic priorities related to health promotion.	1	2	3	4	0
4) We have partnerships with diverse organizations and communities supporting our health promotion programs (e.g., recreation centers, hospitals, universities).	1	2	3	4	0
5) Our leaders and managers support health promotion programs.	1	2	3	4	0
6) Our staff support health promotion programs.	1	2	3	4	0
7) Innovation and education in health promotion is strongly encouraged in our organization.	1	2	3	4	0
8) Employees collaborate to achieve health promotion goals.	1	2	3	4	0

Marks, B., Sisirak, J., & Donahue Chase, D. (2008). Pilot Testing of a Health Promotion Capacity Checklist for Community-Based Organizations. Paper presented at the IASSID 13th World Congress, People with Intellectual Disabilities: Citizens of the World.

Health Promotion Policies

Does your organization have policies that…	**None**	**Informal**	**Written/ Formal**	**Don't Know**
1) require healthy food preparation practices (steaming, low fat/salt substitutes, limited frying) in the homes of people with ID?	1	2	3	4
2) require healthy food options at worksite (snack bar, food service)?	1	2	3	4
3) healthy food options in the vending machines?	1	2	3	4
4) require healthy food options at meetings and events?	1	2	3	4

APPENDIX H (continued)

PHASE 3 SURVEY

Does your organization have policies that…	**None**	**Informal**	**Written/ Formal**	**Don't Know**
5) support staff physical activity (policies that allow workers additional time off from lunch to exercise, walk breaks)?	1	2	3	4
6) provide health promotion programs during work time?	1	2	3	4
7) provide discount memberships to off-site recreation or fitness facilities for staff?	1	2	3	4
8) reduce health insurance fees for staff who participate in healthy lifestyle activities?	1	2	3	4
9) include health promotion in your organization's vision and mission statement?	1	2	3	4
10) provide nutrition guidelines in community homes?	1	2	3	4

Marks, B., Sisirak, J., & Donahue Chase, D. (2008). Pilot Testing of a Health Promotion Capacity Checklist for Community-Based Organizations. Paper presented at the IASSID 13th World Congress, People with Intellectual Disabilities: Citizens of the World.

Internal Resources

Self-Efficacy

We would like to know how confident you are that you can do the following items.	**Not at all Confident**				**Totally Confident**
1) I am confident that I can **teach** people with ID how to make **healthy food choices.**	1	2	3	4	5
2) I am confident that I can teach people with ID how to **eat more fruits and vegetables.**	1	2	3	4	5
3) I am confident that I can **teach** people with ID how to choose healthy portion sizes.	1	2	3	4	5
4) I am confident that I can **advocate** for health promotion.	1	2	3	4	5
5) I am confident that I can **plan** healthy meals.	1	2	3	4	5
6) I am confident that I can **purchase** healthy foods.	1	2	3	4	5
7) I am confident that I can **prepare** healthy meals.	1	2	3	4	5

Marks, B., Sisirak, J., & Donahue Chase, D. (2008). Pilot Testing of a Health Promotion Capacity Checklist for Community-Based Organizations. Paper presented at the IASSID 13th World Congress, People with Intellectual Disabilities: Citizens of the World.

APPENDIX H (continued)

PHASE 3 SURVEY

Perceived Workload

Please circle how much you agree with the following statements…	**Not at All**	**Just a Little**	**Moderate Amount**	**Quite a Lot**	**A Great Deal**
1. I do not have enough time to carry out my work.	1	2	3	4	5
2. I cannot meet all the conflicting demands made on my time at work.	1	2	3	4	5
3. I never finish work feeling I have completed everything I should.	1	2	3	4	5
4. I am asked to do work without adequate resources to complete it.	1	2	3	4	5
5. I cannot follow best practice in the time available.	1	2	3	4	5
6. I am required to do basic tasks which prevent me from completing more important ones.	1	2	3	4	5

Caplan, R. D. (1971). Organizational stress and individual strain: A social psychological study of risk factors in coronary heart disease among administrators, engineers, and scientists. University of Michigan, Ann Arbor, Michigan.

APPENDIX H (continued)

PHASE 3 SURVEY

Behavioral Capability (Knowledge Related to Nutrition)

Parmenter, K., & Wardle, J. (1999). Development of a general nutrition knowledge questionnaire for adults. Eur J Clin Nutr, 53(4), 298-308.

This is a survey, *not* a test. If you do not know the answer, mark `not sure' rather than guess.

The first few items are about what advice you think experts are giving us.

1. Do you think health experts recommend that people should be eating more, the same amount, or less of these foods? *(check one box per food)*

	More	Same	Less	Not sure
Vegetables	☐	☐	☐	☐
Sugary foods	☐	☐	☐	☐
Meat	☐	☐	☐	☐
Starchy foods	☐	☐	☐	☐
Fatty foods	☐	☐	☐	☐
High fiber foods	☐	☐	☐	☐
Fruit	☐	☐	☐	☐
Salty foods	☐	☐	☐	☐

2. How many servings of fruit and vegetables a day do you think experts are advising people to eat? (One serving could be, for example, an apple or a handful of chopped carrots)

_____

3. What version of dairy foods do experts say people should eat? *(check one)*

1 full fat
2 lower fat
3 mixture of full fat and lower fat
4 neither, dairy foods should be cut out
5 not sure

APPENDIX H (continued)

PHASE 3 SURVEY

Experts classify foods into groups.

