

USING THE THEORY OF PLANNED BEHAVIOR TO ASSESS PARTICIPATION IN
CONGREGATE MEAL PROGRAMS

by

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B.S., Fu-Jen Catholic University, Taiwan, 2001
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AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Hospitality Management and Dietetics
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Abstract

Congregate meal programs under Older Americans Act Title III C provide hot meals for individuals 65 and older in a community setting during lunch time. The program focuses on preventing the problems associated with malnutrition and social isolation. From 1980 to 2002, the number of congregate meals served decreased by 18% while home-delivered meals increased almost 290%. To further understand reasons for declining program participation factors that impact participation were examined. The Theory of Planned Behavior (TPB) was used in this study to explain participation intention of community-dwelling elderly who lived in the Kansas North Central-Flint Hill region.

A two-phased elicitation study including: 1) focus groups and 2) salient beliefs study was administered to uncover participation beliefs and identify and clarify salient belief items. Based on the results of an elicitation study and a literature review, a valid questionnaire was developed. Data were collected at a senior fair, senior centers, senior living facilities, senior exercise classes, and a monthly meeting of retired seniors yielding a total of 238 samples. Descriptive statistical analysis was used to summarize the respondent's demographic characteristics. A two-step modeling approach including confirmatory factor analysis and structural equation modeling was performed to assess measurement model fit and checked causal relationships between factors.

Five advantages that respondents believe influence participation include: convenience, social interaction, low-price, nutritious and balanced meals, and less waste. Family members, friends, neighbors, cooks at the meal site, and health professionals were important referents who affected seniors' program participation intention. The salient facilitators of program participation were activities at senior centers, the availability of transportation, the inclusive culture of senior centers, the lack of motivation and ability to cook, and poor weather.

Results show the data fits the TPB moderately well: all predictor variables (attitude, subjective norm, perceived behavior control (PBC), and past behavior) had a significant positive effect on participation intention. Among the four factors, PBC had the greatest predictive power on intention. Attitude had the least impact on participation intention.

Seniors provide thoughtful and insightful opinions about meal program. Results suggest program provider should focus on remove participation barriers and implement effective

strategies to increase congregate meal program participation. The ultimate goal is to encourage the elderly to participate, improving their nutritional intake and thus, their quality of life.

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Rebecca Gould

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Table of Contents

| | |
|---|------|
| List of Figures | xiv |
| List of Tables | xv |
| Acknowledgement | xvii |
| CHAPTER 1 - INTRODUCTION..... | 1 |
| Introduction..... | 1 |
| Statement of Problem..... | 3 |
| Justification..... | 5 |
| Purpose and Objectives..... | 6 |
| Research Model and Hypotheses..... | 6 |
| Significance of the study..... | 9 |
| Limitations of the study | 9 |
| Definition of Terms | 10 |
| References..... | 12 |
| CHAPTER 2 - REVIEW OF LITERATURE..... | 16 |
| Older Population in the United States..... | 16 |
| Demographics of Older Population | 16 |
| Long-term Care Services for the Elderly | 17 |
| Home and Community Based Services for the Elderly | 18 |
| Elderly Nutrition..... | 18 |
| Factors Affecting Nutritional Status of the Elderly | 18 |
| Socioeconomic Factors | 18 |
| Socialization..... | 18 |
| Poverty | 20 |
| Psychological Factors | 20 |
| Depression..... | 20 |
| Dementia..... | 20 |
| Physiological Factors | 21 |
| Chronic Disease | 21 |

| | |
|--|----|
| Oral Health Problems..... | 21 |
| Sensory Change/Loss..... | 21 |
| Nutrition and Quality of Life among the Elderly..... | 22 |
| Food Insecurity among the Elderly..... | 22 |
| Food Assistance Programs for the Elderly..... | 23 |
| Food Stamp Program (FSP)..... | 25 |
| Older Americans Act Nutrition Programs (OAANP)..... | 25 |
| Other Food Assistance Programs for Elderly | 25 |
| Older Americans Act Nutrition Program..... | 26 |
| History of the OAANP..... | 26 |
| Administration | 26 |
| Funding | 28 |
| Programs and Services..... | 29 |
| Congregate Meal Program | 30 |
| Home-Delivered Meal Program..... | 30 |
| Nutrition Service Incentive Program | 30 |
| Other Meal Services Provided under OAANP | 31 |
| Nutrition Requirement | 31 |
| Participation in OAANP..... | 33 |
| Participation Trend..... | 33 |
| Participation Eligibility..... | 33 |
| Participant Characteristics | 35 |
| Nutrition and Health Outcomes of Participants in OAANP | 36 |
| Nutritional Intake..... | 37 |
| Nutritional Risk..... | 42 |
| Socialization..... | 43 |
| Food Insecurity | 43 |
| Participation and Non-participation in OAANP..... | 44 |
| Perception of OAANP | 44 |
| Congregate Meal Program | 44 |
| Home-delivered Meal Program..... | 44 |

| | |
|--|----|
| Barriers to Participating in Program | 45 |
| Perception of Need..... | 45 |
| Program Features | 46 |
| Program Awareness | 47 |
| Improving Participation for Congregate Meal Programs..... | 47 |
| Theory of Planned Behavior | 48 |
| Research Using TPB in Measuring Health related Behavior among Older Adults | 50 |
| Indirect (Belief Based) Measure of Intention | 52 |
| Direct Measure-Predictor Variables of Intention..... | 55 |
| Attitude | 56 |
| Subjective Norm | 57 |
| Perceived Behavior Control..... | 58 |
| Past Behavior | 58 |
| Summary..... | 60 |
| References..... | 61 |
| CHAPTER 3 - METHODOLOGY..... | 73 |
| Population and Sample | 73 |
| Instrument Development..... | 73 |
| Guidelines for Research Instrument..... | 73 |
| Sources of Measurement..... | 75 |
| Elicitation Study..... | 75 |
| Phase I-Focus Group..... | 75 |
| Phase II-Salient Belief Study | 76 |
| Expert Panel | 77 |
| Pilot Test..... | 78 |
| Questionnaire Development..... | 79 |
| Measuring Belief-based Constructs | 79 |
| Behavioral Beliefs..... | 79 |
| Normative Beliefs | 80 |
| Control Beliefs..... | 81 |
| Measuring Predictor Constructs..... | 81 |

| | |
|---|-----|
| Attitude toward Program Participation | 81 |
| Subjective Norm | 82 |
| Perceived Behavior Control..... | 82 |
| Past behavior..... | 82 |
| Participation Intention..... | 82 |
| Measuring Demographic Variables | 83 |
| Data Collection | 83 |
| Data Analysis..... | 83 |
| Project Approval..... | 84 |
| References..... | 86 |
| CHAPTER 4 - PRELIMINARY EVALUATION OF SALIENT BELIEFS ABOUT | |
| PARTICIPATION IN CONGREGATE MEAL PROGRAMS | 88 |
| Abstract..... | 88 |
| Introduction..... | 88 |
| Theoretical Background..... | 90 |
| Theory of Planned Behavior | 90 |
| Salient Beliefs | 90 |
| Methodology..... | 92 |
| Focus Group..... | 92 |
| Salient Belief Study | 94 |
| Results..... | 96 |
| Focus Group..... | 96 |
| Sample Characteristics..... | 96 |
| Behavioral Beliefs..... | 96 |
| Normative Beliefs..... | 98 |
| Control Beliefs | 99 |
| Salient Belief Study | 102 |
| Sample Characteristics..... | 102 |
| Salient Beliefs | 102 |
| Discussion..... | 103 |
| Conclusions and Implications..... | 105 |

| | |
|--|------------|
| References..... | 107 |
| CHAPTER 5 - PREDICTING CONGREGATE MEAL PROGRAM PARTICIPATION: | |
| APPLYING THE THEORY OF PLANNED BEHAVIOR | 111 |
| Abstract..... | 111 |
| Introduction..... | 111 |
| Review of Literature | 113 |
| Congregate Meal Program Participation..... | 113 |
| Theoretical Framework..... | 116 |
| Beliefs Based Measures of TPB | 117 |
| Predictor Variables of Intention..... | 118 |
| Attitude | 118 |
| Subjective Norm | 119 |
| Perceived Behavior Control..... | 120 |
| Past Behavior | 120 |
| Methodology..... | 121 |
| Population and Sample | 121 |
| Questionnaire Development..... | 122 |
| Salient Beliefs..... | 123 |
| Predicting Variables and Intention..... | 124 |
| Demographic Characteristics | 125 |
| Data Collection | 125 |
| Missing Data Treatment..... | 125 |
| Data Analysis | 127 |
| Results..... | 128 |
| Data Screening..... | 128 |
| Descriptive Statistics..... | 128 |
| Respondent Demographic Characteristics | 128 |
| Descriptive of Measurement Items | 130 |
| Missing data | 132 |
| Measurement Model | 133 |
| Structural Model | 136 |

| | |
|---|-----|
| Discussion..... | 138 |
| Limitations and Future Study | 142 |
| Implications | 143 |
| Theoretical Implications | 143 |
| Practical Implications..... | 143 |
| Conclusions..... | 144 |
| References..... | 146 |
| CHAPTER 6 - Summary and Conclusions..... | 153 |
| Summary of Findings..... | 154 |
| The Elicitation Study | 154 |
| Model Evaluation..... | 154 |
| Other Findings | 156 |
| Implications | 156 |
| Theoretical Implications | 156 |
| Practical Implications..... | 157 |
| Limitations and Future Study | 158 |
| Conclusions..... | 160 |
| References..... | 161 |
| Appendix A - Salient Beliefs Questionnaire..... | 164 |
| Appendix B - Guidelines for Panel Reviews | 168 |
| Appendix C - Final Questionnaire | 171 |
| Appendix D - Focus Group Research Guidelines..... | 178 |
| Appendix E - Consent Form for Focus Group..... | 180 |

List of Figures

| | |
|---|-----|
| Figure 1.1 The Proposed Extended Theory of Planned Behavior | 8 |
| Figure 2.1 The Theory of Reason Action (Ajzen & Fishbein, 1980) | 48 |
| Figure 2.2 The Theory of Planned Behavior (Ajzen, 1985) | 49 |
| Figure 3.1 Research Procedure Flow Chart | 74 |
| Figure 3.2 Procedures for Data Analysis | 84 |
| Figure 5.1 Causal Relationships of Study Factors | 137 |

List of Tables

| | |
|--|-----|
| Table 2.1 Home and Community Based Programs for the Elderly | 19 |
| Table 2.2 Food Assistance Programs for the Elderly | 24 |
| Table 2.3 Major Amendments Affecting OAANP | 27 |
| Table 2.4 OAANP Funding, FY 1980-FY 2008 (in million dollars)..... | 29 |
| Table 2.5 Nutrient Requirements for OAANP | 32 |
| Table 2.6 OAANP Participation and Meals Served (in millions)..... | 34 |
| Table 2.7 OAANP Participant Characteristics, FY 2004 | 36 |
| Table 2.8 Studies of Participation OAANP Nutrition and Health-Related Outcomes | 38 |
| Table 2.9 Barriers to Participating in OAANP | 46 |
| Table 2.10 Older Adults Health Related Behavior Researches Using TPB | 51 |
| Table 3.1 Candidate Items for Beliefs: Results from Phase II-Salient Beliefs Study..... | 77 |
| Table 3.2 Reliability of Measurement (N=63)..... | 79 |
| Table 3.3 Study Variables and the Corresponding Questionnaire Item Number | 80 |
| Table 4.1 Focus Group Questions..... | 93 |
| Table 4.2 Candidate Items for Beliefs: Results from Elicitation Study..... | 95 |
| Table 4.3 Focus Group Profile and Participants' Characteristics..... | 96 |
| Table 4.4 Behavioral Beliefs and Sample Quotes | 97 |
| Table 4.5 Normative Beliefs and Sample Quotes..... | 98 |
| Table 4.6 Control beliefs and sample quotes | 100 |
| Table 5.1 Barriers to Participating in OAANP | 115 |
| Table 5.2 Data Collection Sites | 126 |
| Table 5.3 Respondents' Demographic Characteristics | 129 |
| Table 5.4 Descriptive Statistic of Measurement Items and Missing Data for Predictor Variables and Intention | 130 |
| Table 5.5 Descriptive Statistics of Measurement Items and Missing Data for Belief Constructs | 132 |
| Table 5.6 Descriptive Statistics of Missing Data on Initial sample..... | 133 |

| | |
|---|-----|
| Table 5.7 Factor loading, construct reliability, and AVE | 134 |
| Table 5.8 Correlations Matrix, the Square Correlations, AVE, Means and Standard Deviation of Measurement Model | 135 |
| Table 5.9 Hypothesis Test: Parameter Estimate and Fit Indices | 137 |

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CHAPTER 1 - INTRODUCTION

Introduction

The number of Americans aged 65 years and older is increasing. Baby boomers born between 1946 and 1964 will begin to reach 65 by 2011. By 2030, one in five individuals will be 65 or older (Federal Interagency Forum on Aging-Related Statistics, 2008). In addition, the Administration on Aging (AoA) (2007b) emphasized that the elderly population will double from 35 million in 2000 to 71.5 million in 2030. Extended life expectancy will increase the demands for special care services for the elderly.

In 2003, 22.7 million households were maintained by a person aged 65 or older (He, Sengupta, Velkoff, & DeBarros, 2005). In 2006, only 4.4% of the 65 and older population lived in institutional settings such as nursing homes or assisted living facilities (AoA, 2007b). Most elderly lived with their spouses or alone in the community and required assistance with eating, bathing, walking and other activities. Increasing number of community-dwelling elderly expect well-organized aging related associations and well-established community based service programs. The AoA is a government organization focused on promoting the dignity and independence of older adults and preparing society for an aging population. Community-based programs, such as the congregate meal and home-delivered meal programs under Title III-C of the Older Americans Act (OAA), are administered by AoA.

Independence and autonomy are significant quality of life issues for the elderly. Small things such as independent shopping and cooking without the need for assistance help the elderly maintain their dignity. The National Evaluation of Older Americans Act Nutrition Program (OAANP) 1993-1995 found that participants who are regular patrons of the programs spend less time in the hospital and overall, had better nutritional health (Ponza et al., 1996). The pilot study of the Second National Evaluation of OAA Title III conducted during 2004 (AoA, 2006) reported that 72% of participants could continue to live in their own home.

The elderly account for 36% of all healthcare expenditures in the United States (United State Department of Health and Human Service (USDHHS), Centers for Medicare & Medicaid Services, 2006). They also use hospitals at nearly three times the rate of younger adults, and average seven to eight medical visits per year (Weimer, 1997). Medication and hospital visits

represent a large portion of elderly expenses. If the elderly can prevent disease or delay premature death by participating in OAANP, this would result in huge savings for the elderly, in healthcare costs and in other governmental expenditures.

Nutrition plays a critical role in the health, functionality and quality of life among the elderly. Improving daily nutrient intake and nutritional status help people age successfully. Nutritional status is a key indicator of overall health. Thus, monitoring nutritional status in older persons benefits themselves and society as a whole. These benefits include positive health outcomes, reduced health care costs, less dependence on caregivers, and fewer hospitalization stays as well as less time required to recover from illness (Carey & Gillespie, 1995; Gallagher-Allred, Voss, Finn, & McCamish, 1996; Chima, et al., 1997; Kuczmarski & Weddle, 2005).

OAANP, including congregate meal programs and home-delivered meal programs for persons who are 60 years of age or older, was authorized under OAA Title III and supported by State Agencies on Aging. The program was intended to eliminate problems with dietary inadequacy and social isolation. The legislative intent was to make community based services available to older adults who may be at risk of losing their independence (USDHHS, AoA, 2003).

Decreasing participation and loss of funding for congregate meal programs highlight the need to understand what factors affects seniors' intentions to participate in congregate meal programs. Focus groups were conducted to uncover the barriers and obstacles to participation and defined the components of a successful program (Florida International University (FIU), 2000, 2001). No research has examined attitudes about the program. This study will use a theoretical model, the Theory of Planned Behavior, to assess participation in congregate meal programs.

The Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991; Ajzen & Madden, 1986) is an extension of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), and is a valuable tool for predicting and understanding an individual's behavior. The TRA assumes that human beings are typically rational and make systematic use of the information available to them (Ajzen & Fishbein, 1980). However, the limitation of the TRA is that it assumes that behavior is completely volitional. A person may intend to perform a behavior but may be prevented from doing so because of inadequate opportunities or resources (Ajzen, 1985). Ajzen (1985) expanded the TRA to the TPB by including the factor of perceived behavior control.

The TPB is comprised of three major factors that affect a person's decision to perform a behavior: 1) personal beliefs and attitudes toward the behavior, 2) social influences from outside sources and 3) the appropriate resources to perform the behavior together with the perceived difficulty of performing the behavior. In this study, the TPB is a more appropriate model than the TRA for examining elderly decisions to participate in congregate meal programs because target behaviors are affected by lack of transportation, health problems, bad weather, etc.

Previous tests of the TPB found that past behavior can enhance prediction of intention and/or future behavior (Bentler & Speckart, 1979; Ajzen & Driver, 1992; Sonmez & Graefe, 1998; Ouellette & Wood, 1998; Leone, Perugini & Ercolani, 1999; Oh & Hsu, 2001). Ouellette and Wood (1998) conducted a meta-analysis examining 64 studies and found past behaviors were an important predictor of future behavior and intention. Because of the empirical evidence, the frequency of past behavior should lead to future behavior. Therefore, it was hypothesized that the frequency of past program participation should affect future participation intention.

Statement of Problem

Reports from Congress about OAANP (O'Shaughnessy, 2004) illustrate that from 1980 to 2002, the number of congregate meals served declined by 18%, while the number of home-delivered meals served grew by almost 290%. Congregate meals decreased from 132 million in 1980 to 108 million in 2002. Although previous studies show that congregate meals are important, participation has declined.

Congregate meal programs are the largest component of the OAA, serving a total of 1.7 million seniors in 2006 and at the same time, home-delivered meals served 0.9 million seniors (AoA, 2008). However, from 1980 to 2008, funding for home-delivered meal programs grew by 262% while funding for congregate meal programs increased by only about 42% (O'Shaughnessy, 2004; O'Shaughnessy & Napili, 2006). In recent years, state transfer funds have resulted in declining funds for congregate meal programs. In 2006, states transferred \$63 million from congregate meal allotments to either the home-delivered meals or supportive services allotments, resulting in a decrease of 17% in funds earmarked for congregate meal programs (AoA, 2008).

More funding for home-delivered meal programs was followed by rapid growth of requests for the program. Total home-delivered meals served increased from 36.4 million to

140.2 million between 1980 and 2006 (Ponza, Ohls & Posner, 1994; O'Shaughnessy, 2004; AoA, 2007a). The reason for the increasing demand for home-delivered meals were increasing numbers of frail oldest-old individuals (USDHHS, AOA, 2007); federal or state government expansion of home care service for frail elderly living at home (O'Shaughnessy, 2004) and the early discharge of older Medicare patients from the hospital resulting in increasing demand for home and community based programs (Ponza, Ohls, & Posner, 1994).

Home-delivered meal programs target individuals who are home bound due to disability or illness. On the other hand, congregate meal programs target free-living seniors who are able to go to the meal site. Both programs offer nutritious meals to improve the nutritional status of the elderly. However, home-delivered meal programs cannot provide enough social interaction with others especially in a congregate setting (i.e., senior center or meal site) and social support. Moreover, socialization was the most frequently mentioned advantage by congregate meal program participants (Slezak, 2000).

The elderly population in U.S. continues to increase. However, declining numbers in congregate meal programs participation and decreasing congregate meal program funding from the government doesn't match future growth in the elderly population or the services they need. Providers need to understand why eligible elderly don't want to or cannot participate in the program? Do congregate meal programs fit the needs of the community-dwelling elderly? How can program providers better understand their clients and encourage them to participate in these programs? What can local, state, and federal organizations do to improve program participation? The imbalance between declining participation and the growth in the elderly population could be alleviated by understanding this population's behavior and how they use these programs.

Understanding the attitudes of non-participants or irregular participants toward behavioral intention can help improve program participation. Few previous studies have assessed nutritious intake, nutritional risk, socialization, and food insecurity among non-participants by compared program participants and non-participants data. Some researchers who have evaluated non-participant attitudes follow. Ponza et al. (1996) in the national OAANP evaluation used a random sample of non-participants selected from U.S Health Care Financing Administration Medicare beneficiary listing. Neyman and his colleagues (1996, 1998) randomly selected non-participants from senior centers in two California counties. However, these researchers did not focus on exploring seniors' attitude about a specific program, these studies examined the

perception of the program from the perspective of program participants or the program providers (GAO, 2000; Slezak, 2000), but not from the perspective of non-participants. This study incorporates both a sample of participants and one of non-participants to further understand senior's attitude toward congregate meal programs.