1. Do you think these are *high or low in added sugar*? *(check one box per food)*

	High	Low	Not sure
Bananas	☐	☐	☐
Unflavored yogurt	☐	☐	☐
Ice-cream	☐	☐	☐
Tomato ketchup	☐	☐	☐
Canned fruit in heavy syrup	☐	☐	☐

2. A glass of unsweetened fruit juice counts as a serving of fruit.

   1 agree
   2 disagree
   3 not sure

3. Do you think these are *high or low in fat*? *(check one box per food)*

	High	Low	Not sure
Pasta (without sauce)	☐	☐	☐
Low fat spread	☐	☐	☐
Baked beans	☐	☐	☐
Luncheon meat	☐	☐	☐
Honey	☐	☐	☐
Egg	☐	☐	☐
Nuts	☐	☐	☐
Bread	☐	☐	☐
Cottage cheese	☐	☐	☐
Margarine	☐	☐	☐

APPENDIX H (continued)

PHASE 3 SURVEY

4. Do you think these are *high or low in salt*? *(check one box per food)*

	High	Low	Not sure
Sausages	☐	☐	☐
Pasta	☐	☐	☐
Red meat	☐	☐	☐
Frozen vegetables	☐	☐	☐
Cheese	☐	☐	☐

5. Do you think these are *high or low in fiber*? *(check one box per food)*

	High	Low	Not sure
Cornflakes	☐	☐	☐
Bananas	☐	☐	☐
Eggs	☐	☐	☐
Red Meat	☐	☐	☐
Broccoli	☐	☐	☐
Nuts	☐	☐	☐
Fish	☐	☐	☐
Baked potatoes with skins	☐	☐	☐
Chicken	☐	☐	☐
Baked beans	☐	☐	☐

6. Some foods contain a lot of fat but no cholesterol.

   1 agree
   2 disagree
   3 not sure

7. Cholesterol is mainly found in:*(check one)*

   1 vegetable oils
   2 dairy products
   3 both (1) and (2)
   4 not sure

APPENDIX H (continued)

PHASE 3 SURVEY

The next few items are about choosing foods

Please answer what is being asked and not whether you like or dislike the food.

1. If a person wanted to reduce the amount of fat in their diet, which would be the best choice?

   1 steak, grilled
   2 sausages, grilled
   3 turkey, grilled
   4 pork chop, grilled

2. If a person wanted to reduce the amount of fat in their diet, but didn't want to give up chips, which one would be the best choice?

   1 thick cut chips
   2 thin cut chips
   3 crinkle cut chips
   4 baked chips

3. If a person felt like something sweet, but was trying to cut down on sugar, which would be the best choice? *(tick one)*

   1 honey on toast
   2 a cereal snack bar
   3 plain rice cake
   4 banana with plain yogurt
   5 chocolate chip cookie

4. If a person wanted to reduce the amount of salt in their diet, which would be the best choice? *(check one)*

   1 frozen chicken pot pie
   2 instant soup
   3 mushroom egg omelet
   4 stir fry vegetables with soy sauce

APPENDIX H (continued)

PHASE 3 SURVEY

This section is about health problems or diseases

1. Are you aware of any major health problems or diseases that are related to a *low intake of fruit and vegetables*?

   1 yes
   2 no
   3 not sure

   If yes, what diseases or health problems do you think are related to a low intake of fruit and vegetables?

   . . . .

   . . . .

2. Are you aware of any major health problems or diseases that are related to a *low intake of fiber*?

   1 yes
   2 no
   3 not sure

   If yes, what diseases or health problems do you think are related to fiber?

   . . . .

   . . . .

3. Are you aware of any major health problems or diseases that are related to *how much sugar* people eat?

   1 yes
   2 no
   3 not sure

   If yes, what diseases or health problems do you think are related to sugar?

   . . . .

   . . . .

APPENDIX H (continued)

PHASE 3 SURVEY

4. Are you aware of any major health problems or diseases that are related to *how much salt* or sodium people eat?

   1 yes
   2 no
   3 not sure

   If yes, what diseases or health problems do you think are related to salt?

   . . . .

   . . . .

5. Are you aware of any major health problems or diseases that are related to *the amount of fat* people eat?

   1 yes
   2 no
   3 not sure

   If yes, what diseases or health problems do you think are related to fat?

   . . . .

   . . . .

6. Do you think these help to reduce the chances of getting certain kinds of cancer? *(answer each one)*

	Yes	No	Not sure
eating more fiber	☐	☐	☐
eating less sugar	☐	☐	☐
eating less fruit	☐	☐	☐
eating less salt	☐	☐	☐
eating more fruit and vegetables	☐	☐	☐
eating less preservatives/additives	☐	☐	☐

APPENDIX H (continued)

PHASE 3 SURVEY

7. Do you think these help prevent heart disease? *(answer each one)*

	Yes	No	Not sure
eating more fiber	☐	☐	☐
eating less saturated fat	☐	☐	☐
eating less salt	☐	☐	☐
eating more fruit and vegetables	☐	☐	☐
eating less preservatives/additives	☐	☐	☐

APPENDIX H (continued)

PHASE 3 SURVEY

Demographics

1.	Do you buy foods for individuals you support?	1 Yes		2 No
	a. **If YES,** do individuals you support participate in buying the food with you?	1 Always	2 Sometimes	3 Never
2.	Do you plan menus for individuals you support?	1 Yes		2 No
	b. **If YES,** do individuals you support participate in menu planning?	1 Always	2 Sometimes	3 Never
3.	Do you prepare meals for individuals you support?	1 Yes		2 No
	c. **If YES,** do individuals you support participate in making meals?	1 Always	2 Sometimes	3 Never