Previous research has focused on the nutritional risk of congregate meal participants, physical constraint and quality of life. However, little research has assessed attitude and social behavior using a theoretical framework. This lack of a theoretical foundation might affect the validity of existing research. Therefore, the following research questions are explored in this study:

- What are the specific attributes for measuring the salient beliefs?
- What are the factors that influence the intentions of community-dwelling elderly to participate in congregate meal programs?
- Can the extended TPB provide a suitable foundation for establishing a conceptual model of congregate meal program participation?
- What is the relative importance of each variable in the extended TPB in predicting community dwelling elderly participation intention?

Justification

Congregate meal and home delivered meal programs provide nutritious meals to seniors based on provisions within the Older Americans Act. Both programs have challenges. Home delivered meals require a fleet of volunteers, transportation to get the meals to seniors, extensive temperature control requirements and strict adherence to food safety practices and critical control points. Foodborne illness caused by improper food-handling procedures was commonly found among home delivered meal program participants (Almaza, Namkung, Ismail & Nelson, 2007). Congregate meal programs has the potential to cost less due to the setting in which the meals are served, and an easier way to control food safety, food temperatures and critical control points. Socialization is an added benefit of the congregate meal environment (Slezak, 2000). However the literature suggests that this concept might be misunderstood as a means for successful aging especially for those women living alone who actually had better mental health, vitality and physical function compared with women living with a spouse (Michael, Berkman, Colditz & Kawachi, 2001). For these reasons and to better serve seniors, this

study attempts to better understand why seniors choose to participate in the congregate meal setting. The results will help administrators understand how to better serve this population, encourage participation and perhaps save federal dollars in the process.

The American Dietetic Association (ADA) position paper (Kuczmarski & Weddle, 2005) advocates that nutritional well-being is essential to the health and quality of life of older adults. The ADA recommends that ongoing research focus on broadened nutritional benefits to community-dwelling elderly as well as their ability to access nutritional programs. Awareness of programs and providing the elderly with effective nutrition services, intervention and therapies across the aging spectrum will continue to expand as the population of the aging grows.

Purpose and Objectives

The purpose of this study is to understand participation intention of community-dwelling elderly in congregate meal programs using the extended TPB model.

The specific objectives for this study include

- Identify salient beliefs about participating in congregate meal programs
- Determine appropriate questions to measure the factors associated with the TPB
- Examine the construct validity of an extended TPB model
- Identify the effects of salient beliefs on attitudes, subjective norms, and perceived behavior control
- Discover the specific beliefs that most influence each belief factor (behavioral beliefs, normative beliefs, and control beliefs)
- Test the causal relationship between the predictor variables (attitude, subjective norm, perceived behavior control and past behavior) and intention
- Investigate the extent to which predictor variables influence program participants' intention.

Research Model and Hypotheses

The extended TPB model was used in this study to achieve the research objectives. One construct-past behavior was added to the original TPB. Figure 1.1 illustrates the hypothesized relationship in the proposed extended TPB model. Detailed explanations of each hypothetical

relationship among the constructs in the TPB are presented in Chapter 2. The hypotheses for this study are:

Hypothesis 1: Behavioral beliefs toward congregate meal program participation are positively associated with attitudes about program participation.

Hypothesis 2: Normative beliefs about congregate meal program participation are positively associated with subjective norms about program participation.

Hypothesis 3: Control beliefs of congregate meal program participation are positively associated with perceived behavior control about program participation.

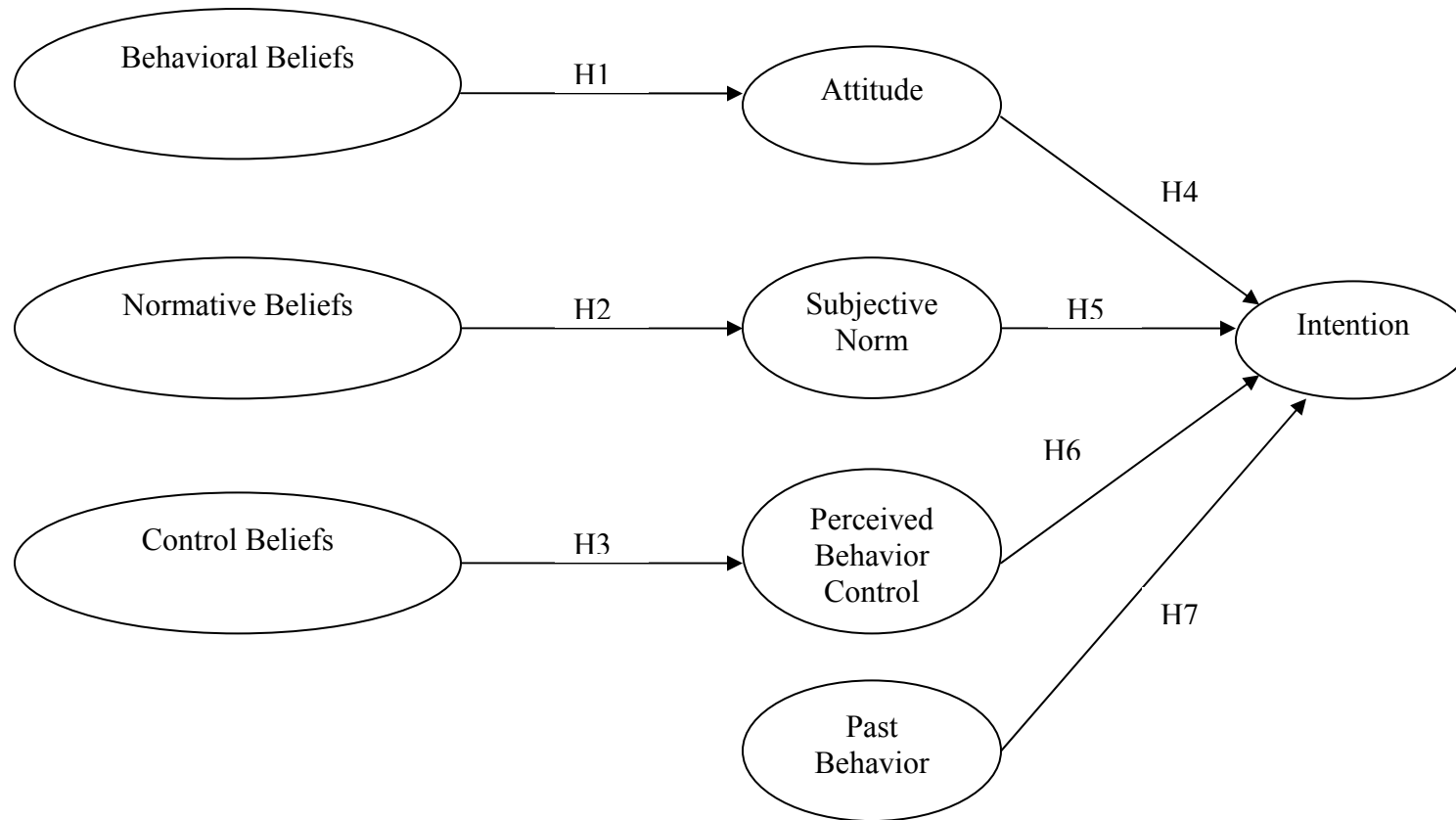
Hypothesis 4: Attitudes toward program participation has a positive effect on participation intention.

Hypothesis 5: Subjective norms about program participation have a positive effect on participation intention.

Hypothesis 6: Perceived behavior control about program participation has a positive effect on participation intention.

Hypothesis 7: Past behavior is a significant predictor of participation intention.

Figure 1.1 The Proposed Extended Theory of Planned Behavior



Significance of the study

This study has both theoretical and practical applications. It broadens our knowledge about congregate meal program participation. This study will apply the Theory of Planned Behavior to congregate meal program participation. Studies of seniors and their use of nutrition programs have typically used descriptive or simple comparison methods to evaluate outcomes like nutrition, health risk, socialization, and food insecurity, but no theory-driven study on this topic exist. This study will incorporate a theoretical framework and establish a sound foundation to expand our understanding of community-dwelling elderly congregate meal program participation. The research also includes the addition of one construct: past behavior. A simultaneous inclusion of additional constructs corresponds to recent theoretical development in human behavior (Oh & Hsu, 2001). Thus, this study contributes to the existing body of research using TPB.

The practical applications for this study derive from understanding the factors that affect congregate meal program participation intention. The results of this study could be used to improve programs. Barriers to participation identified will be share with local, state, federal agencies. By understanding the seniors' needs, the department of aging should consider to reallocate funds for the congregate meal program. Understanding the attitudes of the elderly toward the program and how those factors may affect their willingness to participate in the program will help program managers focus on key components to attract seniors to congregate meal sites. In addition, managers can provide useful program information to the family member of seniors who play an important role in influencing seniors' participation intention. Onsite coordinators can thus make adjustments to their sites and programs to enhance participation. The ultimate goal is to encourage the elderly to participate, improving their nutritional intake and thus, their quality of life.

Limitations of the study

There are several known limitations to the study. First, the study targeted the community-dwelling elderly who live in the Kansas North-Central Flint Hills (NCFH) region. Generalizing study results are one limitation. The sample represents the NCFH seniors' opinions or feelings about the program, not the whole U.S senior population. Second, this study only focused on

measuring intention instead of actual behavior. Intention might not be a predictor for actual behavior. Some meta-analysis data using the TRA and TPB have shown that the relationship between intention and actual behavior ranges from .44 to .62 and prediction power was low (Sutton, 1998). Actual participation remains unknown. Last, this study relies on self-reported frequency of the past four weeks of congregate meal program participation for measuring the past behavior. Although the time frame is short, some seniors might have difficulty in recalling actual participation. This may result in some research bias.

Definition of Terms

Attitude: An attitude represents a person's general favorable or unfavorable feeling toward some stimulus objects, where "object" is used in the generic sense to refer to any aspect of the individual's world (Fishbein & Ajzen, 1975, p.216).

Behavioral Intention: the immediate determinant of behavior, and when an appropriate measure of intention is obtained, it will provide the most accurate prediction of behavior (Ajzen & Fishbein, 1980, p.41).

Congregate Meals: Services or activities designed to prepare and serve one or more meals a day to individuals in central dining areas to prevent institutionalization, malnutrition, and feelings of isolation (USDHHS, 2006).

Community-dwelling Elderly: the elderly (who are 60 years old or older) who live alone, with a their spouse, relatives or others in the community setting, unlike the elderly who are institutionalized such as those in nursing home, or long-term care facilities.

Perceived Behavior Control: people's perception of the ease or difficulty of performing the behavior of interest (Ajzen, 1991).

Subjective Norm: a person's perception that most people who are important to him/her think he/she should or should not perform the behavior in question (Ajzen & Fishbein, 1980, p.57).

Theory of Reasoned Action (TRA): The theory is based on the assumption that human beings are usually rational and make systematic use of the information available to them. People consider the implication of their actions before they decide to engage or not engage in a given behavior (Ajzen & Fishbein, 1980, p.5).

Theory of Planned Behavior (TPB): The TPB is an extension of Theory of Reasoned Action. The difference between the TRA and the TPB is that the TPB includes non-volitional control, also called “actual control” over the behavior (Ajzen, 1985).

References

- Administration on Aging (AoA) (2006, June 1). *Highlights from the pilot study: second national survey of Older Americans Act Title III service recipients*. Retrieved May 19, 2008 from <https://www.gpra.net/nationalsurvey/files/2ndhighlights.pdf>.
- Almanza, B. A., Namkung, Y., Ismail, J. A., & Nelson, D. C. (2007). Clients' safe food-handling knowledge and risk behavior in a home-delivered meal program. *Journal of the American Dietetic Association, 107*, 816-821
- AoA (2007a). *National aging program information systems*. Retrieved May 10, 2008 from <http://www.aoa.gov/prof/agingnet/napis/napis.asp>
- AoA (2007b). *US Department of Health and Human Services. A profile of Older Americans: 2007*. Retrieved Mar 10, 2008 from <http://www.aoa.gov/prof/statistics/profile/2007/2007profile.pdf>
- AoA (2008). *FY2006 U. S. Profile of OAA programs*. Retrieved Mar 10, 2008 from <http://www.aoa.gov/prof/agingnet/napis/SPR/2006SPR/Profiles/us.pdf>
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.
- Ajzen, I., & Driver, B. L. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research, 24*(3), 207-224.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall Inc.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavior control. *Journal of Experimental Social Psychology, 22*, 453-474.
- Bentler, P. M., & Speckart, G. (1979). Models of attitude-behavior relations, *Psychological Review, 86*(5), 452-464.
- Carey, M., & Gillespie, S. (1995). Position of the American Dietetic Association: Cost-effectiveness of medical nutrition therapy. *Journal of the American Dietetic Association, 95*(1), 88-91.

- Chima, C. S., Barco, K., Dewitt, M. L. A., Maeda, M., Teran, J. C., & Mullen, K. D. (1997). Relationship of nutritional status to length of stay, hospital costs, and discharge status of patients hospitalized in the medicine service. *Journal of the American Dietetic Association, 97*, 975-978.
- Florida International University (FIU) (2000). *Evaluation of nutrition programs prepared for suburban area agency on aging and community nutrition network-executive summary*. Retrieved Apr 23, 2007 from http://nutritionandaging.fiu.edu/creative_solutions/Focus%20Groups%20Executive%20Summary.pdf
- FIU (2001). *Increasing participation at Older American Act Title III founded congregate meal sites*. Retrieved Mar 30, 2007 from http://nutritionandaging.fiu.edu/creative_solutions/participation_in_AoA_act.asp
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. California: Addison-Wesley.
- Federal Interagency Forum on Aging-Related Statistics (2008). *Older Americans 2008, key indicators of well-being*. Washington, DC: U.S. Government Printing Office. Retrieved Apr 17, 2008 from http://www.agingstats.gov/agingstatsdotnet/Main_Site/Data/2008_Documents/OA_2008.pdf
- Gallagher-Allred, C. R. Voss, A. C., Finn, S. C., & McCamish, M. A (1996). Malnutrition and clinical outcomes: The case for medical nutrition therapy. *Journal of the American Dietetic Association, 96*, 361-369.
- General Accounting Office (GAO) (2000). *Food assistance options for improving nutrition for older Americans*, GAO/RCED-00-238, retrieved Apr 15, 2008 from <http://www.gao.gov/new.items/rc00238.pdf>
- He, W., Sengupta, M., Velkoff, V., & DeBarros, K. (2005, Dec). *65+ in the United States: 2005. U. S. census bureau, current population report, P23-209*. U.S. Government Printing Office, Washington, DC, Retrieved Oct 16, 2007 from <http://www.census.gov/prod/2006pubs/p23-209.pdf>

- Kuczmariski, M. F., & Weddle, D.O. (2005). Position paper of the American Dietetic Association: nutrition across the spectrum of aging. *Journal of the American Dietetic Association, 105*, 616-633.
- Leone, L., Perugini, M., & Ercolani, A. P. (1999). A comparison of three models of attitude-behavior relationships in the studying behavior domain. *European Journal of Social Psychology, 29*, 161-189.
- Michael, Y. L., Berkman, L. F., Graham, A. Colditz, G. A., Kawachi, I. (2001). Living arrangements, social integration, and change in functional health status. *American Journal of Epidemiology, 153*(2), 123-131
- Neyman, M. R., Zidenberg-Cherr, S., & McDonald, R. B. (1996). Effect of participation in congregate site meal programs on nutritional status of the healthy elderly. *Journal of the American Dietetic Association, 96*(5), 475-483.
- Neyman, M. R., Block, G., Johns, M., Sutherlin, J. M., Mc Donald, R. B., & Zidenberg-Cherr, S. (1998) Effect of participation in congregate-site meal programs on the energy and nutrient intakes of Hispanic seniors. *Journal of the American Dietetic Association, 98* (12), 1460-1462
- Oh, H., & Hsu, C. (2001). Volitional degrees of gambling behaviors. *Annals of Tourism Research, 28*(3), 618-637.
- O'Shaughnessy, C. (2004). *CRS report for congress-Older Americans Act Nutrition Program*. Retrieved Apr 23, 2007 <http://www.nationalaglawcenter.org/assets/crs/RS21202.pdf>
- O' Shaughnessy, C., & Napili, A. (2006, December 11). The Older Americans Act: programs, funding, and 2006 reauthorization (P.L. 109-365), RL31336. Retrieved Apr 23, 2008 from <http://www.ncoa.org/attachments/CRSOAARReport.pdf>
- Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin, 124*(1), 54-74.
- Ponza, M., Ohls, J. C., & Posner, B. M. (1994). *Elderly nutrition program evaluation literature review*. Princeton, NJ: Mathematica Policy Research, Inc.
- Ponza, M., Ohls, J. C., Millen, B. E., McCool, A. M., Needels, K. E., & Rosenberg, L. et al. (1996). *Serving elders at risk. The Older Americans Act Nutrition Programs*. National

- evaluation of the Elderly Nutrition Program, 1993-1995*. Mathematical Policy Research, Inc: NJ.
- Slezak, D. (2000, August 9). *Evaluation of nutrition programs prepared for suburban area agency on aging and community nutrition network*. Retrieved Apr 22, 2008 from http://nutritionandaging.fiu.edu/creative_solutions/Focus%20Groups%20Executive%20Summary.pdf
- Sonmez, S. F., & Graefe, A. R. (1998). Determining future travel behavior from past travel experience and perceptions of risk and safety. *Journal of Travel Research*, 37(2), 171-178.
- Sutton, S. (1998). Predicting and explaining intentions and behavior: how well are we doing? *Journal of Applied Social Psychology*, 28(15), 1317-1338.
- U.S. Department of Health and Human Service (USDHHS), AoA (2003). *Elderly nutrition program fact sheet*. Retrieved Sept 8, 2007 from http://www.aoa.gov/press/fact/pdf/fs_nutrition.pdf
- USDHHS (2006). Uniform definition of service. Retrieved Oct 10, 2007 from <http://www.acf.hhs.gov/programs/ocs/ssbg/sub1/unifdef.html>
- USDHHS, Centers for Medicare & Medicaid Services (2006). *Health expenditures by age*. Retrieved Oct 17, 2007 from <http://www.cms.hhs.gov/NationalHealthExpendData/downloads/agetables.pdf>
- U. S. Department of Health and Human Services (USDHHS), AoA (2007) *A profile of older Americans: 2007*. Retrieved Apr 4, 2008 from <http://www.aoa.gov/prof/statistics/profile/2007/2007profile.pdf>
- Weimer, J. (1997). *Many elderly at nutritional risk*. Retrieved Oct 17, 2007 from <http://www.ers.usda.gov/publications/foodreview/jan1997/jan97g.pdf>

CHAPTER 2 - REVIEW OF LITERATURE

Older Population in the United States

Demographics of Older Population

The number of Americans aged 60 years and older is increasing. Baby boomers born between 1946 and 1964 will begin to reach 65 by 2011. Over the next 30 years, the population over 65 is expected to double. In 2007, one in every eight individuals in the population was an older American (United State Department of Health and Human Service (USDHHS), AoA, 2007). By 2030, one in five individuals will be 65 or older (Federal Interagency Forum on Aging-Related Statistics, 2008). From 2000 to 2030 the elderly population should grow from 35 million to about 72 million.

Life expectancy continues to increase because of the improvements in the physical condition of the elderly. Individuals who reach the age of 65 have an average life expectancy of an additional 18.7 years (USDHHS, AoA, 2007). The oldest old (individuals who are age 85 and up) population will increased from 4.2 million in 2006 to 7.3 million in 2020, a 44% increase (USDHHS, AoA, 2007). This group is the fastest growing segment of the population. The increase in life expectancy means that many older adults have more opportunities for leisure, second careers, and community service than previous generations. However, elderly who have chronic diseases and depend on others for care will increase demands for home, community or institutional long-term care services.

The aging population today is the most diverse in U.S history. Minority elderly will increase from 4.2 million in 2000 to 7.3 million in 2020, comprising 23.6% of the elderly population in 2020 (USDHHS, AoA, 2007). Minority elderly have typically lived in low income households, frequently with health problems that required assistance from government. African Americans, Indians/Alaskan Natives, and Hispanics rated their health lower than Caucasians and Asians (AoA, 2008b). Special services for heath care, nutrition, recreation, and housing must be provided to this diverse senior group. Moreover, income disparities will continue among the elderly subgroups (Economics and Statistic Administration, 2005).