4. Are you the primary grocery shopper in **your family household**? 1 Yes 2 No

5. Are you the primary meal planner in **your family household**? 1 Yes 2 No

6. Do you cook most meals in **your family household**? 1 Yes 2 No

7. Do you have any health or nutrition related qualifications? 1 Yes 2 No
Specify: _____

8. Are **you** on a special diet? 1 Yes 2 No
Specify: _____

9. Number of individuals you support who are on a special diet:

1 None
2 One
3 More than one

10. Is community home where you work eligible to get food from a food bank? 1 Yes 2 No 3 Don't Know

11. Do you use government issued coupons/cards to buy food? 1 Yes 2 No

APPENDIX H (continued)

PHASE 3 SURVEY

12. Your age:_____ years

13. What is your gender?

1 Female 2 Male

14. What is your marital status? (Circle one response)

1 Single
2 Widowed
3 Divorced
4 Separated
5 Married
6 Domestic Partner

15. What race/ethnicity do you consider yourself? (Circle one response)

1 American Indian or Alaskan Native
2 Asian or Pacific Islander
3 Black, not of Hispanic origin
4 Hispanic/Latino
5 White, not of Hispanic origin
6 Other (Specify)_____

16. What is the highest grade of school that you completed? (Circle one response)

1 Less than 8th grade
2 8th grade graduate
3 Some high school (grades 9-12)
4 High school graduate
5 Some college
6 College graduate
7 Post-college or graduate school

17. Including yourself how many people live in your household?

1 One
2 Two
3 Three
4 Four
5 Five or more

18. Do you have children under the age 18 living with you?

1 Yes 2 No

19. Were you born in the United States? 1 Yes 2 No

APPENDIX H (continued)

PHASE 3 SURVEY

20. How many individuals with ID live in the community home where you work?

_____

21. How often do you do grocery shopping for individuals you support?

1 1-2 times **per week**
2 1-2 times **per month**
3 Rarely/Never

22. How long have you worked in this organization?

_____ Years _____ Months

23. How long have you worked with people with ID?

_____ Years _____ Months

24. Are you currently

1 Employed full time
2 Employed part time
3 Volunteer

25. What is your current position?

1 Direct Support Professional (DSP)
2 Qualified Support Professional (QSP)
3 House Manager
4 Other: _____

THE END
Thank you very much for your time.

APPENDIX I

LETTERS OF SUPPORT

ARCA
Opening Doors.

Jasmina Sisirak, MPH
Research and Development Associate Director, Rehabilitation Research and Training Center on Aging with Developmental Disabilities (RRTCADD)
University of Illinois at Chicago
1640 West Roosevelt Road
Chicago, Illinois 60608

June 23, 2009

Dear Jasmina:

ARCA, New Mexico's largest private non-profit organization serving individuals with developmental disabilities, welcomes the opportunity to collaborate with you on the proposed project, **Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale.** We believe that your dissertation project will develop evidence on the resources needed to provide optimal nutrition supports to adults with I/DD residing in integrated community settings. This new knowledge will likely contribute to the development and implementation of effective organizational policies, action plans, and training activities. Organizations like ours are always seeking new approaches that promote in-depth direct care provider knowlege of nutrition, meal planning, food preparation, and using food budgets wisely. New tools that identify barriers and supports provide community based organizations with clear documentation of the need to change, prompts effective ways to change, and empowers the members of the system (management, staff, and individuals with I/DD) to address salient nutrition issues. We know that health promotion is critical for people with I/DD to seek and gain more independence, leadership skills, self-responsibility, and self-sufficiency, and make healthier lifestyle choices.

ARCA provides life-long comprehensive supports for over 587 adults and children in metropolitan, rural and tribal areas of New Mexico that are innovative and provide enhanced values. Our mission is: *Working together to open doors for people with developmental disabilities to be valued members of the community.* ARCA's purpose is to provide the necessary supports, up to 24 hours a day, to individuals with developmental disabilities to live their dreams, work, learn and have fun, while enjoying health, safety and happiness. ARCA's award winning community and family living; community employment, inclusion and vocational; and licensed foster care and adoption services for vulnerable individuals are augmented by customized literacy and health and wellness instruction and statewide Prader-Willi Project services.

For ARCA, enhanced staff training that exceeds regulatory standards is critical to creating a paradigm shift in the delivery of services. While the traditional health care model is one by which services are provided to and for individuals with disabilities, ARCA strives to engage individuals with disabilities as partners in activities/education that promote their health and wellness i.e., having the individual served understand the importance of health and nutrition. It is our belief that a proactive educational approach to teaching individuals and caregivers is fundamental to successfully reducing the health disparities of persons with developmental disabilities. We believe that this project will contribute to ARCA's goal of promoting the health and quality of life of individuals with disabilities.

Sincerely,

Edward J. Kaul
Community Services Director

Tel: 505-332-6700 Fax: 505-332-6800 || 11300 Lomas Blvd NE, Albuquerque, NM 87112

APPENDIX I (continued)

LETTERS OF SUPPORT

NorthPointe Resources
Empowering individuals with disabilities to achieve their dreams

Jasmina Sisirak, MPH
Research and Development Associate Director, Rehabilitation Research and Training Center on Aging with Developmental Disabilities (RRTCADD)
University of Illinois at Chicago
1640 West Roosevelt Road
Chicago, Illinois 60608

June 16, 2009

Dear Jasmina,

Northpointe Resources, Inc. welcomes the opportunity to collaborate with you on the proposed project, **Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale.** The proposed project will allow us to gain understainding of the resources needed to provide optimal nutrition supports to adults with I/DD residing in Community Integrated Living Arrangements (CILA). The new knowledge may contribute to development and implementation of effective organizational policies, action plans, and training activities in order to promote health and wellness of people with I/DD. These may include an in-depth trainings related to nutrition, meal planning, food preparation, and budgeting for food purchase. Tools that identify barriers and supports are necessary for organizational benchmarking, identifying priorities, and empowering individuals within the system (management, staff, and individuals with I/DD) to articulate salient issues. Health promotion is critical for people with I/DD to seek and gain more independence, leadership skills, self-responsibility, and self-sufficiency, and make healthier lifestyle choices.

Northpointe Resources has a comprehensive range of services for persons with intellectual and developmental disabilities including vocational, recreational, educational and residential services designed to support individuals to achieve their dreams. In fact, we offer one of the most extensive systems of support and services in Lake County, Illinois serving over 400 individuals annually; 75 of these individuals reside in our residential CILAs, where we provide 24 hour support. We partner with a variety of state agencies and community businesses to not only fund our services, but to create opportunities that remove barriers that result in isolation and institutional care.

For Northpointe Resources, staff training is a critical step to creating a paradigm shift in how we provide health care and educational services together with the people we support. As residential service providers we have created a health care model by which service are provided to and for individuals with disabilities rather than having the individuals a partner in activities/education that promote the leading of a healthy lifestyle, i.e., understanding the importance of health and nutrition. It is our belief that a proactive educational approach to teaching individuals and caregivers is fundamental to engaging individuals and eliminating health disparities.

We believe that this project will contribute to our goal of promoting health, as well as contribute to the overall quality of life of individuals with disabilities.

Sincerely,

Ron F. Monson
Vice President
Residential Division

NorthPointe Resources, Inc.
3441 Sheridan Road • Zion, IL 60099
P: 847-872-1700 (V/TTY) • F: 847-872-0037
www.NorthPointeResources.org

APPENDIX I (continued)

LETTERS OF SUPPORT

-----Original Message-----
From: Victoria Raier [mailto:vjr@lambsfarm.org]
Sent: Monday, May 24, 2010 1:47 PM
To: Kreig Alm
Cc: jsisirak@uic.edu
Subject: Re: Approval...

Yes, you have my approval. Thank-you.

Victoria J. Raier
Associate Director
of Programs
847-815-3624 Cell
847-990-3833 Greenfield Office
Office Hours Monday - Friday
8:30 am to 6:00 pm

>>> Kreig Alm 5/24/2010 1:39 PM >>>
Vicky,
Could you reply to Jasmina with a written statement of "approval" to go ahead with her nutrition survey Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale (#2009-1201) of the CILA House Managers.
Thanks!
Kreig

Kreig Alm
Lambs Farm
Recreation & Leisure Services Manager
14245 W. Rockland Rd.
Libertyville, Il. 60048
Phone 847-990-3790
Fax 847-362-0742

APPENDIX I (continued)

LETTERS OF SUPPORT

Misericordia Human Rights/ Behavior Management Committee Meeting- 6/16/10
Approval of Research Study

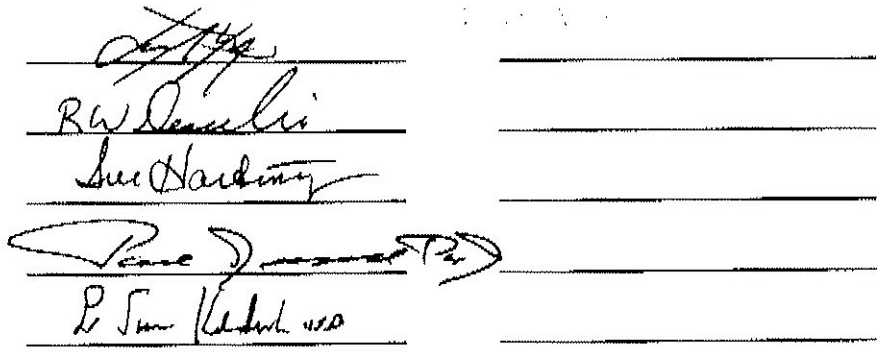
Description of the study:
Volunteers Wanted for a Research Study:
Community Supports for Adults with Intellectual Disabilities:
Development of Nutrition Supports Scale

A research study focused on developing Nutrition Supports Scale (NSS) for staff supporting people with intellectual and developmental disabilities (I/DD) that live in community homes. NSS is a tool that Community Based Organizations (CBO) can use to evaluate nutrition practices in community homes. This scale will look at nutrition practices within community homes where people with I/DD live and will assess staff's perceptions of meal planning, food purchase and preparation.
The study is seeking input from staff working in a community home providing diet and nutrition supports for people with I/DD. A pilot test of the scale will be given which may take 15-20 minutes. Staff will be paid $10 for participation.

Contact:

Jasmina Sisirak, MPH
Associate Project Director
RRTCADD (MC 626)
Department of Disability and Human Development
University of Illinois at Chicago
1640 W. Roosevelt Rd. (RM 707)
Chicago, IL 60608
(P) 312-996-3982 (F) 312-996-6942
www.rrtcadd.org

HRC Member Signatures:



APPENDIX I (continued)

LETTERS OF SUPPORT

From: Everson, Vincent [mailto:VEmerson@anixter.org]
Sent: Tuesday, May 25, 2010 11:36 AM
To: 'jsisirak@uic.edu'
Cc: Torpe, Charles
Subject: Community Supports for Adults with Intellectual Disabilities: Development of Nutrition Supports Scale (# 2009-1201)

Good Morning Jasmina,
I just spoke with Charles about your Nutritional survey.
We would be honored to participate to the extent helpful.
Please feel free to forward me any necessary information.
I can be reached either by email or phone 773-761-1501 ext 222.
Thanks again for the opportunity.
Vince Everson
Anixter Residential Services