Long-term Care Services for the Elderly

Older Americans and their caregivers want more choices for their living environment and health-related services to optimize their independence, productivity, and quality of life (Weddle & Fanelli-Kuczmarski, 2000). Varying levels of care also are necessary as physical functions deteriorate. The elderly expect more choices in long-term care services.

To meet the expectations and the demands of current and potential customers, traditional institutional and hospitalized environmental settings with the lack of independence in nursing homes has been replaced by long term care facilities that focus on hospitality and customer service quality. Constructing of alternatives such as assisted living, adult day care and senior apartment living are being provided. The construction of these facilities has increased dramatically in recent years (Harrington, Chapman, Miller, Miller & Newcomer, 2005). Assisted living facilities that blend housing, hospitality and health-related services are popular long-term care options (The National Center for Assisted Living, 2001).

Formerly, long-term care was defined as traditional nursing home care. Today, long-term care services means service assistance provided over a long period to people with chronic health conditions or physical disabilities who cannot care for themselves without the help of another person (Kane et al., 1996). A variety of housing options includes senior apartment living, assisted living, retirement communities, and nursing homes. Federal and state agencies encourage home and community based service options because of the high cost of nursing facilities. The elderly want living accommodations that allow them to remain independent and active in their community (Weddle & Fanelli-Kuczmarski, 2000).

The concept “aging in place” reflects the needs of the older population. The term has many definitions and does not necessarily mean aging in one setting or in one’s own home until death (Weddle, Wellman & Shoaf, 1996, p. 1150). The American Dietetic Association (ADA) 2000 position paper defines “aging in place” as “the spectrum of living options and medical and supportive services customized to accommodate those who are fully active and have no impairments, those who need limited assistance, and those with more severe impairment who require care in long-term care facilities” (Weddle & Fanelli-Kuczmarski, 2000, p.581). Payment for these options can come from private funds (out-of-pocket expense), public monies (federal and state support program) or a combination.

Home and Community Based Services for the Elderly

The home and community-based services provided through formal networks are designed to help older adults, their families and caregivers to remain living in their home or community, retaining as much independence and quality of life as possible. Services such as feeding, bathing, shopping, cooking, medication monitoring and house cleaning not only provide direct assistance to elderly, but also give family members and caretaking duties. The services offered and provided by each state department on aging might differ depending on policy, resources, and funding. Table 2.1 shows detailed information about home and community service program provided to seniors.

Elderly Nutrition

Factors Affecting Nutritional Status of the Elderly

Several factors affect elders' ability to maintain adequate food intake to meet their nutritional needs, categorized into three groups: socioeconomic, psychological, and physiological.

Socioeconomic Factors

Socialization

Meal quality for the elderly can be improved when they share their meals with friends or family or eat in a congregate setting instead of eating alone. Social interaction positively influences elderly nutritional intake (Phillips, 2006). Some previous studies have shown social isolation affects the food and dietary intakes of the elderly (Bianchetti, Rozzini, Carabellese, Zanetti & Trabucchi, 1990; Murphy, Davis, Neuhaus & Lein, 1990; Walker & Beauchene, 1991; Murphy, Rose, Davis, Neuhaus & Lein, 1993; Zylstra, Beerman, Hillers, & Mitchell, 1995). Elderly who live alone and have infrequent contact with family members or others have problems with nutritional inadequacy because they have less motivation to prepare meals for themselves or to eat regularly. They also are less likely to shop for food and cook. Elderly who eat alone have decreased appetite and interest in food, resulting in poor nutritional intake.

Table 2.1 Home and Community Based Programs for the Elderly

| Service/program | Program description | Eligibility | Application |
|---|---|--|--|
| Senior Care Act | <ul style="list-style-type: none"> • <i>Service:</i> Attendant care, respite care, and transportation. • <i>Cost:</i> Based on elders' liquid assets, services are offered on a sliding fee scale. Customers pay a donation to 100% of the cost of the service. | <ul style="list-style-type: none"> • Age 60+ • Elders must demonstrate ≥ 2 Activities of Daily Living (ADL) and ≥ 3 instrumental ADL | Area Agency on Aging (AAA) |
| Older American Act | <ul style="list-style-type: none"> • <i>Service:</i> Information, legal assistance in-home services, transportation, nutrition program, caregiver program, etc. • <i>Cost:</i> Contribution basis. | <ul style="list-style-type: none"> • Age 60+ | AAA |
| Home & Community Based Services for the Frail Elderly | <ul style="list-style-type: none"> • <i>Service:</i> Attendant care, nursing evaluation visit, adult day care, assistive technology, sleep cycle support, personal emergency response, wellness monitoring and medication reminder. • <i>Cost:</i> Free | <ul style="list-style-type: none"> • Age 65+ and • Meet Medicaid income eligibility guidelines and meet Medicaid long-term care threshold. | AAA |
| Supplemental Security Income | <ul style="list-style-type: none"> • <i>Service:</i> Monthly payment for people • <i>Cost:</i> Free | <ul style="list-style-type: none"> • Low-income • Age 65+, blind or disabled | Social security office |
| Food stamps program | <ul style="list-style-type: none"> • <i>Service:</i> Providing coupon and electronic benefits to purchase food. • <i>Cost:</i> Free | <ul style="list-style-type: none"> • Low-income | Department of Social & Rehabilitation Services (SRS) |
| Medicaid | <ul style="list-style-type: none"> • <i>Service:</i> Physician, hospital, and prescription drug services. • <i>Cost:</i> Depending on services | <ul style="list-style-type: none"> • Low-income, blind and/or disabled person of any age. | SRS |
| Medicare | <ul style="list-style-type: none"> • <i>Service:</i> Health insurance for elderly • <i>Cost:</i> Depending on services | <ul style="list-style-type: none"> • Age 65+ or disabled. | SRS |

Note: Compiled from Kansas Department on Aging (2007, July). Explore Your Options: A Kansas guide to information and in-home service, 2007-2008 Edition, Area 08. Topeka, KS: Kansas Department on Aging.

Poverty

Poverty greatly affects the nutrition status of the elderly. The risks for malnutrition are commonly associated with the low-income elderly. Many researchers have examined the relationships among income, nutritional status, food insufficiency and food insecurity in older populations (Ryan, & Bower, 1989; Weimer, 1998; Sahyoun & Basiotis, 2000; Ziliak, Gundersen, & Haist, 2008). Elderly living on fixed incomes have difficult choices in spending money on medication, health care, housing or nutritious food. The cost of food is often the first and only expense where older adults would compromise on their budget. The result of spending less money on food could be serious malnutrition.

Psychological Factors

Depression

Depression is a common psychological factor resulting in weight loss for the elderly who are ambulatory and living in nursing home (Thompson & Morris, 1991; Morley & Kraenzle, 1994). Older adult depression is caused by loss of a spouse or significant others, a rapid deterioration of health, or financial problems. The symptoms of depression (e.g. appetites loss and weight loss) may cause nutritional problems. The drugs used to treat depression, antidepressants and anti-anxiety agents, have side effects that depress nutritional intake. Frequently reported side effects include decreased appetite, nausea, dry mouth, drowsiness, anorexia, and constipation (Roe, 1990; Dwyer, 1991).

Dementia

Dementia is a disease comprising declining memory and other cognitive functions, which leading to loss of independence and placing an increased burden on the family. The prevalence of dementia increases with age, from 5% of the elderly aged 70 to 79 to 37% of the elderly aged 90 and older (Plassman, Langa, Fisher, Heeringa, Weir, et al., 2007). Dementia is often observed in nursing home residents who also have inadequate nutrient intake (Amelia, Grant & Mulloy, 2008). In the early stages of dementia or Alzheimer's disease, individuals may occasionally forget when and what they eat. During the middle stage of dementia, individuals may begin to have trouble chewing, have limited attention spans, forget to wear dentures and lose their

appetites. Severe dementia includes forgetting how to chew and needing to be fed. All of these symptoms put the elderly at higher risk for malnutrition.

Physiological Factors

Chronic Disease

Chronic diseases such as arthritis, cancer, diabetes, high blood pressure, cardiovascular disease and kidney disease are commonly found in the elderly and increase with age. Chronic disease can directly or indirectly affect seniors' diet and nutrition by affecting their ability to prepare a proper diet and digest, absorb or use nutrients (Dwyer, 1991; ADA, 2008). Other chronic diseases such as arthritis and osteoporosis might make it difficult to shop, cook and eat meals. Some diseases, like chronic obstructive pulmonary disorder, diabetes, cancer, congestive heart failure, and infections would increase metabolic demand and excretion rate and decrease the metabolic appetite affecting nutrient absorption (Marcus & Berry, 1998; Womack & Breeding, 1998).

Oral Health Problems

Food intake for the elderly is affected by the condition of their mouth, teeth and oral cavity. Oral health problems commonly found in the older adult include cavities, gum diseases, soft tissue and bone problems, dry mouth, tooth loss, lack of or poorly fitting dentures, medication side effects, diseases of the oral tissues, and pain (ADA, 2008). Dentures have been significantly related to poor diet in community dwelling elderly (Fischer & Johnson, 1990). Swallowing problems common in older adults can profoundly affect food choices. In a study of homebound elders in New York, difficulty in swallowing was positively related to not eating on one or more days per week (Frongillo, Rauschenbach, Roe, & Williams, 1992). Elderly with oral health problems may eliminate the food they can no longer chew, bite, or swallow or that irritate a painful mouth. The more food removed from the diet, the greater chance of causing malnutrition.

Sensory Change/Loss

The sense of smell and taste also decrease with aging. One common reason that the elderly don't finish their meals is that the food no longer tastes good. Morley (2001) found that 40% of individuals with chemosensory problems are aged 65 and over. Food flavors can change

with the loss of both olfactory and taste perception. Sensory changes associated with the aging population are related to poor appetite, inappropriate food choices, and an increased risk of malnutrition (Griep et al., 1996; Schiffman & Graham, 2000; Kim, Hur, Cho & Lee, 2003). The elderly may lose their enjoyment of food when their sensory faculties are on the decline.

Nutrition and Quality of Life among the Elderly

The 2005 position paper of American Dietetic Association (Kuczmarski & Weddle, 2005) stated that nutritional well being affects the quality of life for adults 60 years and older. Food enjoyment does contribute to the quality of life for older adults (Kerschner, & Pegues, 1998). Rosenberg and Miller (1992) proposed that the most practical outcome of research on the relationship of diet and nutrition to aging would be a better understanding of how nutrition-related behaviors can provide an optimal quality of life.

Previous studies have examined the relationship between nutrition and quality of life in the elderly. Vailas and her colleagues (1998) study used 180 Older Americans Act Nutrition Program (OAANP) participants to evaluate the relationship between quality of life and risk indicators for malnutrition. The researchers found that nutritional risk and food insecurity were negatively associated with quality of life. In a longitudinal study examining the prediction power of nutritional risk and quality of life in 367 elderly community living Canadians (Keller, Østbye, & Goy, 2004), nutritional risk is a predictor for the decline of health related quality of life over time.

Food and nutrition service and nutritional status should be included in the outcome assessment for quality of life in older adults. Barr and Schumacher (2003a) suggested that consistent outcome measures used across clinical conditions to measure nutritional quality of life is lacking. They used focus groups, surveys, and consensus to develop a nutritional quality of life framework. Barr and Schumacher (2003b) proposed six clusters that represent nutritional quality of life: food impact, self-image, psychological factors, social/interpersonal factors, physical factors and self-efficacy. This nutritional quality of life measurement can help in assessing the nutritional status of the elderly and improve their quality of life.

Food Insecurity among the Elderly

The U.S Department of Agriculture defines food insecurity as "... uncertain of having, or unable to acquire, enough food to meet the needs of all their members because they had

insufficient money or other resources for food” (USDA, 2007c). The most recent national data collected in 2005 by the Economic Research Service under USDA using a set of 18 validated questions to measure food security, showed that 730,000 households with elderly members (2.7%) suffer food insecurity (Nord, Andrew & Carlson, 2006). Another national study evaluated OAANP participants and found one in ten congregate meal participants and one in six home-delivered meal participants had suffered food insecurity during the preceding month (Ponza et al., 1996). The prevalence of food insecurity among older adults is a serious issue for policy makers, the government, and scholars.

Food security is strongly related to income, race and ethnicity. Nord (2002) in a food security report found that the rate of food insecurity among those elderly households with income below the federal poverty line is more than 12 times, the elderly household with an income above 185% of the poverty line. In addition, food insecure households are more likely to be Hispanic (18.9%) and black (18.9%) seniors than non-Hispanic white elderly (3.7%). The elderly living alone were more likely to suffer hunger than the households with more than one elderly member. The elderly who are in economic and social need are more likely to face food insecurity.

In recent years, more researchers have studied are examining food insecurity and other related factors in the older population. A study in New York found that 3.4% of congregate meal clients and 17.5% of clients waiting to receive home-delivered meals did not eat for one or more days, a strong indicator of food insecurity (Frongillo et al., 1992). Wolfe and others (1996) conducted an in-depth interview with 41 low-income elderly in New York to determine the potential effect of income on food insecurity. The conceptual framework showed that health, food program participation, and life experiences related to food insecurity among the older population.

Food Assistance Programs for the Elderly

The Food Stamp Program (FSP) and OAANP are two major federal programs that provide critical nutrition support for the elderly. Other food assistance programs for elderly are Commodity Supplemental Food Program, Child and Adult Food Program, and the Seniors Farmers’ Market Nutrition Program. Table 2.2 illustrates federal food assistance programs for the elderly.

Table 2.2 Food Assistance Programs for the Elderly

| Program | What is available? | Who is served? | Household income limit |
|--|--|--|---|
| Commodity Supplemental Food Program (CSFP) | Food for home use | Pregnant, postpartum, or breast feeding women; children from birth to 6 years old; or people who are 60+ | Income up to 185% of Federal Poverty Income Guidelines (FPIG) for women, infants and children, or up to 130% of FPIG for people 60+ |
| Food Stamp Program (FSP) | Food for home use | Low income people of any age | Gross income up to 130% of FPIG and net income (after reductions of up to 100% of FPIG) |
| Senior Farmers' Market Nutrition Program (SFMNP) | \$ 30 of locally grown fruits, vegetables and herb at farmers' markets or roadside farm stands | Low income senior (who are age 60+) | Income up to 185% of FPIG. Some state agencies accept proof of participation CSFP and FSP for SFMNP |
| Child and Adult Care Food Program | Up to two meals and one snack each day in adult day care centers | Adults age 60 or older who are enrolled in participating adult care centers | None |
| Older Americans Act Nutrition Program | Congregate meals, home delivered meals, commodity supplement, nutrition education and nutrition counseling | People 60+ and their spouse | None |

Note: Compiled from "Guild to Kansas Food Resources," Kansas Hunger Reduction Network, 2005, [Online]. Available at http://www.srskansas.org/ISD/ees/Guide_KS_Food_Resources.pdf and "Child and Adult Care Food Program," USDA, 2008, Mar 26, [Online]. Available at <http://www.fns.usda.gov/cnd/care/Regs-Policy/AdultCare/Adultfaqs.htm>

Food assistance programs are beneficial to the food-insecure elderly. The 1993-1995 national OAAANP study found that participants are better nourished and have higher levels of socialization than non-participants (Ponza, et al., 1996). In addition, food assistance programs such as home-delivered meal programs can help seniors live independently, stay in their own homes longer and delay placement in nursing homes, thus preventing or reducing spending on

medical help and hospital stays. The cost of one year's home-delivered meal program for an older individual is approximately the same as a one day hospital stay (AoA, 2002).

Food Stamp Program (FSP)

The FSP is available to all individuals or households that meet certain income criteria. Low-income families are the target population. However, for the eligible elderly, the number of FSP participants is small than other age groups. According to the USDA 1997 report (GAO, 2000), only about 30% of elderly persons who were eligible for food stamps participate in the program while about 63% of all eligible persons participate in FSP. Since the participation rate for the elderly is low, government and state agencies should seek approaches to reach more elders in need and promote the FSP.

Older Americans Act Nutrition Programs (OAANP)

OAANP are state and community programs that fall under Older American Act (OAA) Title III for U.S older population and Title VI, specifically for older Native Americans. OAANP has three major programs including the congregate and home-delivered meal programs, as well as nutrition service incentive programs for elderly who face the problems of inadequate diets and social isolation. The next section will explain OAANP in detail.

Other Food Assistance Programs for Elderly

Other programs that assist elders in meeting their food needs include the Commodity Supplemental Food Program (CSFP), the Child and Adult Care Food Program (CACFP), and the Senior Farmers' Market Nutrition Program (SFMNP).

The CSFP provides food and administrative funds for distributing food packages to supplement the diets of low-income adults aged 60 or more, as well as new mothers, infants, and children. The CSFP operates in only 35 states, including of Kansas (USDA, 2007a). In FY2006, more than 90% of all enrolled participants were elderly adults with more than 422,000 elderly participating each month (USDA, 2007a). For CACFP, the adult participants who are functionally impaired or 60 years of age or older were enrolled in an adult day care center (USDA, 2008). The SFMNP provides fresh, locally grown produce from farmers' markets, roadside stands, and community supported agriculture programs to low-income seniors and was initiated in FY 2002. In FY 2006, 825,691 elderly received SFMNP coupons (USDA, 2007b).

Older Americans Act Nutrition Program

Older Americans Act Nutrition Program (OAANP), formerly known as the Elderly Nutrition Program authorized a range of food and nutrition services to promote health and functional independence and manage chronic disease.

History of the OAANP

The Older Americans Act 1965 was originally signed into the Law in 1965 by President Lyndon B. Johnson as a 3-year demonstration project. The OAANP was officially developed in 1972 when Congress enacted the National Nutrition Program for the Elderly as Title VII in the OAA. In 1978, the OAANP was consolidated under Title III (Title IIIC-1 congregate nutrition service and Title IIIC-2 home-delivered nutrition services), and grants to Indian Tribes were added under Title VI.

Since the creation of the OAANP, the OAA has been amended frequently. These amendments added new responsibilities and justified other under the original legislation. Table 2.3 shows the major amendments affecting the OAANP from year 1973 to 2006.

Administration

Administration on Aging (AoA) works closely with U.S Department of Health and Human Services to administer OAA. The AoA governs the OAA through a National Aging Service Network of approximately 56 State Units on Aging (SUA), 655 Area Agencies on Aging (AAA), and thousands of local service providers that provide direct services to seniors (AoA, 2006b).

Based on the information provided through their official webpage, AoA is the federal leader of National Aging Service Network. AoA works to enforce awareness among other federal agencies, state organizations, and local groups and alerts the public to the needs of vulnerable older adults. The SUAs serve as the state governmental agencies for aging issues and works with other state agencies and public and private organizations that provide services to the elderly. AoA grants OAA funds to SUAs to support home and community based programs. Then, SUAs

Table 2.3 Major Amendments Affecting OAANP

| Year | Amendments |
|-------------|---|
| 1973 | To increase organizational effectiveness at the state and local level, State agencies were directed to divide their respective states into planning and service areas and to designate AAAs to develop and administer the plans. The amendments also authorized the Secretary of the USDA to donate commodities and dairy products to the nutrition program. |
| 1978 | Consolidated the social services, nutrition and multipurpose senior centers authorized previously under Title III, V, and VII into a new Title III. Separate appropriations were authorized for congregate meal services and home-delivered meal programs, and states were allowed to transfer funds between their separate allotments for congregate and home-delivered nutrition services. The legislation also established separate funding under Title VI for provision of congregate and home-delivered meals to elderly Native American Indians and Native Alaskans (Part A) and Native Hawaiians (Part B). |
| 1981 | Modified Title III to increase the states' flexibility in administering funds for support and nutrition services, by allowing states to transfer funds between their separate allotments for supportive and nutrition services. The amendments also extended eligibility for nutrition services to certain groups, for example, handicapped or disabled individuals younger than 60 years of age. |
| 1984 | Enhanced the states' ability to transfer funds between their separate allotments for support and nutrition services and to target resources for low income, minority elderly. Modified how funds for state administration are allocated to SUAs. |
| 1986 | Increased appropriations for USDA commodity programs and increased the level of reimbursement for each meal served under the program. |
| 1987 | Set a maximum 30% limit of funds that can be transferred among allotments. States required the AAA to attempt to provide services to low-income and minority participants in at least the same proportion as their population in the local area. |
| 1992 | Reauthorized OAA for four years. Required increasing data collection efforts to support evaluation of the effectiveness of reaching economically and socially needy elderly, clarified criteria for the intrastate funding formula and reduced the limit on the percentage of funds that can be transferred among allotments. |
| 2000 | Added focus on older individuals residing in rural areas. NSIP (formerly known as the USDA cash or cash in-lieu of commodities program) transferred from USDA to AoA. The law required that each state allotment be increased at a rate that is at least 20% of the percentage increase in the total allotment over the FY2000 amount. |
| 2006 | Addressed the Title III (except E) funding formula, principle of choice for independence, Nutrition Service Incentive Program (NSIP), mental health services, targeting of older individuals with limited English proficiency, planning for baby boomers, use of volunteers in direct service provision, and planning for disaster preparedness |

Note: Compiled from Ponza, Ohls & Posner (1994), O'Shaughnessy (2004) and AoA (2006a, 2007a).

award funds to designated AAAs to provided services at the local level to the need elderly. The agencies might be public agencies located within county government, a regional planning council, an unit of city government or a private nonprofit organization. All of the services are offered to achieve the same goal: "...enable seniors to remain in their own homes with high quality of life for as long as possible through the provision of home and community based services" (AoA, 2007b).

Funding

In 2008, the total funding for nutrition programs will be 711.5 million. Fifty four percent of the funding is for congregate meal programs; 26% for home-delivered meal programs and 20% for the Nutrition Service Incentive Program (Table 2.4). Funding for OAANP represents approximately 58% of the 2008 funding for OAA Title III, which also funds a wide range of community programs for the elderly such as senior centers and supportive services, family caregiver programs, disease prevention and health promotion and in-home service for the frail elderly. The demands for home-delivered nutrition programs have increased dramatically in recent years. Table 2.4 shows that from 1980 to 2008, the funding has grown by 262% for the home-delivered meal program, while funding for congregate meal programs increased by only 42%.

State transfer funds have decreased for congregate meal programs in recent years. In 2006, states transferred 63 million dollars out of the congregate meal program allotments to other programs within OAA Title III, resulting in a decrease of 17% in funds that were originally targeted for congregate meals (AoA, 2008a). Funding for home-delivered meals increased by 17% as a result of transfers (AoA, 2008a) and demands from home-bound and frail elderly.

OAANP funding is influenced by state, tribal, local and other federal monies and service as well as increased donations from participants (Ponza et al., 1996). Millen and other researchers (2002) found that federal AoA resources contributed 37% of the overall cost of providing congregate meals and 23% of home-delivered meals. Other federal sources (mainly the USDA, commodity supplement) provided 11% of resources. State, local, and private resources provide 17% of congregate and 33% of home delivered meal funding. Participants' contributions (which are completely voluntary), solicited donations, and volunteer time are estimated to contribute about one third (about 34%) of the meal cost. OAANP relies on

Table 2.4 OAANP Funding, FY 1980-FY 2008 (in million dollars)

| Fiscal year | <i>Congregate meal program(CMP)</i> | | <i>Home-delivered meal program(HDMP)</i> | | <i>Nutrition services incentive program(NSIP)</i> | | Total |
|---------------|-------------------------------------|-------------|--|--------------|---|--------------|-------|
| | \$ | CMP /total* | \$ | HDMP/ total* | \$ | NSIP/ total* | |
| 1980 | 270.0 | 68.49 | 50.0 | 12.68 | 74.2 | 18.82 | 394.2 |
| 1985 | 336.0 | 63.29 | 67.9 | 12.79 | 127.0 | 23.92 | 530.9 |
| 1990 | 351.9 | 61.26 | 79.0 | 13.75 | 143.5 | 24.98 | 574.4 |
| 1995 | 375.8 | 60.62 | 94.1 | 15.18 | 150.0 | 24.20 | 619.9 |
| 1996 | 364.5 | 58.81 | 105.3 | 16.99 | 150.0 | 24.20 | 619.8 |
| 1997 | 364.5 | 59.77 | 105.3 | 17.27 | 140.0 | 22.96 | 609.8 |
| 1998 | 374.4 | 59.77 | 112.0 | 17.88 | 140.0 | 22.35 | 626.4 |
| 1999 | 374.3 | 59.76 | 112.0 | 17.88 | 140.0 | 22.35 | 626.3 |
| 2000 | 374.3 | 56.60 | 147.0 | 22.23 | 140.0 | 21.17 | 661.3 |
| 2001 | 378.4 | 55.64 | 152.0 | 22.35 | 149.7 | 22.01 | 680.1 |
| 2002 | 390.0 | 54.45 | 176.5 | 24.64 | 149.7 | 20.90 | 716.2 |
| 2003 | 384.6 | 53.84 | 181.0 | 25.34 | 148.7 | 20.82 | 714.3 |
| 2004 | 387.3 | 54.14 | 179.9 | 25.15 | 148.2 | 20.72 | 715.4 |
| 2005 | 385.1 | 53.75 | 182.8 | 25.51 | 148.6 | 20.74 | 716.5 |
| 2006 | 385.1 | 53.89 | 181.8 | 25.44 | 147.7 | 20.67 | 714.6 |
| 2007(budget) | 398.9 | 54.27 | 188.3 | 25.62 | 147.8 | 20.11 | 735.0 |
| 2008(request) | 383.4 | 53.89 | 181.0 | 25.44 | 147.1 | 20.67 | 711.5 |

Note: * Percentage of total funding. Compiled from O'Shaughnessy (2004) and O'Shaughnessy & Napili (2006).

participants' donations and each state has its own requirements for suggested contributions. For example, the suggested donation for Kansas North Central-Flint Hills AAA is \$ 2.75. Program participants are encouraged to the voluntarily contribute to meal and supportive services.

Programs and Services

The Older Americans Act Nutrition Program (OAANP) is the largest community nutrition program provided for older adults in the U.S. OAANP under OAA, including Title III-C and Title VI, provides grants to states and territories to establish and manage nutrition

programs for both congregate and home delivered nutrition programs. Title III-C also authorized the Nutrition Service Incentive Program that provides cash or commodities to states and tribes for meals. Title VI provides grants to tribes, tribal organization, and public and non-profit private organizations representing Native Hawaiians for nutrition services, and family caregiver services that meet the unique culture aspects of this population. In this study, the major focus will be in OAA Title III-C program, because of data limitations and incomplete literature available for the Title VI.

Congregate Meal Program

Congregate meal programs are part of the community based service program (Title III of the Older Americans Act). The legislative intent is to make community based services program available to community-dwelling elderly at risk of losing their independence. Especially for the elderly who are poor, minorities and those living in rural areas where access to services may be limited, community based services across the states received funding from federal, state, local and private donations.

- Based on the Older Americans Act (2006a), congregate meal programs must
- Provide five or more days a week (except in a rural areas) at least one hot or other appropriate meal per day;
- Provide in congregate settings, including adult day care facilities and multigenerational meal sites;
- Include nutrition education services and other appropriate nutrition services for older individuals.

Home-Delivered Meal Program

Home-delivered meal programs should follow the Older Americans Act (2006b) and provide five or more meals per week, and offer at least one home delivered hot, cold, frozen, dried, canned or supplemental foods (with a satisfactory storage life) meals per day. The community-dwelling elderly who are home-bound because of disabilities or illness are the targeted population for home-delivered meals.

Nutrition Service Incentive Program

Nutrition Service Incentive Program (NSIP) is the USDA cash allotment or commodity program authorized by the OAA to provide state agencies with either cash allotments or commodities to encourage the delivery of OAANP meals more effectively and efficiently. Most SUAs do not use the commodity option and only a cash allotment is available (Wellman et al, 2005).

Other Meal Services Provided under OAANP

Some program providers work with dietitians to provide creative meal options for their clients. Balsam and his colleagues (2000) summarized the results of two national studies on service innovations in the OAANP. The authors reported that the program provides a variety of services such as weekend meals, congregate breakfast/supper programs, ethnic meals, religious meals, modified or special diet meals, frozen meals, or ready to eat meals for meal participants.

Nutrition Requirement

OAANP meals must comply with the most recent Dietary Guidelines for Americans and provide the following:

- A minimum of 33% of the Dietary Reference Intakes (DRI) as established by the Food and Nutrition Board of the Institute of Medicine of the National Academy of Sciences, if the project provides one meal per day.
- A minimum of 66% of the Dietary Reference Intakes if the facility provides two meals per day,
- 100 % of the allowances if the project provides three meals per day.

Programs also must provide culturally appropriate meals if most participants are from different culture background and meals should adjust to meet any special dietary needs of the participants. Nutrient requirements are used as a guide in menu planning of OAANP (Table 2.5).

Table 2.5 Nutrient Requirements for OAANP

| | Energy (Kcal) | Protein (g) | Carbohydrate (g) | Total Fat (g) | Saturated Fat⁷ | Cholesterol (mg)⁷(g) | Sodium (g) | Fiber (g) |
|---|--------------------------|------------------------|-----------------------------|--------------------------|--------------------------------------|--|-----------------------|------------------|
| OAA standards: <i>Dietary Guidelines for Americans</i> | | | >55% | <30% | <10% | <300/day | <2400/day | - |
| OAA standards: <i>1/3 DRIs¹</i> | 685 ³ | 19 ⁴ | 43⁵ | 23 | Limit | Limit intake | | 10* |
| <i>AMDR²</i> | | 10-35% | 45-65% | 20-35% | intake | | | |
| OAANP national evaluation ⁶ | | | | | | | | |
| <i>Congregate meal</i> | 849 | 37 | 49% | 35% | 12% | 87 | 1162 | |
| <i>Home-delivered meal</i> | 828 | 41 | 49% | 34% | 12% | 71 | 951 | |

¹ Recommended Dietary Allowances (RDAs) are in bold type and Adequate Intakes (AIs) are in ordinary type followed by an asterisk (*).

² Acceptable Macronutrient Distribution Ranges (AMDRs) for intakes of carbohydrates, proteins and fats are expressed as % of total calories.

³ Value are based on the Estimated Energy Requirements (EER) table. Used 75 year old male, height of 5'7", "low active" physical activity level (PAL) and calculated the median BMI and calorie level for men and subtracted 10 kcal/day (from 2504) for each year of age above 30.

⁴ The RDA for protein equilibrium in adults in a minimum of 0.8 gm/kg body weight for reference body weight.

⁵ The RDA for carbohydrate is the minimum adequate to maintain brain function in adults.

⁶ National Evaluation of the OAANP 1993-1995, Mathematica Policy Research, Inc., 1996.

⁷ DRI value for saturated and monounsaturated fatty acids, and cholesterol not established as "they have no beneficial role in preventing chronic disease, and thus are not required in the diet.

Note. Compiled from the Institute of Medicine, Dietary Reference Intakes: Applications in Dietary Assessment, (2000) and Dietary Reference intakes for Energy, Carbohydrates, Fiber, Fat, Protein and Amino Acids, (2000).

Participation in OAANP

Participation Trend

AoA program data collected from 1980 to 2000 shows an increased number of OAANP meals served (Table 2.6). Most growth occurred in the early 1980's for congregate meal programs. The highest number of total congregate meals served was approximately 150 million meals served in year 1985. However, for home-delivered meal programs, the meals served have increased dramatically between 1980 and 1990. Since 1990 the number has grown steadily.

Participation in the OAANP mirrors the trend in meals served. For congregate meal programs, participation decreased from 2.4 million in FY 1995 to 1.7 million in FY 2006, except for FY 2002 and 2003, a 30% reduction. During the same timeframe, participation in home-delivered meal programs fluctuated slightly, with a 0.9 million participation rate.

A continuing shift in services has occurred over time from congregate meals programs to home-delivered programs. In 1980, the congregate meals served were 78% of the total meals served by OAANP. Home-delivered meals were only 22% of total meals. The percentage of total meals served as congregate meals decreased steadily, from 78% to 41%. In contrast, the percent of home-delivered meals increased significantly from 22% to 59%.

Previous studies have suggested reasons for the increased demand for home-delivered meals, including increasing numbers of older persons in the population, particularly the frail oldest-old (elderly who are older than age 85) (USDHHS, AoA, 2007); federal or state government expansion of home care services for frail living at home (O' Shaughnessy, 2004); the early discharge of older Medicare patients from hospitals, resulting in increasing demand for medical or daily living assistance from home and community-based programs (Ponza, Ohls, & Posner, 1994), and increased federal funding for home-delivered meal programs (Table 2.4).

Participation Eligibility

OAANP *Title III C-1 congregate meals* provides meals for persons who fit one of the following criteria 1) a person who is 60 years or older and a spouse (who may be younger than 60); 2) disabled persons younger than 60 living in housing facilities where congregate meals are served; 3) disabled persons residing at home with elderly individuals and accompanying them to congregate meal sites; and 4) volunteers providing services during meal hours. *Title III C-2*

Table 2.6 OAANP Participation and Meals Served (in millions)

| Fiscal year | <i>Congregate meal program(CMP)</i> | | | <i>Home-delivered meal program(HDMP)</i> | | | Total meals |
|-------------|-------------------------------------|---------------|-------------------------------|--|---------------|--------------------------------|-------------|
| | meal served | Participation | CMP /total meals ^a | meal served | participation | HDMP /total meals ^a | |
| 1980 | 132.0 | - | 78.38 | 36.4 | - | 21.62 | 168.4 |
| 1985 | 149.9 | - | 66.50 | 75.5 | - | 33.50 | 225.4 |
| 1990 | 142.2 | - | 58.28 | 101.8 | - | 41.72 | 244.0 |
| 1995 | 123.4 | 2.41 | 50.91 | 119.0 | 0.99 | 49.09 | 242.4 |
| 1996 | 118.6 | 2.15 | 49.92 | 119.0 | 0.88 | 50.08 | 237.6 |
| 1997 | 116.5 | 2.11 | 48.54 | 123.5 | 0.89 | 51.46 | 240.0 |
| 1998 | 114.0 | 1.90 | 46.72 | 130.0 | 0.90 | 53.28 | 244.0 |
| 1999 | 112.8 | 1.77 | 45.59 | 134.6 | 0.83 | 54.41 | 247.4 |
| 2000 | 115.9 | 1.75 | 44.68 | 143.5 | 0.96 | 55.32 | 259.4 |
| 2001 | 112.1 | 1.75 | 43.86 | 143.5 | 0.93 | 56.14 | 255.6 |
| 2002 | 108.3 | 1.91 | 43.27 | 142.0 | 1.00 | 56.73 | 250.3 |
| 2003 | 105.7 | 1.84 | 42.57 | 142.6 | 0.95 | 57.43 | 248.3 |
| 2004 | 105.6 | 1.78 | 42.48 | 143.0 | 0.97 | 57.52 | 248.6 |
| 2005 | 100.5 | 1.75 | 41.77 | 140.1 | 0.94 | 58.23 | 240.6 |
| 2006 | 98.0 | 1.70 | 41.14 | 140.2 | 0.92 | 58.86 | 238.2 |

Note: ^a Percentage of total funding. CMP=Congregate Meal Program, HDMP= Home-Delivered Meals Program. Compiled from Ponza, Ohls, & Posner (1994), O'Shaughnessy (2004), AoA (2007c).

home-delivered meals are available to homebound persons 60 years or older and a spouse (who may be younger than 60) and disabled persons younger than age 60 living with an elderly person. Home-delivered meal participants were homebound because of their disability, illness or social isolation.

Based on the 2006 amendment of the OAANP (2006c), the program targets the elderly with the most “economic or social need.” Economic need results from an income level at or below the poverty line and/or a “social need,” the need caused non-economic factors like 1) physical and mental disabilities, 2) language barriers, and 3) cultural, social or geographical isolation. In particular, the target populations are low-income elderly and members of racial/ethnic minorities.

Participant Characteristics

The characteristics of OAANP for participants vary. Specifically, clients for congregate meal programs are expected to be more active, able to leave their homes, unlike participants who receive home-delivered meals. The congregate meal program is especially attractive to elderly without cooking facilities or knowledge of food preparation, those who do not like cooking, or those who want to share meals in a communal setting (Ponza & Wray, 1990). Home-delivered meals focus on the elderly who are homebound and have difficulty cooking, shopping and preparing meals for themselves.

Under OAA Title III-C regulation, OAANP’s target clients who are the elderly with economic and social need. Ponza and his colleagues (1996) found that 80-90% of participants have income below 200% of the Department of Health and Human Service (DHHS) poverty level, which is twice the rate for the overall elderly population in the U.S. More than twice as many ENP participants live alone compared with the overall U.S. elderly population (Ponza et al., 1996).

Most recently the national survey of the Older Americans Act Title III conducted during 2004 illustrated the outcome performance of congregate meal programs and home-delivered meals (POMP, 2006). The participant characteristics for these two programs are in Table 2.7. The survey results of participant characteristics found that home-delivered meals serve more elderly who are impaired. Fifty-four percent of home-delivered meal participants rated their own health poor or fair, compared with 29% of congregate meal program participants. Home-

Table 2.7 OAANP Participant Characteristics, FY 2004

| Characteristic | Congregate meal program (%) | Home-delivered meal program (%) |
|--|------------------------------------|--|
| Female | 69.10 | 72.43 |
| Age 75 or older | 62.31 | 72.83 |
| Low-income (income under \$20,000) | 57.39 | 84.86 |
| Minority | 12.77 | 18.77 |
| <i>Black or African-American</i> | 8.42 | 16.16 |
| <i>Asian</i> | 1.35 | 0.44 |
| <i>American Indian or Alaskan Native</i> | 1.47 | 1.75 |
| <i>Naïve Hawaiian or Other Pacific Islander</i> | 0.02 | 0.05 |
| <i>Other race</i> | 1.46 | 1.49 |
| Living alone | 52.22 | 60.57 |
| High school graduate | 74.51 | 57.58 |
| Living in rural area | 29.19 | 23.12 |
| Self rated “fair and poor” health | 29.16 | 54.19 |
| Five times or more a week participating in OAANP | 22.45 | 73.57 |

Note: Compiled from 2004 AoA National Survey of Older Americans Program (AoA, 2006c)

delivered meal program participants are more likely to be low-income, minority, and living alone than congregate meal participants.

Participation rate for OAANP is a method to evaluate how well the programs reach potential needy elderly. The percentage for five times or more per week participating in OAANP is three times higher for the home-delivered meal program than congregate meal program (74% versus 22%). Home-delivered programs better target socially and economically needy seniors. These participants tend to need more assistance from nutritional services and rely on the program.

Nutrition and Health Outcomes of Participants in OAANP

This section summarizes various studies from national, state and local samples and evaluates the OAANP by different outcomes variables from 1993-2008 (Table 2.8). The

discussion is organized into four subgroups: dietary intake, nutritional risk, socialization and food insecurity.

Nutritional Intake

Measurements to examine dietary intakes for OAANP participants resulted in non-significant findings in some studies. Neyman et al. (1998) examined the dietary intakes of 80 community-dwelling seniors and found no significant differences between congregate meal participants and non-participants. On the other hand, other researchers reported OAANP participants had received higher dietary intake than non-participants (Gilbride et al., 1998; Neyman, Zidenberg-Cherr & McDonald, 1996; Ponza et al., 1996).

The nutritional aspect of meal programs plays an important role in the daily lives of community-dwelling elderly, especially for those participating in OAANP. Based on the results of the 2004 second national survey, in 2004, 58% of congregate meal participants and 62% of home-delivered meal participants reported that the meals provided half or more of their food intake. Dietary intake for the congregate recipients was equal to or more than that reported by the general population age 60 years and older (Performance Outcome Measures Projects (POMP), 2006). Ponza et al. (1996) concluded that OAANP meals provide approximately 40 to 50% of the participants' daily intakes for most nutrients. Prothro and Rosenbloom (1999a) reported results similar to Ponza and his colleagues (1996) and concluded that congregate meals provided 38% to 44% of the average daily energy intake and 33% to 65% of the average intake for selected nutrients. Specifically, intake was higher than the 33% Recommended Dietary Allowances (RDA) suggested for an OAANP meal.