VITA

Jasmina Sisirak, MPH

Curriculum Vitae

GENERAL INFORMATION

Office Address: Rehabilitation Research and Training Center on Aging with Developmental Disabilities (RRTCADD)
Department of Disability and Human Development, M/C 626
College of Applied Health Sciences
University of Illinois at Chicago
1640 West Roosevelt Road
Chicago, Illinois 60608
Phone: (312)-996-3982
Email: jsisirak@uic.edu

EDUCATION

University of Illinois at Chicago, School of Public Health
PhD candidate
Community Health Sciences
University of Illinois at Chicago, School of Public Health
Master of Public Health, 2002
Epidemiology
Southern Illinois University at Carbondale
Bachelor of Science in Dietetics, Cum Laude, 1999

PROFESSIONAL EXPERIENCE

Associate Project Director. Rehabilitation Research and Training Center on Aging with Developmental Disabilities (RRTCADD), DHD, CAHS, UIC, Chicago, Illinois. *2008 to present.*

Project Coordinator. Rehabilitation Research and Training Center on Aging with Developmental Disabilities (RRTCADD), DHD, CAHS, UIC, Chicago, Illinois. *2004 to2008.*

Coordinator. National Organization of Nurses with Disabilities (NOND) Internet Resource Clearinghouse: Regional Demonstration Project. *2005 to 2006.*

Field Coordinator. RRTCADD, DHD, CAHS, UIC Chicago, Illinois, *2002 to 2004*.

Project Coordinator, Evaluation of the National Special Olympics Healthy Athletes Pilot Projects. DHD, CAHS, UIC, Chicago, Illinois. *2003 to 2004*.

VITA (continued)

Project Coordinator. Illinois Information Center on Health Promotion, Nutrition and Disability. National Center on Physical Activity and Disability (NCPAD). DHD, CAHS, UIC, Chicago, Illinois. *2002 to 2004.*

Research Specialist. A Randomized Clinical Trial to Reduce Transmission of HIV Rates in Kisumu, Kenya. School of Public Health. UIC, Chicago, Illinois. *2002*.

Research Assistant. Exercise Adherence Among Adults with Mental Retardation/Exercise Adherence Among Adults with Down Syndrome. RRTCADD, DHD, CAHS, UIC, Chicago, Illinois. *2001 to 2002*

Research Assistant. Dose Response Effect of Aerobic Exercise in Improving Functional Capacity and Quality of Life in Persons with Stroke. Center for Health Promotion. Department of Disability and Human Development. DHD, CAHS, UIC, Chicago, Illinois. *2001-2002.*

HONORS/AWARDS

2001-2002 Recipient of the University of Illinois at Chicago's Public Health Traineeship Award for Post Graduate Studies

ONGOING RESEARCH SUPPORT

RC4HD066915 Marks (PI) 9/1/10-8/31/13
Eunice Kennedy Shriver National Institute of Child Health & Human Development
Community-Academic Partnership: Building an Infrastructure to
Improve Health for People Aging with DD
Role: Co-Investigator

Sisirak (PI) 5/1/09 – present
UIC Midwest Roybal Center for Health Promotion and Behavior Change
Community Supports for Adults with Intellectual Disabilities:
Development of Nutrition Supports Scale

H133B080009 Marks (PI) 10/01/08-9/31/13
National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education.
Efficacy of Interactive Distance Learning Train the Trainer Health Promotion Program
Role: Co-Investigator.

2009-07381 Marks (PI) 6/15/10-6/14/12
Special Olympics International
Athlete to Athlete:Peer Health Coaches Pilot Intervention
Role: Co-Investigator

VITA (continued)

COMPLETED RESEARCH SUPPORT

Marks (PI) 9/1/07 – 9/31/08
UIC Midwest Roybal Center for Health Promotion and Behavior Change
Continuity of Care for People Aging with I/DD: A Pilot Training Program
Role: Co-Investigator

ICDD2007 Marks (PI) 6-1-07 - 5-31-08
Illinois Council on Developmental Disabilities
Building Capacity among Pediatric Residents to Promote Health Advocacy among Persons with Developmental Disabilities
Role: Co-Investigator

H133B031134 Marks (PI) 09/01/03-2008
National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education
Healthy Communities for Adults with Intellectual and Developmental Disabilities: Evaluating the Efficacy of Two Train-the-Trainer Approaches.
Role: Project Coordinator.

2003-119 Heller (PI) 09/01/03-2008
Retirement Research Foundation
Health Promotion for Adults Aging with Intellectual and Developmental Disabilities: Train-the-Trainer Capacity Building Project.
Role: Project Coordinator.

P30 AG22849-01 Heller (PI) 09/01/03-2008
UIC Midwest Roybal Center for Health Promotion and Behavior Change
Health Promotion for People with Intellectual Disabilities: Train-the-Trainer Dissemination Pilot Project.
Role: Project Coordinator.

2007-03417 Marks (PI) 01/01/07-12/31/07
Northpointe Resources Inc.
Health and Wellness Capacity Building Project: “Getting the Memo”
Role: Co-Investigator

Heller (PI) 10/31/2004-5/1/2006
Special Olympics International Student Grants Program
Learning Through Pictures: Nutrition and Physical Activity Health Literacy for Adults with I/DD.
Role: Co-Investigator.

VITA (continued)

04-2-185 Heller (PI) 10/01/03-05/01/06
Special Olympics International
Evaluation of the National Special Olympics Healthy Athletes Pilot Projects.
Role: Project Coordinator.