Table 2.8 Studies of Participation OAANP Nutrition and Health-Related Outcomes

| Study | Outcome variables | Sample | Research Design | Measure of participation | Analysis method |
|---|--|--|---|--------------------------------------|-------------------------|
| National Evaluations | | | | | |
| First and Second AoA National Survey of OAA Participants (POMP, 2004, 2006) | Dietary intake and socialization | <i>Stage 1:</i> representative sample of AAA (n=132 in 2004; n=138 in 2006) <i>Stage 2:</i> random sample from chosen AAA (n=4 per AAA, in 2004; n=24 per AAA, in 2006) | Telephone interviews with program participants | Based on AAA program client lists | Descriptive statistics |
| National Evaluation of the OAANP from 1993-1995 (Ponza et al., 1996) | Dietary intake, nutritional risk, socialization, and food insecurity | Random sample of OAANP and random sample of non-participants selected from US Health Care Financing Administration Medicare beneficiary listings (n=2699) | In-person interview and 24-hour dietary recall for nutrient intake (comparison between participants and non-participants) | Received meals on dietary recall day | Multivariate regression |

| State and local studies of OAANP | | | | | |
|---|--------------------------------------|--|---|---|--|
| Keller (2006) | Nutritional risk | Seniors participating in home and community-based program (HCBP) in southwestern Ontario, Canada (n=263) | Longitudinal study by using in-person and telephone interview and the 15-items Seniors in the Community: Risk Evaluation of Eating and Nutrition (SCREEN) | Clients of HCBP programs, require help for ≥ 1 ADLs, cognitive ability to complete study and English speaking. | Bivariate analysis, regression |
| Prothro & Rosenbloom (1999a, b, c) | Dietary intake and socialization | Congregate and home-delivered meal program participants in Decatur, Georgia (n=103) | In-person interview of program participants and 3 day 24-hour dietary recalls | Currently enrolled in OAANP | Chi-square, t-test, ANOVA, correlation |
| Vailas, Nitzke, Becker & Gast (1998) | Nutritional risk and food insecurity | Congregate and home-delivered meal program participants in Pepin County, Wisconsin (n=155) | Nutritional Screening Initiative (NSI) checklist, global quality-of-life scale, Geriatric Depression Scale, ADL, food insecurity instrument, social relationship and food enjoyment scale | Currently enrolled in OAANP | T-test, chi-square analysis, correlation |

| State and local studies of <i>congregate meals</i> program | | | | | |
|---|--------------------------------------|--|--|--|---------------------------------|
| Quigley, Hermann & Warde (2008) | Nutritional risk | Congregate meal program participants (n=8892) | NSI checklist | Currently receiving OAANP meal | Chi-square |
| Weatherspoon, Worthen & Handu (2004) | Nutritional risk | Regular congregate meal participants at six meal sites in north Florida county (n=324) | In-person interview and NSI | Regular congregate meal program participants | Chi-square, logistic regression |
| Gilbride et al. (1998) | Dietary intake, and nutritional risk | Residents in Housing and Urban Development (HUD) elderly housing facilities in metropolitan New York City (n=40) | In-person interview with 24 hour dietary recalls, food frequency, 5-day food records, and NSI (comparison between participants and non-participants) | Not available | Descriptive statistics |
| Neyman et al. (1998) | Dietary intake | Participants and non-participants in two California counties (n=80) | 24 hour dietary recall (comparison between participants and non-participants) | Not available | ANOVA |
| Neyman et al. (1996) | Dietary intake | Participants and non-participants at nine OAANP sites in two northern California counties (n=135) | 3-days food record (comparison between participants and non-participants) | Consume meals on food recorded day | MANOVA |

| State and local studies of <i>home-delivered meals program</i> | | | | | |
|---|--------------------------------------|--|---|---|-------------------------|
| New York State Office for the Aging (2002) | Nutritional risk and food insecurity | HDM clients from three New York counties (n=141) | NSI, Nutritional functional impairment, food security, BMI (longitudinal study) | Currently receiving HDM | Descriptive statistics |
| Edward, Frongillo, Rauschenbach & Roe (1993) | Food insecurity | Random sample of diabetic recipients of home-delivered meals in New York State and random sample of non-participants from a waiting list (n=154) | In person interview (comparison between HDM clients and those on a waiting list.) | Currently receiving diabetic meals twice each weekday and weekend | Multivariate regression |

Note: HDM=Home-Delivered Meals

Nutritional Risk

Nutritional risk among elderly is influenced by various factors not considered in other age group. To address the specific nutritional risk problems for elderly, the Nutrition Screening Initiative (NSI) is a tool for evaluating older Americans nutritional status and provides an interdisciplinary, community based model that applies to home and community based programs and fosters better collaboration among professionals. Professional organizations like the American Dietetic Association, American Academy of Family Physicians, and National Council on the Aging sponsored the NSI and committed to identifying and treating nutritional problems among elderly. The NSI developed a three stage approach to screening for potential nutrition problems (ADA, 2008).

The three stages in approaches used 1) the DETERMINE Your Nutritional Health Checklist, 2) the Level I Nutrition Screening, and 3) the Level II Nutrition Screening. The use of checklists and the Level I Nutrition Screening is the first step in detecting nutritional risk. Usually, the elderly can examine themselves. Laboratory tests or special measurements are not required at this level. The Level II Nutrition Screening is more in depth, requiring laboratory tests or special measurements. Part of the problem with the screenings include disease, eating poorly, tooth loss/mouth pain, economic hardship, reduced social contact, multiple medications, involuntary weight loss/gain, and assistance within self care that affect life and the ability to perform activities of daily living, including eating (ADA, 2008)

The DETERMINE checklist is currently used by many OAANP providers, social workers and dietitians to identify individuals who might be at nutritional risk and need assistance for specific nutritional services such as cooking and shopping and nutritional counseling and education programs. Posner and her colleagues (1993) suggested that the DETERMINE checklist is a reliable tool for measuring individuals at risk for nutritional problems.

Ponza et al. (1996) used the DETERMINE checklist to assess nutritional risk among both congregate and home-delivered meal participants. Overall, 64% of congregate and 88% of home-delivered participants had characteristics associated with moderate to high nutritional risk. The OAANP participants who have some specific characteristics such as female, living alone, advanced age, being African American, with self-reported poor health and irregular visits to medical/health professionals had a higher chance of nutritional risk (Quigley, Hermann, & Warde, 2008). Understanding which group of seniors is at a higher risk can help program

providers and the governments target their program clients to eliminate nutritional risk for the elderly.

Nutritional risk was the broadly used outcome assessment indicator for measuring the performance of OAANP. Gilbride et al. (1998) used the NSI level I on a small elderly population in New York City and found that the level of nutritional risk among congregate meal participants was twice that of a comparable elderly who did not participate in congregate meal programs. In addition, the nutritional risk for home-delivered meal participants is higher than congregate meal participants (New York State Office for the Aging, 2002). A longitudinal study conducted by Keller (2006) found that OAANP participants used the program more during the follow-up period was associated with decreased nutritional risk.

Socialization

OAANP was intentionally designed to target the elderly who have social needs as well as nutritional needs. The national evaluation of the programs are the only identified studies that attempted to measure social outcomes of participants (POMP 2004, 2006; Ponza et al., 1996).

The 1993-1995 National Evaluation used the number of social contacts per month (Ponza et al., 1996). As the outcome for measuring socialization, the authors found that OAANP participants had significantly more social contact than non-participants. As predicted, the homebound participants had less contact than those who attend congregate meal sites. The Second National Survey of OAA Title III Service Recipients conducted during 2004 (POMP, 2006) discovered that 57% of participants report their social opportunities had increased since they started participating in congregate meal programs. For home-delivered meal participants, 46% reported they would like to be more active socially. Two national studies reported the positive impact of congregate meal on socialization (Ponza et al., 1996; POMP, 2004, 2006).

Food Insecurity

Food insecurity is prevalent among the elderly, especially the low-income and minority elderly. Table 2.8 summarizes three studies that examined the impact of food insecurity.

Ponza et al. (1996) compared findings for OAANP participants with data from the U.S. elderly population. The authors found that, although most OAANP participants reported having enough food to eat, they were much more likely to suffer food insecurity than elderly persons in the overall U.S. population. Edwards and colleagues (1993) attempted to assess the impact of

OAANP on food insecurity. The study focused on various restricted samples of elderly diabetics who were either receiving home-delivered meals or were on a waiting list for home-delivered meals. The home-delivered meal program had a positive effect on food security. Elderly diabetics who received home-delivered meals were less likely than comparable elders on a waiting list to be classified as food insecure. The New York State Office for the Aging (2002) conducted a longitudinal study of the participants of home-delivered meal programs and discovered that food insecurity at the time of initial assessment was more prevalent among participants and was reduced with continuing participation in the program. Reducing food insecurity is a noticeable outcome for OAANP participants.

Participation and Non-participation in OAANP

Perception of OAANP

Congregate Meal Program

Assessing good nutrition is the most visible outcome for congregate meal program participants. Meal recipients tend to enjoy the meals and preferred meals that were prepared onsite (Kendrick & Slezak, 1989). Meal quality, menu variety and meal setting are important predictors of participation in congregate meal programs (Ponza & Wray, 1990). Providing ethnic meals is an important factor affecting congregate meal program participation (Choi, 2002). The participants perceived that the availability of meal sites that serve one predominant ethnic meal is an advantage for the elderly from representative ethnic groups. The meals may be more familiar for participants and meal companions may come from similar cultural and language backgrounds.

Participants believe they benefit from the fellowship and the recreational activities provided by the congregate meal program (Ponza & Wray, 1990). Slezak (2000) conducted a focus group to evaluate participation in congregate meal programs. The researchers reported that socialization was the most frequently mentioned advantage including social interaction, social support, relief from loneliness/depression, stimulation, self-satisfaction and volunteer work.

Home-delivered Meal Program

Few studies had compared perceptions of home delivered meal program participants and participants of congregate meal programs. Participants in the Ponza and Wray study (1990) stated that hot, well-balanced meals were the most important part of the program as well as the

contact with the meal delivery person. In a recent national pilot survey of OAA Title III (POMP, 2006) home-delivered meal programs provided high quality and reliable nutritional resources for recipients.

Barriers to Participating in Program

Elderly who are eligible OAANP but do not participate in programs are a serious issue for program providers and the federal government. Clark and her colleagues (1993) estimated that 11% of eligible elderly nationwide age 65 or older participated in the congregate meal programs in 1992, and 5% of the eligible elderly participated in the home-delivered meal program. Some studies have tried to examine the barriers to participation in OAANP (Table 2.9). Barriers for participation fall into three subsections 1) perception of need, 2) program features, and 3) program awareness.

Perception of Need

This population may be reluctant to accept food assistance because they take pride in their independence is a primary reason why many elderly do not participate in OAANP. Receiving food assistance would compromise their independence, especially for those who had lived through the Depression (GAO, 2000; Slezak, 2000; Bermudez & Tucker, 2004; Lee, Frongillo & Olson, 2005). Ponza and Wary (1990) used 12 focus groups and four discussion sections to explore the reasons that low-income elderly participate or do not participate in food assistance programs. For some elderly individuals, pride and reluctance to accept “charity” are especially strong barriers to program participation. In addition, some elderly are reluctant to participate in the programs because they feel they cannot afford the suggested donation (Ponza & Wary, 1990; Lee et al., 2005). Elderly who are uncomfortable in group settings and those who perceive that the congregate meal program is for “old folks” choose not to participate in congregate meal programs.

Funding limitations and restrictions for the recipients constrain participation in OAANP, especially for home-delivered meal participants. The providers of OAANP reported that 41% of home-delivered meal program and 9% of congregate meal program participants were on a waiting list (GAO, 2000).

Table 2.9 Barriers to Participating in OAANP

| Reasons for NON-participation | Ponza & Wray (1990) | GAO (2000) | Slezak (2000) ^a | Bermudez & Tucker (2004) | Lee, Frongillo & Olson (2005) ^b |
|--|---------------------|------------|----------------------------|--------------------------|--|
| Don't need the program | | x | | | x |
| Lack of transportation | x | x | x | x | |
| Don't like or cannot eat the food | x | | | x | |
| Feel uncomfortable <i>going</i> or don't like a stranger at home | x | | x | x | |
| Feel uncomfortable applying (age bias, program for charity) | x | x | x | x | x |
| Unable to pay for contribution | x | | | | x |
| Dislike location of program | x | | | | |
| Unaware of the program | x | x | x | | x |
| Restriction on attendance | x | | x | x | |
| Program is full (especially for home-delivered meal program) | x | x | | | |
| Time conflict | x | | x | | |
| Unpleasant experience with a previous meal | x | | | | |
| Language barrier | | | | x | |
| Dislike physical environment of meal sites | x | | | | |

Note: ^a For congregate program participants ^b From providers perspective

Program Features

Older adults may not be able to participate in OAANP because they do not have access to transportation (Slezak, 2000) especially the elderly who live in rural areas or have some form of disability that keeps them from driving. Ponza and Wray (1990) received the same feedback from program clients. This population perceived dining at the meal sites as inconvenient or undesirable because they lack van transportation or the facility was in the inner-city areas.

Another obstacle for congregate meal program participants is lack of program flexibility in food items and serving times (Ponza & Wray, 1990; Slezak, 2000). For example, some programs provide only certain foods for the participants. If the senior did not like the food or they cannot eat the food, he/she might not want to participate in the program. The participants may also be affected because the centers are only open for a limited time. Seniors might have doctor's appointment or personal appointments that conflict with meal site schedules.

Program Awareness

According to the president of an OAANP provider organization, lack of program awareness or widespread misinformation are reasons elders do not participate (Ponza & Wray, 1990; GAO, 2000; Slezak, 2000). Some non-participants revealed that they were completely unaware of the existence of OAANP (Ponza & Wray, 1990). Others knew about the program but lacked specific information about availability, eligibility requirements, and procedures for application. Accurate program information with formal outreach, referral mechanisms, word-of-mouth or personal program experience are important to program participation.

Improving Participation for Congregate Meal Programs

The number of congregate meals served and participation rate have declined steadily in recent years (O'Shaughnessy, 2004). Program providers for congregate meal programs should implement, expand, and improve efficient and effective strategies to increase program participation. In addition, SUA and AAA should have policies and procedures in place to help nutrition providers enhance their programs. Previous studies and reports (Wellman, Smith, Alfonso, & Lloyd, 1999; Slezak, 2000; Florida International University, 2001) offer guidance and suggestions for increasing participation in congregate meal programs. These included:

- ***Quality of food and service:*** offer well presented, attractive meals; provide professional and friendly service; serve food in pleasant, welcoming, and supportive environment.
- ***Flexibility:*** provide variety in food and menu items, including cultural and dietary choices, and offer meals at various times except lunch hours such as breakfast or dinner.
- ***Assistance:*** provide transportation to the site, assist participants who have disabilities and help link other nutrition and social services
- ***Awareness of cultural differences:*** recruit staff or cooks who have better cultural proficiency skills.

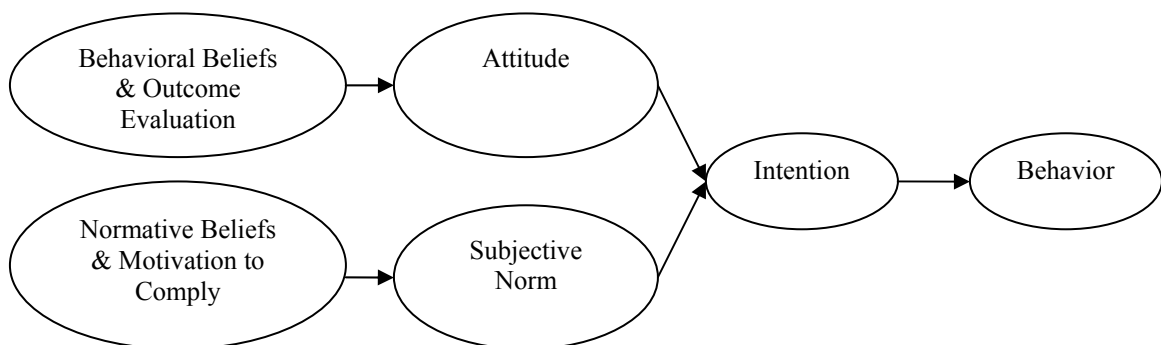
- **Outreach:** expand outreach activities and improve marketing.
- **Innovative service:** use a restaurant style as an alternative to provide ethnic meals or food choices and provide vouchers for individuals to redeem at participating restaurants, cafeterias, hospital or school lunchroom, grocery stores, and food courts.
- **On site activities:** provide a variety of volunteer opportunities, programs, meeting, social services and activities on site.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991; Ajzen & Madden, 1986) seeks to explain an individual’s behavior and the psychological determinates of behavior. It is basically an extension of the Theory of Reasoned Action (TRA). TRA predicts human-beings’ volitional behaviors and assumes that each person is typically rational and makes systematic use of the information available to him/her (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) (Figure 2.1). According to TRA, intention is a great predictor of volitional action/behavior (Ajzen, 1988; Bagozzi & Yi, 1989) and is affected by two fundamental factors: 1) attitude and 2) subjection norm (Ajzen, 1985). Attitude defined a person’s attitude toward behaviors. Subjective norm is the perception of social pressure from an individual or a group to perform or not perform a behavior. Thus, TRA can be summarized by using the following equation:

$$\text{Behavior} \sim \text{Intention} = w_1 \text{Attitude} + w_2 \text{Subjective Norm}$$

Figure 2.1 The Theory of Reason Action (Ajzen & Fishbein, 1980)

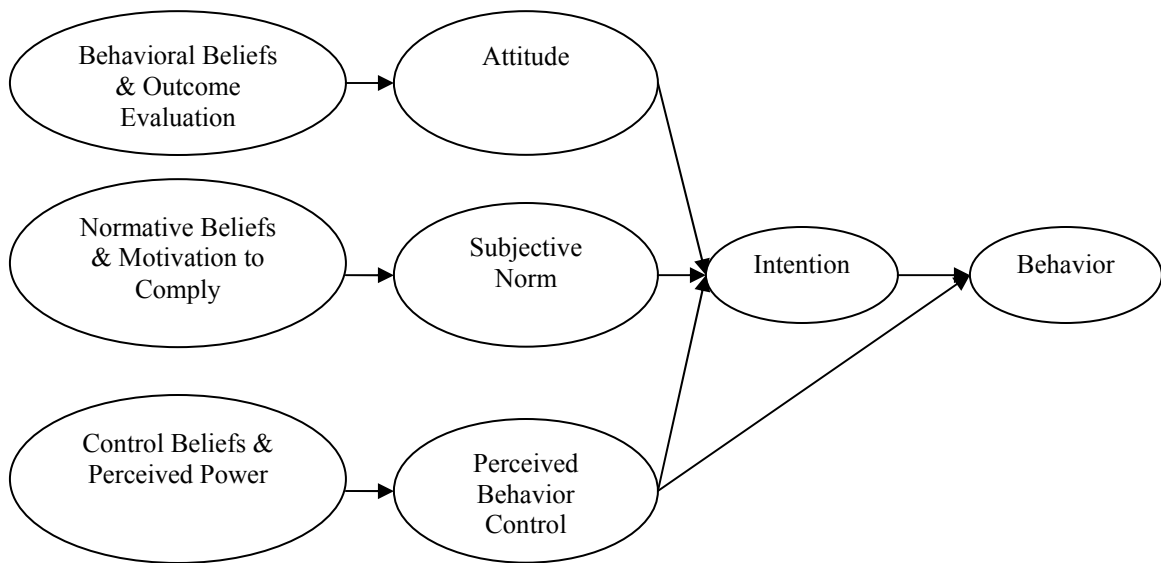


In the equation, the tilde (~) means that intention can predict behavior if no change in intention has happened before performing the behavior and w_1 and w_2 are the weighting

parameters reflecting the relative importance of attitude and subjective norm (Ajzen, 1985). Therefore, the intention/behavior is the weighted sum of attitude and subjective norm.

However, TRA is limited because it assumes that behavior is under total volitional control. Although a person may intend to perform a behavior, he/she may be prevented from acting, because of time constraints, limited resources and/or inadequate opportunities (Ajzen, 1985). Ajzen (1988, 1991) tried to overcome the weakness of the TRA “only predicting volition behavior” and attempted to incorporate one additional factor to measure non-volitional behavior. The additional factor, perceived behavioral control (PBC), was included in TPB model (Figure 2.2). Adding the perception of control is important because human behaviors are complicated

Figure 2.2 The Theory of Planned Behavior (Ajzen, 1985)



and influenced by various non-volitional factors. PBC refers to people’s perception of the ease or difficulty of performing the behavior of interest (Ajzen, 1991) and is hypothesized to directly affect both intention and behavior. If a person perceives a behavior as easy to perform, or that he/she has better control over the behavior, he/she would have experience a more positive behavioral intention and be more likely to perform the behavior. Meta-analysis studies for TPB have shown that the additional factor of PBC added to the TRA model can increase the prediction power of intention (Ajzen & Madden, 1986; Ajzen, 1991; Godin & Kok, 1996; Hausenblas, Carron & Mack, 1997; Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Armitage & Conner, 2001; Warburton & Terry, 2000; Hagger, Chatzisarantis, & Biddle, 2002) The equation explaining TPB is shown below:

Behavior~ Intention=

$$w_1 \text{ Attitude} + w_2 \text{ Subjective Norm} + w_3 \text{ PBC}$$

A person's intention to perform a behavior or complete the actual behavior is the weighted sum of attitude, subjective norm, and PBC.