Rimmer (PI) 12/01/02-12/01/03
Vitamin Anti-Trust Settlement Fund. Illinois Office of the Attorney General
Illinois Information Center on Health Promotion, Nutrition, and Disability.
Role: Project Coordinator.

SCHOLARLY COMMUNICATIONS/ELECTRONIC PUBLICATIONS

Refereed Publications

Marks, B. & Sisirak, J. (In Press). Interpreting Conceptualizations of Health among Persons with Disabilities Through Critical Social Theory. *Journal for the Anthropological Study of Human Movement, 16*(1).

Marks, B., Sisirak, J., Heller, T., & Wagner, M. (2010). Evaluation of Community-Based Health Promotion Programs for Special Olympics Athletes. *Journal of Policy and Practice in Intellectual Disabilities, 7*(2), 119–129.

Marks, B., **Sisirak, J.,** Hsieh, K. (2008). Health services, health promotion, and health literacy: Report from the State of the Science in Aging with Developmental Disabilities Conference. *Disability and Health Journal, 1(3),* 136-142.

Heller, T., Marks, B., Hsieh, K., Rimmer, J., & **Sisirak, J.** (2005). 1st IASSID Asian-Pacific Conference Taipei, Taiwan June 12–15, 2005 Abstracts (Long-term Outcomes of an Exercise Education Program on Adults with Down syndrome), *Journal of Policy and Practice in Intellectual Disabilities, 2(3-4),* 176.

Refereed Publications in Review

Marks, B., Sisirak, J., & Chang, Y.C. (In Review). Efficacy of a Train-The-Trainer Program to Improve Health Status for Adults with Intellectual Disabilities, Journal of Applied Research in Intellectual Disabilities.

Marks, B., Sisirak, J., & Chang, Y.C. (In Review). Increasing Health Advocacy among Health Care Providers Caring for Children and Adolescents with Disabilities and Special Health Care Needs: Efficacy of a Health Advocacy Training, Rehabilitation Nursing Journal.

VITA (continued)

Non-Refereed Publications

Marks, B. & Sisirak, J. (2010). Age-Related Changes for Adults with Developmental Disabilities. Impact Newsletter, 23(1), 24-25, 34.
Marks, B. & **Sisirak, J.** Promoting Wellness for People Aging With Disabilities: The Challenges for Providers. (February 2008) *Maximizing Human Potential.* American Society on Aging.

Compact Disk Production

Exercise and Nutrition Health Education Curriculum for Adults with Developmental Disabilities Beth Marks, Tamar Heller, & Jasmina Sisirak (2006) Revised 3rd Edition. Compact Disk.

BOOKS, BOOK CHAPTERS, MONOGRAPHS, REPORTS

Marks, B., Sisirak, J., & Heller, T. (2010). *Health Matters: Establishing Sustainable Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities*. Brookes Publishing: Philadelphia.
Marks, B., Sisirak, J. & Heller, T. (2010). *Health Matters: Exercise and Nutrition Health Education Curriculum for Adults with Developmental Disabilities*. Brookes Publishing: Philadelphia.
Marks, B. & Sisirak, J. (2010). Caregiving: Adults with Developmental Disabilities. In M.J. Craft-Rosenberg (Ed), *Encyclopedia of Family Health*, SAGE Publications, Inc.: Thousand Oaks, CA.
Marks, B., Sisirak, J., & Magallanes, E. (2010). Building Capacity among Health Professionals in Ecuador: Promoting Health Advocacy among Persons with Developmental Disabilities. The Global Health Leadership Office/WHO Collaborating Center & Department of Disability and Human Development, University of Illinois at Chicago, Chicago, IL.
Marks, B., Sisirak, J., Schmalzriedt, A. & Heller, T. (2005). *Engagement through Fitness: Training Manual.* Special Olympics International and Rehabilitation Research and Training Center on Aging with Developmental Disabilities, University of Illinois at Chicago.
Marks, B., Heller, T., **Sisirak, J**., Hsieh, K. & Pastorfield, C. (2005). *Health Promotion Pilot Programs Evaluation: Improving Athletes' Health – Final Report,* Special Olympics International, Washington, DC.
Sisirak, J. & Marks, B. (2005). *Physical Testing Procedure Manual*. Chicago: Rehabilitation Research and Training Center on Aging with Developmental Disabilities, University of Illinois at Chicago.

Nutrition fact sheets developed in 2003 and available on National Center on Physical Activity and Disability website (www.ncpad.org/nutrition): Alzheimer's disease and nutrition; Autism and nutrition; Do you know your Food Guide Pyramid?; Estimating serving sizes; Fatigue; Food Guide Pyramid; Food label; How good are you at estimating serving (portion) sizes?; Hydration; Hydration quiz; Multiple sclerosis and nutrition; Osteoporosis; Pressure ulcers (sores)

VITA (continued)

PRESENTATIONS

Marks, B. & **Sisirak, J**. (April-May 2010). Opening Doors for Nursing Students with Disabilities: Building Capacity for Success. 2010 North Carolina Board of Nursing Education Summit.

Sisirak, J. and Brinkmeier, K. (March 9, 2010). Health Matters: Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer Workshop, 2010 Oklahoma Governor's Conference on Developmental Disabilities, Oklahoma City, OK.

Sisirak, J. (January 14, 2010). Importance of physical activity and nutrition for people with I/DD. Lambs Farm, Libertyville, Illinois.

Marks, B. and **Sisirak, J**. (September 16, 2009). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, Salt Lake City, Utah.

Marks, B. and **Sisirak, J**. (July 8, 2009). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, Chicago, Illinois.

Sisirak, J., Marks, B., and Riley, B. (February 9, 2009). What Influences Fruit and Vegetable Intake among Adults with I/DD? Special Olympics World Winter Games, Boise, Idaho.

Marks, B., Sisirak, J., Contri, D. & Heller, T. (October 28, 2008). Increasing health advocacy among health care providers who care for people with I/DD: Impact of a new curriculum. American Public Health Association, 136th Annual Meeting & Exposition, San Diego, CA.

Marks, B., Sisirak, J., Riley, B., & Donahue Chase, D. (October 27, 2008). Psychometric testing of health promotion capacity checklist for community-based organizations. American Public Health Association, 136th Annual Meeting & Exposition, San Diego, CA.

Sisirak, J., Marks, B., Riley, B., Chang, Y.C. (October 27, 2008). Patterns of Medication Use and Health Status among Adults with I/DD. American Public Health Association, 136th Annual Meeting & Exposition, San Diego, CA.

Marks, B. and **Sisirak, J**. (October 1, 2008). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, STARS Technical Training, Oklahoma City, OK.

Marks, B., **Sisirak, J**., & Donahue Chase, D. (August 27, 2008). Pilot Testing of a Health Promotion Capacity Checklist for Community-Based Organizations. IASSID 13th World Congress, People with Intellectual Disabilities: Citizens of the World, Cape Town, South Africa.

Marks, B., **Sisirak, J**., & Heller, T. (August 27, 2008). Impact of a Health Advocacy Curriculum for Health Care Providers in Caring for Persons with I/DD. IASSID 13th World Congress, People with Intellectual Disabilities: Citizens of the World, Cape Town, South Africa.

Sisirak, J., Marks, B., Riley, B. and Heller, T. (August 28, 2008). Factors associated with fruit and vegetable intake among adults with I/DD. IASSID 13th World Congress, People with Intellectual Disabilities: Citizens of the World, Cape Town, South Africa.

VITA (continued)

Marks, B., **Sisirak, J.,** & Heller, T. (August 29, 2008). Efficacy of a Train-the-Trainer Program on Caregivers' Health Status, Perceptions, and Behavior. IASSID 13th World Congress, People with Intellectual Disabilities: Citizens of the World, Cape Town, South Africa.

Marks, B. & **Sisirak, J.** (November 12, 2007). Implementing Health Promotion Programs for Adults with Developmental Disabilities (DD). Illinois Recreational Therapy Association Conference, Alsip, Illinois.

Sisirak, J., Marks, B., Heller, T., Riley, B. (November 6, 2007). Dietary Habits of Adults with Intellectual and Developmental Disabilities Residing in Community-Based Settings. American Public Health Association, 135th Annual Meeting & Exposition, Washington, DC.

Marks, B., **Sisirak, J**., Heller, T., Riley, B. (November 6, 2007). Impact of a Train-the-Trainer Program on the Psychosocial Health Status of Staff Supporting Adults with Intellectual and Developmental Disabilities, American Public Health Association, 135th Annual Meeting & Exposition, Washington, DC.

Marks, B. and **Sisirak, J**. (September 14, 2007). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, Little City, Palatine, Illinois.

Marks, B., **Sisirak, J**. and Ong, C. (March 1 and 2, 2007). Fitness for All! Train the Trainer Workshop, Mt. Washington Recreation Center, Cincinnati, Ohio.

Marks, B. & **Sisirak, J**. (February 6 and 7, 2007). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, RRTCADD, Chicago, Illinois.

Marks, B. & **Sisirak, J**. (January 19, 2007). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, Northpointe Resources, Zion, Illinois.

Marks, B. & **Sisirak, J**. (January 11, 2007). Implementing Health Promotion Programs for Adults with Developmental Disabilities: Is Your Organization Ready? 5th Annual QMRP Leadership Conference, Alsip, Illinois.

Heller, T., Marks, B. Pastorefield, C., **Sisirak, J.** and Hsieh, K. (November 8, 2006). Outcomes of five community-based health promotion programs across the U.S. for athletes with intellectual disabilities, American Public Health Association, 134th Annual Meeting and Exposition, Boston, MA.

Sisirak, J., Marks, B., Riley, B. and Heller, T. (November 7, 2006). Learning Through Pictures: Nutrition and physical activity health literacy intervention for adults with I/DD, Poster session presented at the American Public Health Association, 134th Annual Meeting and Exposition, Boston, MA.

Marks, B., **Sisirak, J.,** Heller, T., and Riley, B. (November 6, 2006). Efficacy of a Train-the-Trainer Program to Improve Health Status for People with Intellectual and Developmental Disabilities, American Public Health Association, 134th Annual Meeting and Exposition, Boston, MA.

Marks, B., **Sisirak, J.**, and Brinkmeier, K. (October 18, 2006). Adults with I/DD – Promoting Healthy Aging. Illinois Association of Rehabilitation Facilities, 31st Annual Conference and Trade Show, Springfield, Illinois.

VITA (continued)

Marks, B. & **Sisirak, J**. (September 20 & 21, 2006). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, RRTCADD, Chicago, Illinois.

Marks, B. & **Sisirak, J**. (May 25 & 26, 2006). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, RRTCADD, Chicago, Illinois.

Marks, B. & **Sisirak, J**. (May 8 & 9, 2006). Exercise and Nutrition Health Education: Train-the-Trainer, Albuquerque, New Mexico.

Marks, B. & **Sisirak, J**. (April 24 &25, 2006). Exercise and Nutrition Health Education: Train-the-Trainer, CARC, Chicago, Illinois.