In this study, TPB is regarded as a more appropriate model than TRA for examining elderly decisions to participate in congregate meal programs because target behaviors are predicted to be affected by control factors such as lack of transportation and time constraints (Ponza & Wray, 1990; GAO, 2000; Slezak, 2000, Bermudez & Tucker, 2004). Because congregate meal program participation is not completely volitional, two non-volitional factors (PBC and past behavior) are included in this study.

Although TPB is generally applicable to human behaviors, the TPB has been modified and given alternative conceptualizations to explain certain human behaviors (Oh & Hsu, 2001). In this study, the role of past behavior was incorporated to test the causal relationship between predictor variables and intention and to increase model prediction power to explain meal program participation intention. Many studies investigating a mixture of human behaviors have found that past behavior is a reliable indicator of future behavior (Bentler & Speckart, 1979; Ajzen & Driver, 1992; Ouellette & Wood, 1998; Sonmez & Graefe, 1998; Leone, Perugini & Ercolani, 1999; Oh & Hsu, 2001). The theoretical relationship among each construct of the extended TPB are explained in the next section.

In this study, the proposed model for congregate meal program participation hypothesized that past participation is an important determinant of elderly program participation intention. Therefore, the participation intention can be formulated as follows:

Behavior~ Intention=

$$w_1 \text{ Attitude} + w_2 \text{ Subjective Norm} + w_3 \text{ PBC} + w_4 \text{ Past Behavior}$$

Research Using TPB in Measuring Health related Behavior among Older Adults

Congregate meal programs can be categorized as a health behavior function. The TPB has been adapted for several health related studies (Table 2.10). An increasing number of studies focus on the elderly population. For example, the TPB was used with older populations to explore intention to exercise (Courneya, 1995; Gretebeck, 2000; and see Hagger et al., 2002 meta-analysis), predict dairy product consumption (Kim, Reicks, & Sjoberg, 2003),

Table 2.10 Older Adults Health Related Behavior Researches Using TPB

| Author(s) | Age | Activity | Relationship | Correlation (r) |
|--|-------|-------------------------|-----------------|-----------------|
| Courneya (1995) | 60+ | Physical activity | ATT-BI | .51 |
| | | | SN-BI | .47 |
| | | | PBC-BI | .48 |
| | | | (ATT+SN+PBC)-BI | .62 |
| Gretebeck (2000) | 65+ | Physical activity | ATT-BI | .36 |
| | | | SN-BI | .66 |
| | | | PBC-BI | .66 |
| | | | (ATT+SN+PBC)-BI | .77 |
| Kim, Reicks, & Sjoberg (2003) | 65+ | Consuming dairy product | ATT-BI | .42 |
| | | | SN-BI | .33 |
| | | | PBC-BI | .48 |
| | | | (ATT+SN+PBC)-BI | .65 |
| Warburton & Terry (2000) | 65~74 | Volunteer Decision | ATT-BI | .33 |
| | | | SN-BI | .54 |
| | | | PBC-BI | .72 |
| | | | PB-BI | .69 |
| Roelands, Oost, Depoorter, & Buysse (2002) | 70~89 | Using assistive devices | ATT-BI | .17* |
| | | | SN-BI | .09* |
| | | | PBC-BI | .47* |

Note. ATT=attitude toward behavior, SN=Subjective Norm, PBC=Perceived Behavioral Control, BI=Behavior Intention, PB=Past Behavior, () =multiple correlation *Path Coefficient (p<.05)

make volunteer decisions (Warburton & Terry, 2000) and examine the use of assistive devices (Roeland, Oost, Depoorter & Buysse, 2002).

Hagger et al. (2002) conducted a meta-analysis of TRA and TPB to assess physical activities; more than half of these studies were conducted with an older adult sample. Courneya (1995) examined the relationship of TPB among predictor variables, intention and physical activity behavior in 288 seniors. Results showed that attitude, subjective norms and PBC had significant predictive power over intention. Courneya, Nigg and Estabrooks (1998) measured the physical activities of 13 seniors over three years. Here, the subjective norm (pressure from important individuals) appeared to be more relevant in influencing older adults to be physically active. Gretebeck (2000) compared the TRA and the TPB in predicting the physical activities of older adults and found that the predictor variables in TPB better explained differences than TRA ($R^2=.59$ vs. $R^2=.46$). Including PBC can increase accuracy in predicting physical activity behavior.

A study applying TPB to predicting dairy product consumption among older adults showed that attitude and PBC were great predictors for intention, while subjective norm was not (Kim et al, 2003). One possible reason for the lack of a relationship is that in this case, older adults depend on their own beliefs and judgment.

Roelands et al. (2002) study used 491 community-dwelling elderly between 70 to 89 years of age to measure the use of assistive devices. Self-efficacy (self-efficacy was used in this study instead of PBC) ($\beta=.47, p\leq.001$) showed a stronger significant prediction power for intention than attitude ($\beta=.17, p\leq.001$) and subjective norm ($\beta=.01, p\leq.05$). Warburton and Terry (2000) tested a revised TPB to predicting the intention to volunteer among seniors. The subjective norm, PBC and moral obligation predicted intention. Attitude was a mediator for moral obligation.

In summary, TPB is a model for measuring a person's intention and behavior. The previous studies have shown varying levels of predictive power for various types of behaviors. Researchers should be aware of unique characteristics of each population when applying TPB, especially among older adults, who might think and perform differently to other populations.

Indirect (Belief Based) Measure of Intention

The beliefs based construct was adopted from expectancy-value theory (Fishbein & Ajzen, 1975). A function of beliefs relevant to the behavior, is the basis for a person's decision to perform or not to perform behavior. These beliefs are indirect measures for predictor variables (attitude, subjective norm and PBC). Beliefs should not be used to attempt to predict behavior or intention directly. Likewise attitude and subjective norms are inappropriate for directly predicting behavior (Ajzen, 1980). Three beliefs, behavioral beliefs, normative beliefs and control beliefs, are described below.

Behavioral beliefs refer to the subjective probability that a behavior will lead to a certain consequence (Ajzen & Fishbein, 1980). Each behavioral belief (bb_i) is multiplied by behavioral outcome evaluation (be_i), and the attitude is summed over the n salient beliefs (Ajzen & Fishbein, 1980). The essential structure of attitude is outlined in the following equation:

$$\text{Attitude} = \sum_{i=1}^n bb_i be_i$$

Normative beliefs are the likelihood that important reference individuals or groups would approve or disapprove of the behavior (Ajzen & Madden, 1986). To obtain an estimate of a subjective norm, each normative belief (nb_i) of an individual is multiplied by his/her motivation to comply with the reference (mc_i) (Ajzen & Fishbein, 1980) and total n salient beliefs are summed. The subjective norm is illustrated as:

$$\text{Subjective Norm} = \sum_1^n nb_i mc_i$$

Control beliefs focus on the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors (Ajzen, 1985). Perceived behavior control is a function of control beliefs, which are the individual's perception of the extent to which he/she perceived any difficulty in performing the behavior, with the likelihood of the behavior depending on internal and external factors (Ajzen, 1991). According to Ajzen (1985), internal factors include variables such as individual differences, information, skills, abilities, and emotion; in addition, the external factors involve time, financial opportunities, and dependence on others. To estimate the PBC, each control belief (cb_i) is multiplied by the perceived power of the control factor to facilitate or inhibit performance of the behavior (pp_i) and total n salient beliefs are summed. PBC can be expressed in the following equation:

$$\text{PBC} = \sum_1^n cb_i pp_i$$

Theoretically, the beliefs based measures and predictor variables should correlate with each other. However, the results of some TRA and TPB studies do not always reflect this. Gagne and Godin (2000) found that the correlation between $\sum bb_i$ and attitude is better than $\sum bb_i be_i$ and attitude. Similar results were found in the relationship for beliefs based measure with subjective norm and PBC. Thus, the single $\sum bb_i$, $\sum nb_i$ and $\sum cb_i$, instead of $\sum bb_i be_i$, $\sum nb_i mc_i$, and $\sum cb_i pp_i$ might result in a higher correlation coefficient with attitude, subjective norm and PBC. This confirmed Ajzen's (1991) statement "the moderate correlations between global and belief-based measures suggest that the expectancy-value formulation may fail adequately to describe the process whereby individual beliefs combine to produce the global response."

Although the problem of the weak correlation between belief based and direct measures has been identified, most TRA and TPB studies still follow, the original beliefs structure shown in equations of attitude, subjective norm and PBC.

The purpose of this study is to explain the predictive power of predictor variables for intention, and the specific beliefs that determine attitude, subjective norm or PBC differences. Indirect measures become more important and have more application for related fields. Wankel and Mummery (1993) suggested that even though indirect measures had lower causal effect on intention or behavior than direct measures, they provided more useful information in explaining behavioral differences.

A number of empirical studies using TRA and TBP found significant correlations between belief variables and predictor variables. Armitage and Conner's (2001) meta-analysis of TPB with 161 TPB studies shows that the average correlation for behavioral beliefs to attitude, normative beliefs to subjective norm and control beliefs to PBC are .50, .50 and .52, respectively (Table 2.11). Ajzen and Madden (1986) measured 169 undergraduate students' class participation and found a significant correlation between beliefs based measures and predictor variables ($r=.51$ for attitude, $r=.47$ for subjective norm, and $r=.54$ for PBC).

For this study, we must explain how belief based factors apply to behavior intention (intent to participate in the congregate meal program). For congregate meal program participation, the elderly who believe that attending congregate meals will bring a positive consequence (behavioral beliefs), such as improving their nutritional intake, allowing them to spend less money on food, and providing more opportunities to socialize with others, and at same time associate positive feelings about participating in the meal program (outcome evaluation) would tend to have a favorable attitude toward attending congregate meal programs. As a result, behavioral beliefs about congregate meal program participation can influence senior attitudes toward program participation.

For normative beliefs, if the elderly believe that most referents like family members, friends, health professionals, and local civic groups want him/her to participate in the program and their motivation to follow the significant individuals or groups' opinions was high, the perception of pressure from referents for elderly would be increased. On the other hand, if the elderly do not believe most referents' opinions and they do not want to adhere to the opinion of the references, the lower social pressure might lead to less subjective norms affecting

participation intention. In this study, it is hypothesized that seniors' normative beliefs about program participation affects the subjective norm about their program participation.

Various internal and external beliefs factors affect congregate meal program participation. Internal factors include the ability to drive, acceptability of food served or food choices, age bias, stigma of charity, health problems. External factors include time conflicts, weather conditions, and distance to senior centers/meal sites, location of site. Control beliefs about program participation affect perceived behavioral control in congregate meal program participation. Based on the TPB, three hypotheses follow:.

Hypothesis 1: Behavioral beliefs toward congregate meal program participation are positively associated with attitudes about program participation.

Hypothesis 2: Normative beliefs toward congregate meal program participation are positively associated with subjective norms about program participation.

Hypothesis 3: Control beliefs about congregate meal program participation are positively associated with perceived behavior control about program participation.

Direct Measure-Predictor Variables of Intention

Fishbein and Ajzen (1975) suggest that the proximal cause of behavior is the intention to perform the behavior. Previous studies measure the correlations among predictor variables, intention and behavior and found significant relationships. For example, Ajzen's (1991) meta-analysis of the TPB found correlations between predictor variables and intention is .71 and for actual behavior, multiple correlations are .51 from two independent variables (intention and PBC). Armitage and Conner (2001) using 161 research studies, reported that the average multiple correlation of predictor variables with intention is .63 and account for 39% of the variances. Godin and Kok (1996) performed a meta-analysis of TPB that specifically measured health related behaviors indicating that all predictor variables predicted 41% of intentions. Attitude and PBC were two significant predictor variables explaining intention. In a summary of nine meta-analyses of TRA and TPB, multiple correlations from predictor variables and intention range from .63 to .71 and explain 40-50% of variance (Sutton, 1998).

Ajzen and Fishbein (1980) indicated that behavioral intention changes with time and the accuracy of predicting power for actual behavior from intention will decrease when the time period between first measure for intention and second observed behavior is increased. The long

wait between time periods might cause bias and reduce the predictive power of intention for actual behavior. Although extended time might affect the causal relationship between intention and behavior, a large body of research shows that intention can be the most powerful single predictor of behavior (Conner & Abraham, 2001). This study measured intention only to eliminate bias, assuming that behavioral intention reflects the actual behavior.

Attitude

Attitude is a person's general favorable or unfavorable feeling toward some stimulus objects (Fishbein & Ajzen, 1975). The set of salient beliefs that the individual holds about performing a behavior determines a person's attitude toward that behavior. Attitude is the first and most important antecedent of behavior intention (Albrecht & Carpenter, 1976). Initially, individuals hold positive and negative beliefs about performing a particular behavior. Once an attitude is formed about an action, the attitude will lead to a behavioral intention in preparation for action. In other words, an individual will intend to perform or not based on his/her positive or negative attitude about behavior.

Several studies have shown that attitude is the best predictor of a behavior and behavioral intention. For example, in a meta-analysis of TRA (Sheppard, Hartwick & Warshaw, 1988) showed an average correlation for predicting behavioral intentions from attitude toward behavior is .67 ($p < .001$). In addition, Armitage and Conner's (2001) meta-analysis for TPB found the average correlation of attitude and behavioral intention is .49 ($p < .001$). Hagger and other researchers' (2002) meta-analysis of TRA and TPB in physical activities across 72 studies concluded that for TRA, attitudes were the most significant predictor for intention ($\beta = .51$, $p < .01$). For the TPB, similar results were found. Attitudes predict intention significantly ($\beta = .40$, $p < .01$) and the prediction power of intention for attitude was higher than PBC ($\beta = .33$, $p < .01$). The attitude toward consumption of dairy products by older adults has a significant effect on intention (Kim, Reicks, & Sjoberg, 2003).

Based on previous research, general measures of attitude have shown a positive relationship between attitude and behavioral intention. Thus, it is hypothesized that the elderly who have favorable attitudes toward participation are more likely to participate in congregate meal programs.

Hypothesis 4: Attitude toward program participation has a positive effect on participation intention.

Subjective Norm

A subjective norm refers to perceived social pressure to perform or not to perform the behavior (Ajzen, 1991). It is assumed that an individual will intend to perform a certain behavior when he/she perceives that significant others or groups think he/she should. Although program participation is voluntary, the normative pressure from family members, friends, health professionals, or community organizations should have some impact on senior intention to participate in congregate meal programs.

Some empirical studies have examined the proposition that subjective norms predicts intention (see Table 2.11). The correlation between subjective norms and intention range from .33 to .66. Armitage and Conner (2001) reviewed 161 TPB studies and found that the average correlation of intention to subjective norm is .34. Compared with other predictor variables, the subjective norm-intention correlation seems lower than other relationships (Armitage & Conner, 2001). However, Armitage and Conner (2001) suggested multiple measurement items can increase correlation between subjective norm and intention.

Wankel and Mummery (1993) used national survey data for measuring physical activity. The study purpose was to find the difference among various age and gender sub-groups by applying TPB model. The results were similar to other studies: the subjective norm was the weakest factor among the three predictor variables. However, the subjective norm increased with aging, especially for the category of older adult (60 years and older) and its predictive power for intention is better than attitude for that group. Based on previous studies, the predictive power of subjective norm might differ for the elderly population and the relationship might be weaker or stronger. Thus, researchers should treat this group with caution when designing and explaining each TPB path.

One study that applied the TPB to predict dairy product consumption in older adults found that subjective norms were not significantly related to intention (Kim et al., 2003). One reason from the findings might be the living arrangement of older participants. Most elderly lived alone and had limited socialization with friends or family members. However, the causal relationship between subjective norm and intention was positively significant in many previous health related TPB studies. Fila and Smith (2006) measured healthy eating behavior in 139 urban Native American youth and found significant referents that influence their health eating intentions are family, friends, TV, and after school programs. Measuring volunteering decisions

among elderly using revised TPB revealed that the relationship between subjective norm and intention was higher than the relationship between attitude to intention (Warburton & Terry, 2000). This finding is inconsistent with previous TRA and TPB studies. The authors suggested that studies should not ignore the predictive power of subjective norm on behavioral intention. Based on the results of empirical tests of the theory, the hypothesis was show below.

Hypothesis 5: Subjective norms for program participation have a positive effect on participation intention.

Perceived Behavior Control

The definition of PBC is the extent to which the person believes that he/she has control over internal or external factors that may facilitate or constrain behavior (Ajzen, 1991). Ajzen (1991) also stated that people are not likely to form a strong intention to perform a behavior if the individual believes that he/she does not have any resources or opportunities to do so even if he/she holds positive attitudes toward the behavior and believes that important others would approve of the behavior.

Kim and researchers (2003) found that PBC can predict the intention to consume dairy products among older adults, but the predictive power of PBC is less than attitudes. Two research studies (Godin & Kok, 1996; Povey et al., 2000) have found that PBC is a predictor of dietary behavioral intention. Godin and Kok's (1996) meta-analysis for health related behavior found that PBC explained an additional 13% of variance to intention and 12% of variance to the behavior. Armitage and Conner (2001) discovered that the average correlation between PBC and behavioral intention was significant at .43. They also confirmed that overall PBC adds an average of 6% to prediction of behavioral intention. Thus, the elderly, who have full control over inhibiting factors or situational variables, are more likely to participate in the program.

Hypothesis 6: PBC over program participation has a positive effect on participation intention.

Past Behavior

Ajzen (1991, p.199) stated that "Theory of planned behavior is, in principle, open to the inclusion of additional predictors if it can shown that they capture a significant proportion of the variance in intention or behavior after the theory's current variables have been taken into account." Previous studies using TPB with additional variables included anticipated regret (Sheeran & Orbell, 1999), descriptive norms (Sheeran & Orbell, 1999), past behavior and habit

(Ouellette & Wood, 1998), moral norms (Beck & Ajzen, 1991; Warburton & Terry, 2000), self-efficacy (Hagger et al., 2002), self-identity (Conner, Warren, Close & Sparks, 1999) and perceived constraints (Alexandris, Barkoukis & Tsormpatzoudis, 2007).

Previous studies have shown that past behavior was the best predictor of behavioral intention and future behavior. Conner and Armitage (1998) reviewed six additional variables for TPB finding that past behavior is one of the additional predictor variables that strongly affect intention and future behavior. Past behavior explained an extra 7% of the variance in intention after taking into account attitude, subjective norm and PBC. Ouellette and Wood's (1998) meta-analysis concluded, in 19 out of 22 studies, past behavior was a significant factor affecting behavior intention after controlling for attitude and subjective norm. Norman and Smith (1995) applied TPB to exercise behavior over six months and found that prior behavior is the strongest predictor of behavior. Conner and his colleagues (1999) used an extended TPB model (including one additional variable, self-efficacy) to examine the behavior of alcohol consumption and found past behavior can predict intentions. Ryu and Jang (2006) used TRA to measure student intention to experience local cuisine in a travel destination and found that past behavior had significant positive effects on intention. Sonmez and Graefe (1998) results revealed that having past travel experience to a specific region increases a person's intention to return to the same place. Although some studies argue that TPB predictor variables, particularly PBC (Ajzen, 1991), have a mediating effect between past behavior and future behavior or intention (Hagger et al., 2002). Conner et al. (1999) and Reineck, Schmidt and Ajzen (1996) found that the relationship between past behavior and intention/future behavior is not entirely mediated by TPB predictor variables. The authors concluded that past behavior should be a direct predictor of intention.

Some issues might arise when including past behavior as an additional factor for TPB. The predictive power of the relationship between past and present behavior proved stronger only when the intention and behavior is stable over time period (Bamberg, Ajzen & Schmidt, 2003). Past behavior should include in the TPB and TRA when repeat behavior was performed (Bamberg, et al., 2003). Albarracin et al. (2001) did a TRA and TPB meta-analysis to measure condom use behavior and found when past behavior was added to the TRA model, the influence of subjective norm on intentions becomes small. Similar results occurred in the TPB model. When past behavior is added to the model, the influences of perceived behavioral control on both intention and actual behavior decrease.