Marks, B. & **Sisirak, J**. (April 18 & 19, 2006). Establishing Community-Based Exercise and Nutrition Health Promotion Programs for Adults with Developmental Disabilities: Train the Trainer, RRTCADD, Chicago, Illinois.

Marks, B. & **Sisirak, J**. (March 28, 2006). Exercise and Nutrition Health Education: Train-the-Trainer, Jewish Foundation for Group Homes, Rockville, MA.

Marks, B. & **Sisirak, J**. (February 7, 2006). Exercise and Nutrition Health Education: Train-the-Trainer, Albuquerque, New Mexico.

Heller, T. & **Sisirak, J**. (January 24, 2006). Promoting Healthy Aging in a Community Setting, 4th Annual QMRP Leadership Conference, Alsip, Illinois.

Heller, T., Marks, B., **Sisirak, J.,** & Hsieh, K. (December 15, 2005). Health Promotion Pilot Programs Evaluation: Improving Athletes' Health, Final Report to Special Olympics International, Washington, DC.

Sisirak, J., Marks, B. Heller, T. (December 14, 2005). Reliability of Adapted Nutrition and Activity Knowledge Scale for People with Intellectual Disabilities, American Public Health Association, 133rd Annual Meeting & Exposition, Philadelphia, PA.

Marks, B., **Sisirak, J**., Heller, T., Hsieh, K. (December 12, 2005). Health Status, Perceptions, and Behavior of Staff Working with People with Intellectual and Developmental Disabilities, American Public Health Association, 133rd Annual Meeting & Exposition, Philadelphia, PA.

Marks, B. & **Sisirak, J.** (November 8 & 9 2005). Exercise and Nutrition Health Education for Adults with Developmental Disabilities, Lincoln, Nebraska.

Marks, B. & **Sisirak, J.** (October 14, 2005). Supporting Age-Related Changes Among Persons with Developmental Disabilities: Health Promotion Programs, Northpointe Resources, Zion, Illinois.

Marks, B. & **Sisirak, J**. (October 6 & 7, 2005). Exercise and Nutrition Health Education: Train-the-Trainer, Albuquerque, New Mexico.

Marks, B. & **Sisirak, J**. (September 22, 2005). Starting an Exercise and Nutrition Health Education Program for Adults with Developmental Disabilities, Project Renew, Milwaukee Training Initiative, Milwaukee, Wisconsin.

Marks, B. & **Sisirak, J**. (September 22, 2005). Keynote Presentation. Health Education to Support Age-Related Physical and Cognitive Changes Among Persons with Developmental Disabilities, Project Renew, Milwaukee Training Initiative, Milwaukee, Wisconsin.

Marks, B. & **Sisirak, J**. (September 20, 2005). Recognizing Age-Related Changes and Promoting Healthy Aging Among Persons with Developmental Disabilities, Council of Rehabilitation Affiliates, Chicago, Illinois.

VITA (continued)

Heller, T., Hsieh, K., Marks, B. & **Sisirak, J**. (June 13, 2005) .Health Promotion for Adults with Intellectual Disabilities, 1st International Congress of IASSID-Pacific, Taipei, Taiwan.

Marks, B. & **Jasmina, S**. (May 11, 2005). Exercise and Nutrition Health Education for Adults with Developmental Disabilities Train-the-Trainer Program. Department of Human Services Mini Conference, Chicago, IL.

Marks, B. & **Jasmina, S.** (April 27, 2005). Exercise and Nutrition Health Education for Adults with Developmental Disabilities Train-the-Trainer Program. Department of Human Services Mini Conference, Carbondale, IL.

Marks, B. & **Jasmina, S.** (April 12, 2005). Exercise and Nutrition Health Education for Adults with Developmental Disabilities Train-the-Trainer Program. Department of Human Services Mini Conference, Springfield, IL.

Sisirak, J. (December 8, 2004). People with intellectual and developmental disabilities and physical activity, Governor's Conference on Aging, Chicago, IL.

Heller, T., Marks, B., Pastorfield, C., Wagner, M., Corbin, S., Hsieh, K., & **Sisirak, J.** (June, 2004). Evaluation of the Special Olympics International Health Promotion Pilot Projects, AAMR 2004 Annual Meeting, Chicago, IL.

Sisirak, J. (March 11, 2004) Health Promotion for People with Intellectual Disabilities. Developmental Training Program In-Service Day presented at Clearbrook, Schaumburg, IL.

Sisirak, J. (November 18, 2003). Development of disability specific nutritional guidelines: Conceptual framework and fact sheets. Poster session presented at the American Public Health Association, 131st Annual Meeting and Exposition, San Francisco, CA.

Sisirak, J. & Marks, B. (April, 2003). Food and Nutrition Presentation, Blue Cap, Blue Island Citizens for Persons with Developmental Disabilities, Inc., Blue Island IL.

Sisirak, J. (April, 2002). Transmission of Helicobacter pylori among siblings in Peru. Capstone presented at School of Public Health, University of Illinois at Chicago, Chicago, IL.

Marks, B., **Sisirak**, J. & Ailey, S. (October, 2002). Health Promotion for Adults with Developmental Disabilities. Presented at Institut Republike Slovenije za Rehabilitacijo, Ljubljana, Slovenia.

PROFESSIONAL AFFILIATIONS/SERVICE WORK

Institutional Review Board (IRB), Office for the Protection of Research Subjects (OPRS), UIC, (August, 2006 – present) – Member.

American Public Health Association – Member

LANGUAGE PROFICIENCY

English – Fluent
Serbo-Croatian & Bosnian – Fluent
Slovenian – Basic