Based on empirical research, it is hypothesized that congregate meal program participation intention can be predicted by the past behavior of the participant.

Hypothesis 7: Past behavior has a positive effect on participation intention.

Summary

This chapter discussed some health problems that might affect seniors' nutritional status and introduced government food assistance program provided specifically for older adults. Various benefits from participating in the congregate meal program were discussed. Some data related to congregate meal programs such as program funding, number of meals and participation rate were shown. The serious problem of declining participation was recognized. Some relevant studies have tried to find reasons for decreasing participation (ex. benefits or barriers to participation) and examine participants' characteristics. However, no explanations used theory as a basis. Extended TPB was suggested in the last section to further explain the determinants of program participation. Each hypothesis was described and supported through previous literature.

References

- Administration on Aging (AoA) (2002). *Facilitating access-making it easier for older people to access an integrated array of health and supportive service*. Retrieved Apr 17, 2008 from http://www.aoa.gov/about/annual_report/ar_facilitating.pdf
- Ajzen, I. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Ajzen, I. (1985). From intention to action: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control, from cognition to behavior (pp.11-39)*. New York: Springer-Verlag.
- Ajzen, I. (1988). *Attitudes, personality and behavior*. Chicago, IL: The Dorsey Press
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I., & Driver, B. L. (1992) Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research*, 24(3), 207-224.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavior control. *Journal of Experimental Social Psychology*, 22, 453-474.
- Albarracin, D., Johnson, B. T., Fishbein, M., & Muellerleile, P.A. (2001). Theories of reason action and planned behaviors as models of condom use: A meta-analysis. *Psychological Bulletin*, 127(1), 142-161.
- Albrecht, S. L. & Carpenter, K. E. (1976). Attitudes as predictors of behavior versus behavior intentions: A convergence of research traditions, *Sociometry*, 39(1), 1-10.
- Alexandris, K., Barkoukis, V., & Tsormpatzoudis, C. (2007). Does the theory of planned behavior elements mediate the relationship between perceived constraints and intention to participate in physical activities? A study among older individuals. *European Review of Aging and Physical Activities*, 4, 39-48.
- Amelia, E. J., Grant, A. P. & Mulloy, C. (2008). Eating behavior in persons with moderate to late-stage dementia: assessments and interventions. *Journal of the American Psychiatric Nurses Association*, 13, 360-367.

- American Dietetic Association (ADA) (2008). *Nutrition intervention manual for professionals caring for older Americans-executive summary*. Retrieved Apr 7, 2008 from <http://www.eatright.org/ada/files/NSIOlderAmericansComplete1.pdf>
- AoA (2005). *National survey of older Americans programs*. Retrieved May 10, 2008 from <http://www.aoa.gov/prof/agingnet/napis/napis.asp>
- AoA (2006a). *Gateway to 2006 amendments to the Older Americans Act*. Retrieved Apr 3, 2008 from http://www.aoa.gov/oa2006/Main_Site/oa/oa.aspx#t3
- AoA (2006b). *The aging network*, Retrieved Apr 1, 2008 from <http://www.aoa.gov/prof/agingnet/agingnet.asp>
- AoA (2006c, June 1). *Highlights from the pilot study: second national survey of Older Americans Act Title III service recipients*. Retrieved May 19, 2008 from <https://www.gpra.net/nationalsurvey/files/2ndhighlights.pdf>
- AoA (2007a). *Older Americans Act, Summary of key changes in the 2000 amendments Americans Act*, Retrieved Apr 3, 2008 from http://www.aoa.gov/about/legbudg/oa/legbudg_oa_summary.asp
- AoA (2007b). *AoA strategic action plan 2007-2010*. Retrieved Apr 2, 2008 from <http://www.aoa.gov/ABOUT/strategic/AoA%20Strategic%20Action%20Plan%202007-2012.pdf>
- AoA (2007c). *National aging program information systems*. Retrieved May 10, 2008 from <http://www.aoa.gov/prof/agingnet/napis/napis.asp>
- AoA (2008a, January 17). *FY 2006 U.S. profile of OAA programs*. Retrieved Apr 21, 2008 from <http://www.aoa.gov/PROF/agingnet/NAPIS/SPR/2006SPR/Profiles/us.pdf>
- AoA (2008b, February 6). *A statistical profile of older Americans aged 65+*. Retrieved Apr 16, 2004 from http://www.aoa.gov/PRESS/fact/pdf/ss_stat_profile.pdf
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analysis review. *British Journal of Social Science*, 40(4), 471-499.
- Bagozzi, R. P., & Yi, Y. (1989). The degree of intention formation as a moderator of the attitude-behavior relationship. *Social Psychology Quarterly*, 52(4), 266-279.
- Balsam, A. L., Sullivan, A. F., Millen, B. E., & Rogers, B. L. (2000). Service innovations in the elderly nutrition program: two decades of accomplishments. *Journal of Nutrition for the Elderly*, 19(4), 41-48.

- Bamberg, S., Ajzen, I., & Schmidt, P. (2003). Choice of travel mode in the theory of planned behavior: the roles of past behavior, habit, and reasoned action. *Basic and Applied Social Psychology, 25*(3), 175-187.
- Barr, J. T., & Schumacher, G. E. (2003a). The need for a nutritional related quality of life measure. *Journal of the American Dietetic Association, 103*, 177-180.
- Barr, J. T., & Schumacher, G. E. (2003b). Using focus groups to determine what constitutes quality of life in clients receiving medical nutrition therapy: First steps in the development of a nutrition quality-of-life survey. *Journal of the American Dietetic Association, 103*, 844-851.
- Beck, L., & Ajzen, I. (1991) Predicting dishonest actions using the theory of planned behavior. *Journal of Research in Personality, 25*, 285-301
- Bentler, P. M. & Speckart, G. (1979). Models of attitude-behavior relations, *Psychological Review, 86*(5), 452-464.
- Bermudez, O. I., & Tucker, K. L. (2004). Cultural aspects of food choices in various communities of elders, *Generations, 28*(3), 22-27.
- Bianchetti, A., Rozzini, R., Carabellese, C., Zanetti, O., & Trabucchi, M. (1990). Nutritional intakes, socioeconomic conditions, and health status in a large elderly population. *Journal of the American Geriatrics Society, 38*, 521-526.
- Choi, N. G. (2002). Asia American elderly participants in congregate dining programs: An exploratory study, *Journal of Nutrition for the Elderly, 21*(3), 1-13.
- Clark, R. L., Cohen, B. E., Burt, M. R., & Schulte, M. M. (1993). *Who uses food assistance programs? Factors associated with use among the elderly*. Washington, DC: The Urban Institute.
- Conner, M., & Abraham, C., (2001). Conscientiousness and the theory of planned behavior: toward a more complete model of the antecedents of intentions and behavior. *Personality and Social Psychology Bulletin, 27*(11), 1547-1561.
- Conner, M., & Armitage, C. J (1998). Extending the theory of planned behavior: a review and avenues for further research. *Journal of Applied Social Psychology, 28*, 15, 1429-1464.
- Conner, M., Warren., R., Close, S., & Sparks, P. (1999). Alcohol consumption and the theory of planned behavior: an examination of the cognitive mediate of past behavior. *Journal of Applied Social Psychology, 29*(8), 1676-1704.

- Courneya, K. S. (1995). Understanding readiness for regular physical activity in older individuals: An application of the theory of planned behavior. *Health Psychology, 14*, 80-87.
- Courneya, K. S., Nigg, C. R., & Estabrooks, P. A. (1998). Relationships among the theory of planned behavior, stages of change, and exercise behavior in older persons over a three year period. *Psychology and Health, 13*, 355-367
- Dwyer, J. T. (1991). *Screening older Americans' nutritional health: current practices and future possibilities*. Washington, DC: Nutrition Screening Initiative.
- Economics and Statistics Administration (2005). *65+ in the United States: 2005*. Retrieved Apr 5, 2008 from <http://www.census.gov/prod/2006pubs/p23-209.pdf>
- Edwards, D. L., Frongillo, E. A., Rauschenbach, B., & Roe, D. A. (1993). Home-delivered meals benefit the diabetic elderly. *Journal of the American Dietetic Association, 93*(5), 585-587
- Federal Interagency Forum on Aging-Related Statistics (2008). *Older Americans 2008, key indicators of well-being*. Retrieved Apr 17, 2008 from http://www.agingstats.gov/agingstatsdotnet/Main_Site/Data/2008_Documents/OA_2008.pdf
- Fila, S. A., & Smith, C. (2006). Applying the theory of planned behavior to healthy eating behaviors in urban Native American youth. *International Journal of Behavioral Nutrition and Physical Activity, 3*, 11-22.
- Fischer, J., & Johnson, M. A. (1990). Low body weight and weight loss in the aged. *Journal of the American Dietetic Association, 90*, 1697-1706.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading MA: Addison-Wesley.
- Florida International University (2001). *Increasing participation at Older American Act Title III founded congregate meal sites*. Retrieved Mar 30, 2007 from http://nutritionandaging.fiu.edu/creative_solutions/participation_in_AoA_act.asp
- Frongillo, E. A., Rauschenbach, B. S., Roe, D. A., & Williams, D. F. (1992). Characteristics related to elderly persons' not eating for 1 or more days: implications for meal programs. *American Journal of Public Health, 82*, 600- 602.

- Gagne, C. & Godin, G., (2000). The theory of planned behavior: some measurement issues concerning beliefs-based variables. *Journal of applied social psychology*, 30(10), 2173-2193.
- General Accounting Office (GAO) (2000). *Food assistance options for improving nutrition for older Americans*, GAO/RCED-00-238, retrieved Apr 15, 2008 from <http://www.gao.gov/new.items/rc00238.pdf>
- Gilbride, J. A., Amella, E. J., Breines, E. B., Mariano, C., & Mezey, M. (1998). Nutrition and health status assessment of community-residing elderly in New York City: A pilot study. *Journal of the American Dietetic Association*, 98(5), 554-558.
- Godin, G., & Kok, G. (1996). The theory of planned behavior: a review of its applications to health-related behaviors. *American Journal of Health Promotion*, 11, 87-98.
- Gretebeck, K. A. (2000). *Predicting physical activity in older adults: the theories of reasoned action and planned behavior*. Unpublished doctoral dissertation, Purdue University.
- Griep, M. I., Verleye, G., Franck, A. H., Collys, K., Mets, T. F., et al. (1996). Variation in nutrition intake with dental status, age and odor perception. *European Journal of Clinical Nutrition*, 50(12), 816-825.
- Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J. H. (2002). A meta-analytic review of the theory of reasoned action and planned behavior in physical activity: predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*, 24, 3-32.
- Harrington, C., Chapman, S., Miller, E., Miller, N., & Newcomer, R. (2005). Trends in the supply of long-term-care facilities and beds in the United States. *Journal of Applied Gerontology*, 24, 265-282.
- Hausenblas, H. A., Carron, A. V., & Mack, D. E. (1997). Application of the theory of reasoned action and planned behavior to exercise behavior: a meta-analysis. *Journal of Sport & Exercise Psychology*, 19, 36-51.
- Kane, R., Kane R., Kaye, N., Mollica, R., Riley, T., Saucier, P., et al. (1996). *Managed care: handbook for the aging network*. Minneapolis, MN: University of Minnesota.
- Keller, H. H. (2006) Meal programs improve nutritional risk: a longitudinal analysis of community-living seniors. *Journal of the American Dietetic Association*, 106, 1042-1048

- Keller, H. H., Østbye, T., & Goy, R. (2004). Nutritional risk predicts quality of life in elderly community-living Canadians. *The Journals of Gerontology*, 59A, 68-74.
- Kendrick, O. W., & Slezak, D. (1989). Nutrition program for the elderly: Participants' perception of food quality by type of food service system, *Journal of Nutrition for the Elderly*, 9(1), 27-38.
- Kerschner, H., & Pegues, J. M. (1998) Productive aging: a quality of life agenda. *Journal of the American Dietetic Association*, 98, 1445-1448.
- Kim, K., Reicks, M., & Sjoberg, S. (2003). Applying the theory of planned behavior to predict dairy product consumption by older adults. *Journal of Nutrition Education and Behavior*, 35, 294-301.
- Kim, W. Y., Hur, M., Cho, M. S., & Lee, H. S. (2003). Effect of olfactory function on nutritional status of Korean elderly women. *Nutrition Research*, 23, 723-734.
- Kuczumski, M. F., & Weddle, D. O. (2005). Position paper of the American Dietetic Association: nutrition across the spectrum of aging. *Journal of the American Dietetic Association*, 105, 616-633.
- Lee, J. S., Frongillo, E. A., & Olson, C. M. (2005). Conceptualizing and assessing nutrition needs: perspectives of local program providers. *Journal of Nutrition for the Elderly*, 24(3), 25-45.
- Leone, L., Perugini, M., Ercolani, A. P. (1999). A comparison of three models of attitude-behavior relationships in the studying behavior domain. *European Journal of Social Psychology*, 29(2-3), 161-189.
- Marcus, E., & Berry, E. M. (1998). Refusal to eat in the elderly. *Nutrition Review*, 56(6), 163-171.
- Millen, B. E., Ohls, J. C., Ponza, M., & McCool, A. C. (2002). The elderly nutrition program: an effective national framework for preventive nutrition interventions. *Journal of the American Dietetic Association*, 102(2), 234-240.
- Morley, J. E. (2001). Decreased food intake with aging. *Journals of Gerontology*, 6, 81-88.
- Morley, J. E., & Kraenzle, D. (1994). Causes of weight loss in a community nursing home. *Journal of Geriatric Society*, 42, 583-585.
- Murphy, S. P., Davis, M., Neuhaus, J., & Lein, D. (1990) Factors influencing dietary adequacy and energy intake of older Americans. *Journal of Nutrition Education*, 22, 284-291.

- Murphy, S. P., Rose, D., Davis, M., Neuhaus, J., & Lein, D. (1993) Living arrangements over an 8-13 year period and food group consumption by older adults. *Nutrition Research*, 13, 1239-1252.
- New York State Office for the Aging (2002). *Home delivered meal services for older New Yorkers-A three-county longitudinal surveillance study*. Retrieved Apr 15, 2008 from <http://aging.state.ny.us/explore/nutrition/hdms/pdfs/HDMServicesReport.pdf>
- Neyman, M. R., Zidenberg-Cherr, S., & McDonald, R. B. (1996). Effect of participation in congregate site meal programs on nutritional status of the healthy elderly. *Journal of the American Dietetic Association*, 96(5), 475-483.
- Neyman, M. R., Block, G., Johns, M., Sutherlin, J. M., Mc Donald, R. B., & Zidenberg-Cherr, S. (1998) Effect of participation in congregate-site meal programs on the energy and nutrient intakes of Hispanic seniors. *Journal of the American Dietetic Association*, 98 (12), 1460-1462
- Nord, M. (2002). *Food security rates are high for elderly households*. Food Review, 25(2), 19-24. Retrieved Apr 16, 2008 from <http://www.ers.usda.gov/publications/FoodReview/Sep2002/frvol25i2d.pdf>
- Nord, M., Andrew, M., & Carlson, S. (2006). *Household food security in the United States*. ERR-29. Retrieved Apr 6, from <http://www.ers.usda.gov/Publications/ERR29/ERR29.pdf>
- Norman, P., & Smith, L. (1995). The theory of planned behavior and exercise: an investigation into the role of prior behavior, behavior intentions and attitude variability. *European Journal of Social Psychology*, 25, 403-415.
- O'Shaughnessy, C. (2004) *CRS Report for congress-Older American Act nutrition program*. Retrieved Apr 23, 2007 <http://www.nationalaglawcenter.org/assets/crs/RS21202.pdf>
- O'Shaughnessy, C., & Napili, A. (2006, December 11). The Older Americans Act: programs, funding, and 2006 reauthorization (P.L. 109-365), RL31336, Retrieved Apr 23, 2008 from <http://www.ncoa.org/attachments/CRSOAARReport.pdf>
- Oh, H. & Hsu, C. (2001). Volitional degrees of gambling behaviors. *Annals of Tourism Research*, 28 (3), 618-637.
- Older Americans Act of 1965, Pub. L. No. 89-73, 79 Stat.1-8 (1965). Retrieved Apr 21, 2008 from http://www.aoa.gov/about/legbudg/oa/oa_1965.pdf

- Older Americans Act Amendment of 2006, Pub. L. No. 109-365, 42 U.S.C. §3030e (2006a).
Retrieved Apr 21, 2008 from
http://www.aoa.gov/OAA2006/Main_Site/oa/oa_full.asp#sec_331
- Older Americans Act Amendment of 2006, Pub. L. No. 109-365, 42 U.S.C. §3030f (2006b).
Retrieved Apr 21, 2008 from
http://www.aoa.gov/OAA2006/Main_Site/oa/oa_full.asp#sec_336
- Older Americans Act Amendment of 2006, Pub. L. No. 109-365, 42 U.S.C. §306
(2006c). Retrieved Apr 22, 2008 from
http://www.aoa.gov/OAA2006/Main_Site/oa/oa_full.asp#sec_306
- Ouellette, J. A. & Wood, W. (1998) Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin*, 124(1), 54-74.
- Performance Outcomes Measures Project (POMP), (2004). *Highlights from the pilot study: first national survey of Older Americans Act Title III service recipients-paper No. 2*. Retrieved Apr 10, 2008 from <https://www.gpra.net/surveys/2ndhighlights.pdf>
- POMP (2006, June 1). *Highlights from the pilot study: second national survey of Older Americans Act Title III service recipients*. Retrieved Apr 4, 2008 from <https://www.gpra.net/nationalsurvey/files/2ndhighlights.pdf>
- Povey, R., Conner, M., Sparks, P., James, R., & Shepherd, R. (2000). Application of the theory of planned behavior to two dietary behaviors: roles of perceived control and self-efficacy. *British Journal of Health Psychology*, 5, 121-139.
- Phillips, R. M. (2006) *Social network and dietary intake in community dwelling elderly women: a secondary analysis of the third national health and nutrition examination survey*. Unpublished Doctoral Dissertation, University of Maryland, College Park.
- Plassman, B. L., Langa, K. M., Fisher, G. G., Heeringa, S. G., Weir, D. R., Ofstedal, M. B., et al., (2007). *Prevalence of Dementia in the United States: the aging, demographics, and memory study*, *Neuroepidemiology*, 29, 125-132.
- Ponza, M., & Wray, L. (1990). *Final results of the elderly program study-evaluation of the food assistance needs of the low-income elderly and their participation in USDA programs*. Princeton, NJ: Mathematica Policy Research, Inc.
- Ponza, M., Ohls, J. C., & Posner, B. M. (1994). *Elderly nutrition program evaluation literature review*. Princeton, NJ: Mathematica Policy Research, Inc.

- Ponza, M., Ohls, J.C., Millen, B.E., McCool, A.M., Needels, K.E., Rosenberg, L., et al. (1996). *Serving Elders at Risk. The Older Americans Act nutrition programs: national evaluation of the elderly nutrition program*. Princeton, NJ: Mathematica Policy Research, Inc.
- Posner, B. M., Jette, A. M., Smith, K. W., & Miller, D. R. (1993). Nutrition and health risks in the elderly: the nutrition screening initiative. *American Journal of Public Health, 83*(7), 972-978.
- Prothro, J. W., & Rosenbloom, C. A. (1999a). Description of a mixed ethnic, elderly population. I. Demography, nutrient/energy intakes, and income status. *Journals of Gerontology, 54A*(6), M315-M324.
- Prothro, J. W., & Rosenbloom, C. A. (1999b). Description of a mixed ethnic, elderly population. II. Food group behavior and related nonfood characteristics. *Journals of Gerontology, 54A*(6), M325-M328.
- Prothro, J. W., & Rosenbloom, C. A. (1999c). Description of a mixed ethnic, elderly population. III. Special diets, food preferences, and medicinal intakes. *Journals of Gerontology, 54A*(6), M329-M332.
- Quigley, K. K., Hermann, J. R., & Warde, W. D. (2008). Nutritional risk among Oklahoma congregate meal participants. *Journal of Nutrition Education Behavior, 40*, 89-93.
- Reinecke, J., Schmidt, P., & Ajzen, I (1996). Application of the theory of planned behavior to adolescents' condom use: A panel study. *Journal of Apply Social Psychology, 26*, 749-772.
- Roe, D. A. (1990). Geriatric Nutrition. *Clinics in Geriatric Medicine, 6*(2), 319-334.
- Roelands, M., Oost, P. V., Depoorter, A., & Buysse, A. (2002) A social-cognitive model to predict the use of assistive devices for mobility and self-care in elderly people, *The Gerontologist, 42*(1), 39-50.
- Rosenberg, I. H., & Miller, J. W. (1992), Nutritional factor in physical and cognitive functions of elderly people. *American Journal of Clinic Nutrition, 55* (suppl), 1237S-1243S.
- Ryan, V. C., & Bower, M. E. (1989). Relationship of socioeconomic status and living arrangements to nutritional intake of the older person. *Journal of the American Dietetic Association, 89*, 1805-1807.

- Ryn, K., & Jang, S. (2006). Intention to experience local cuisine in a travel destination: the modified theory of reasoned action. *Journal of Hospitality & Tourism Research*, 30(4), 507-516.
- Sahyoun, N., & Basiotis, P. P. (2000). *Food insufficiency and nutritional status of the elderly population*. Retrieved, Apr 16, 2008 from <http://www.cnpp.usda.gov/Publications/NutritionInsights/Insight18.pdf>
- Schiffman, S. S., & Graham, B. G. (2000). Taste and smell perception affect appetite and immunity in the elderly. *European Journal of Clinical Nutrition*, 54 (Suppl 3), S54-S63.
- Sheeran, P. & Orbell, S. (1999). Augmenting the theory of planned behavior: roles for anticipated regret and descriptive norms. *Journal of Applied Social Psychology*, 29(10), 2107-2142.
- Sheppard, B. H., Hartwick, J., & Warshaw, P. P. (1988). The theory of reasoned action: a meta analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15(3), 325-343.
- Slezak, D. (2000, August 9). *Evaluation of nutrition programs prepared for suburban area agency on aging and community nutrition network*. Retrieved Apr 22, 2008 from http://nutritionandaging.fiu.edu/creative_solutions/Focus%20Groups%20Executive%20Summary.pdf
- Sonmez, S. F. & Graefe, A. R. (1998) Determining future travel behavior from past travel experience and perceptions of risk and safety. *Journal of Travel Research*, 37(2), 171-178.
- Sutton, S. (1998). Predicting and explaining intentions and behavior: how well are we doing? *Journal of Applied Social Psychology*, 28(15), 1317-1338.
- The National Center for Assisted Living (2001). *Assisted living: independence, choice and dignity*. Retrieved Mar 24, 2008 from <http://www.ncal.org/about/alicd.pdf>
- Thompson, M. P., & Morris, L. K. (1991). Unexplained weight loss in the ambulatory elderly. *Journal of American Geriatric Society*, 39, 497-500.
- United States Department of Agriculture (USDA) (2007a, March). *Commodity supplemental food program*. Retrieved Mar 26, 2008 from <http://www.fns.usda.gov/fdd/programs/csfp/pfs-csfp.pdf>

- USDA (2007b, September). *Senior farmers' market nutrition program*. Retrieved Apr 17, 2008 from <http://www.fns.usda.gov/wic/SFMNP-Fact-Sheet.pdf>
- USDA (2007c, Nov 14). *Food security in the United States: conditions and trends*. Retrieved Apr 18, 2008 from <http://www.ers.usda.gov/Briefing/FoodSecurity/trends.htm>
- USDA (2008, Mar 26). *Child adult food care program*. Retrieved Mar 26, 2008 from <http://www.fns.usda.gov/cnd/care/CACFP/aboutcacfp.htm>
- U. S. Department of Health and Human Services (USDHHS), AoA (2007) *A profile of older Americans: 2007*. Retrieved Apr 4, 2008 from <http://www.aoa.gov/prof/statistics/profile/2007/2007profile.pdf>
- Vailas, L. I., Nitzke, S. A., Becker, M., & Gast, J. (1998). Risk indicators for malnutrition are associated inversely with quality of life for participants in meal programs for older adults. *Journal of the American Dietetic Association*, 98, 548-553
- Walker, D., & Beauchene, R. E., (1991). The relationship of loneliness, social isolation, and physical health to dietary adequacy of independently living elderly. *Journal of the American Dietetic Association*, 91, 300-304.
- Wankel, L. M. & Mummery, W. K. (1993). Using national survey data incorporating the theory of planned behavior: implications for social marketing strategies in physical activity. *Journal of Applied Sport Psychology*, 5, 158-177.
- Warburton, J., & Terry, D. J. (2000). Volunteer decision making by older people: A test of a revised theory of planned behavior. *Basic and Applied Social Psychology*, 22(3), 245-257.
- Weatherspoon, L. J., Worthen, H. D., & Handu, D. (2004). Nutrition risk and associated factors in congregate meal participants in Northern Florida: role of elder care services (ECS). *Journal of Nutrition for the Elderly*, 24(2), 37-54.
- Weddle, D., Wellman, N. S., & Shoaf, L. R. (1996). Position of the American Dietetic Association: nutrition, aging, and the continuum of care. *Journal of the American Dietetic Association*, 96(10), 1048-1052.
- Weddle, D. O., & Fanelli-Kuczmariski, M. (2000). Position of the American Dietetic Association: nutrition, aging and the continuum of care. *Journal of the American Dietetic Association*, 100(5), 580-595.

- Weimer, J. (1998). *Factors affecting nutrient intake of the elderly*. Food and Rural Economics Division, Economic Research Service, AER769. Retrieved Apr 16, 2008 from <http://www.ers.usda.gov/publications/aer769/aer769.pdf>
- Wellman, N. S., Smith, J., Alfonso, M., & Lloyd, J. (1999, December). *Nutrition 2030 grassroots survey report*. Miami, FL: Florida International University. Retrieve Apr 22, 2008 from http://nutritionandaging.fiu.edu/downloads/Grassroots_Survey.PDF
- Wellman, N. S., Weddle, D.O., Kamp, B., Podrabsky, M., Reppas, S., Pan, Y. L., et al. (2005) *Older Americans Act nutrition program toolkit*. Miami, FL: Florida International University. Retrieved Apr 2, 2008 from http://nutritionandaging.fiu.edu/OANP_Toolkit/toolkit%20update%202.7.06.pdf
- Wolfe, W. S., Olson, C. M., Kendall, A., & Frongillo, E. A. (1996). Understanding food insecurity in the elderly: A conceptual framework. *Journal of Nutrition Education*, 28(2), 92-100.
- Womack, P., & Breeding, C. (1998). Position of the American Dietetic Association: liberalized diets for older adults in long-term care. *Journal of the American Dietetic Association*, 98(2), 201-204.
- Ziliak, J. P., Gunderson, C. G., & Haist, M (2008). *The causes, consequences, and future of senior hunger in America*, Retrieved Apr 11, 2008 from <http://www.mowaa.org/SeniorHungerStudy.pdf>
- Zylstra, R., Beerman, K., Hillers, V., & Mitchell, M. (1995). "Who's at risk in Washington State? demographic characteristics affect nutritional risk behaviors in elderly meal participants," *Journal of the American Dietetic Association*, 95, 358-360.

CHAPTER 3 - METHODOLOGY

The purpose of this study was to predict community-dwelling elderly congregate meal program participation intention using the Theory of Planned Behavior (TPB). The study used direct and indirect measures to examine the relationships between the predictor variables (attitude, subjective norm, perceived behavior control, and past behavior) and intention, in addition to testing the hypotheses. This chapter describes the methods used to accomplish the goals of this study. The research procedure flow chart is presented in Figure 3.1.

Population and Sample

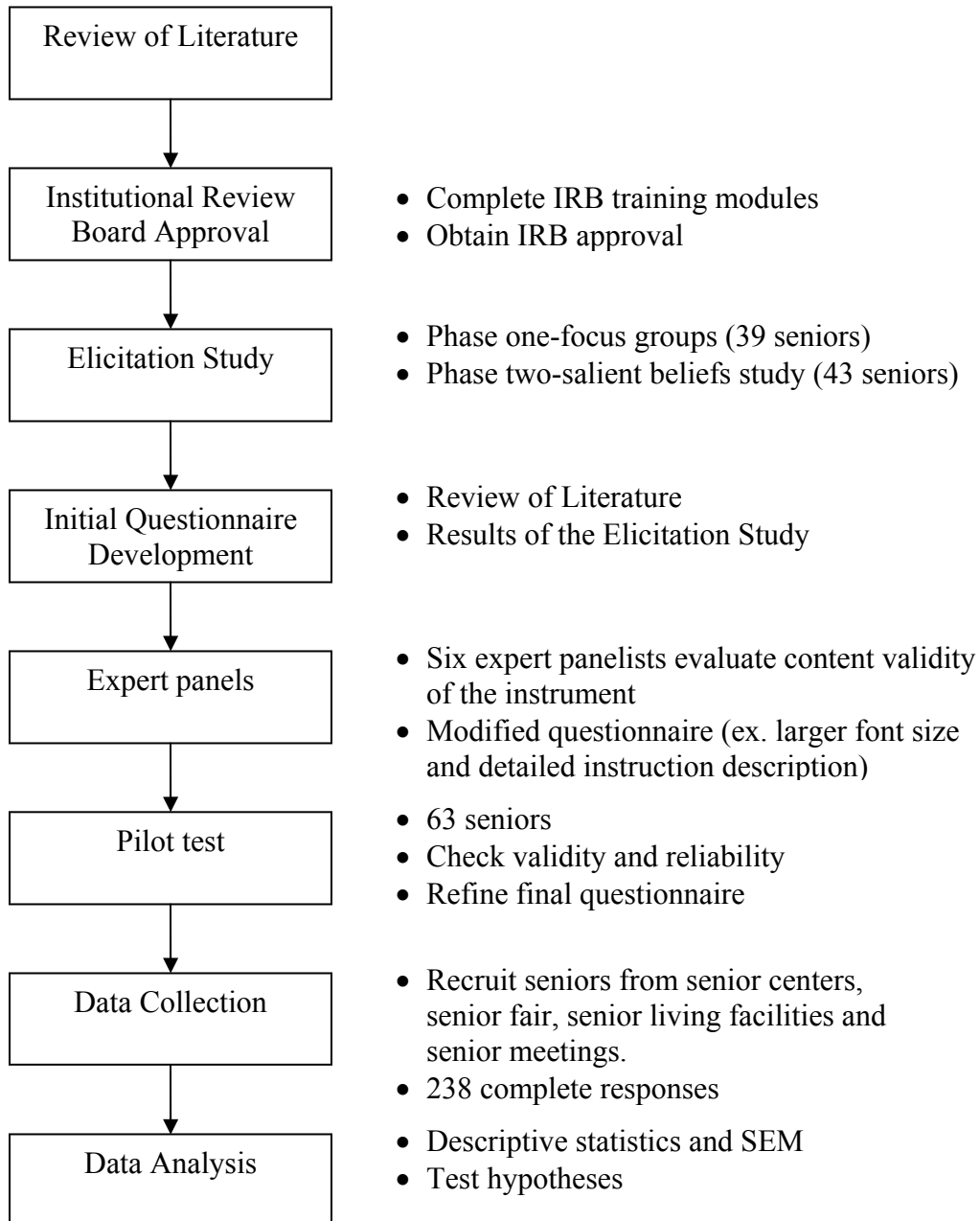
The population for the study was community-dwelling elderly aged 60 years or older, living in the North-Central Flint Hills (NCFH) region of Kansas. The NCFH Area Agency on Aging (AAA) was chosen because of the proximity to the research institution and available funding. The AAA executive director and foodservice manager were interested in learning ways to improve participation. This region spans 18 counties and includes 44 nutrition programs providing congregate and home-delivered meals at senior centers/nutrition sites. The convenience sample for congregate meal program participants were recruited from senior centers. Those who were infrequent program participants or non-participants were solicited from the regional senior fair, senior exercise classes, senior apartment living and independent living facilities, and organizations where senior participate. The goal was to receive a minimum of 200 completed surveys. Hair et al. (2006) stated that a minimum of 200 study samples should provide a sound basis for running Structural Equation Modeling (SEM).

Instrument Development

Guidelines for Research Instrument

Ajzen (2006) suggested that researchers must explicitly describe the behavior of their respondents and the goal behavior should be defined in terms of target, action, context and time (TACT) at the beginning of the questionnaire. TPB follows the principle of compatibility, which means all the measures in the questionnaire are considered in the same level of generality

Figure 3.1 Research Procedure Flow Chart



(Francis et al., 2004). Thus, predictor variables and intention should be defined in exactly the same terms. In this study, the congregate meal program participation behavior is stated specifically as the “participating (action) in congregate meal programs (target) in central dining areas (context) during weekdays at lunchtime (time).”

Sources of Measurement

Measurement items were developed from a literature review and an elicitation study. To measure the hypothetical constructs (attitude, subjective norm, perceived behavioral control and intention), this study adapted items from several validated studies (Ajzen, 1988, 1991, 2006; Gretebeck, 2000; Francis et al, 2004; Lee, 2005). For measurement of salient belief constructs, an elicitation study was conducted to develop this set of evaluative items. The elicitation included two phases: 1) focus groups and 2) the salient belief study.

Elicitation Study

Phase I-Focus Group

Based on the guidelines for developing an elicitation study (Francis et al., 2004), the context of interview questions was developed and four focus groups were conducted in the NCFH region. A total 39 participants were recruited. Nine open-ended questions were posed to participants who were asked to share their thoughts. These questions included the following:

1. What do you believe are the ***advantages*** of participating in senior meal programs?
2. What do you believe are the ***disadvantages*** of participating in senior meal programs?
3. Is there anything else you associate with your views about participating in senior meal programs?
4. Are there any individuals or groups who would ***approve*** of your senior meal program participation?
5. Are there any individuals or groups who would ***disapprove*** of your senior meal program participation?
6. Is there anything else you associate with other people’s views about senior meal program participation?
7. What factors or circumstances would ***enable*** you to participate in senior meal programs?

8. What factors or circumstances would make it *difficult or impossible* for you to participate in senior meal programs?
9. Are there any other issues that come to mind when you think about participating in senior meal programs?

Focus group participants were asked to answer the above questions to elicit behavioral, normative, and control beliefs for congregate meal program participation. The moderator facilitated the discussion and a research assistant took notes. The focus group discussion was tape recorded. Content analysis was used to establish themes among responses based on field notes and recorded tapes. All beliefs themes were extracted and are shown in Table 3.1.

Phase II-Salient Belief Study

The findings of the focus groups yielded various belief items. However, some belief items were not consistent with previous studies. The content analysis for control belief produced seventeen belief items that were higher than behavioral belief items (n=8) and normative belief items (n=9). According to Van der Pligt and Eiser (1984), three to five belief items are appropriate to represent all individual salient beliefs. Thus, to further clarify and identify the salient belief items, a phase II salient belief study was incorporated into an elicitation study. The questionnaire includes two parts: 1) the list of belief items by category and 2) demographic information (see Appendix A). Participants were asked to choose the five belief items most salient to them from behavioral beliefs, normative beliefs, and control beliefs. Because participants might perceive control belief items from different point of views (Oh & Hsu, 2001) thus control beliefs were divided into two sub-categories: facilitators and inhibitors. To increase measurement validity and reliability, we selected five salient belief items from each sub-category. To increase the generalizability of the sample, data were collected from two senior centers and one caregiver workshop where most participants had never participated in the program. In addition, the age limit (60 years and older) for the selected sample was removed from this part of the study. Table 3.1 shows salient frequencies and rankings in descending order from most to least important. The five most salient beliefs are identified with an asterisk (*).

Table 3.1 Candidate Items for Beliefs: Results from Phase II-Salient Beliefs Study

| Belief constructs | Belief themes | Salient frequency |
|---------------------------|---|--------------------------|
| <i>Behavioral Beliefs</i> | | |
| | Convenience* | 42 |
| | Social interaction* | 40 |
| | Low-priced* | 39 |
| | Nutrition and balanced meals* | 36 |
| | Less waste* | 25 |
| | Special diet provided | 12 |
| <i>Normative Beliefs</i> | | |
| | Family members ^{a*} | 64 |
| | Friends* | 30 |
| | Neighbors* | 15 |
| | Cooks at the meal site* | 13 |
| | Health professionals* | 13 |
| | Faith groups | 7 |
| | Local business | 4 |
| | Local civic groups | 3 |
| <i>Control Beliefs</i> | | |
| | Activities at senior center ^{b*} | 57 |
| | Transportation ^{c*} | 49 |
| | Inclusive culture of senior centers* | 33 |
| | Lack of motivation and inability to cook* | 31 |
| | Weather* | 28 |
| | Companionship | 27 |
| | Time conflict | 21 |
| | Don't like/can't eat the food | 21 |
| | Misunderstanding programs | 20 |
| | Physical environment | 14 |
| | Did not know about the programs | 10 |
| | Health problems | 9 |
| | No meal site in the community | 5 |

^a Family members included daughters/sons, spouse, and relatives.

^b The activities included volunteer work, meetings and games.

^c Transportation included cannot drive, no transportation, travel distance, and transportation provided.

*Selected salient beliefs from phase II study

Expert Panel

The expert panel was selected to review the content validity of the questionnaire. Guidelines for the questionnaire panel are in Appendix B. The panelists consisted of one gerontology professional, two older Kansan volunteers working in the Area Agency on Aging

(AAA) and three AAA personnel. Each panel member reviewed the questionnaire by answering seven questions to evaluate the relevancy and wording of each item, suitability of the measurement scale, clarity of instruction, and the overall design of questionnaire. Changes such as larger font size, and simplicity of instructions were made based on the suggestions from the panel experts.

Pilot Test

A pilot test was conducted in two senior centers and one retired employee group with a total of 63 completed surveys received. The pilot test allowed us to evaluate the reliability of the instrument and to increase the content validity of each question. Participants were asked to review and complete the questionnaire. The internal consistency of the instrument was measured using Cronbach's alpha. The beliefs based constructs and past behavior constructs were excluded from the reliability check because there was only one measurement item for each construct. The beliefs based construct was retrieved from one summative measurement. For example, the indirect measure of attitude was assessed by the sum of behavioral beliefs multiplied by the outcome evaluation ($\sum bb_i be_i$). The construct of past behavior was assessed by asking only one question "how often did you eat meals at the senior center during last month?" The Cronbach's alpha scores were expected to be higher than the recommended .70 suggested by Nunnally and Bernstein (1994).

The reliability score for each construct is shown in Table 3.2. Except for the construct of PBC, other constructs (attitude, subjective norm and intention) achieved the minimum Cronbach's alpha score ($\alpha \geq .70$). The low internal consistency between each PBC measurement items might result from the confusion with reverse question wording and the two sub-dimensions for the PBC construct (controllability and self-efficacy). In order to improve the reliability rate of the PBC construct, the reverse question wording was rephrased, measurement scales were changed, and two additional questions were included.

Comments from the participants were used to modify the instrument to increase both clarity and content validity. A sample question was added at the beginning of the questionnaire and highlighted instructions were added prior to the section on outcome evaluation to reduce the confusion between behavioral beliefs and outcome evaluation, normative beliefs and motivation to comply, and control beliefs and perceived control power.

Table 3.2 Reliability of Measurement (N=63)

| Construct | Number of items | Cronbach's alpha(α) |
|----------------------------|------------------------|--|
| Attitude | 7 | .92 |
| Subjective norm | 2 | .85 |
| Perceived behavior control | 4 | .46 |
| Intention | 3 | .73 |

Questionnaire Development

Based on the results of the expert panel and pilot test, changes were made in the questionnaire. The questionnaire included two sections: 1) factors affecting senior meal program participation intention and 2) demographic information (see Appendix C). Table 3.3 shows each study variable with the corresponding questionnaire item number. In the context of the questionnaire, the term for “congregate meal programs” was replaced by “senior meal programs” based on the suggestions made by the AAA executive director. “Senior meal programs” elicit a more positive image than “congregate meal programs.” Also, congregate meal is the federal term for the program.

Measuring Belief-based Constructs

Behavioral Beliefs

The focus group yielded eight behavioral beliefs themes. Five salient beliefs (social interaction, nutrition implications, low-price, convenience, and less waste) were drawn from the salient beliefs study for measuring behavioral beliefs toward program participation. Results from the elicitation study were similar to previous studies (Ponza & Wray, 1990; Slezak, 2000). Two questions were asked about each of the five belief themes; beliefs-based attitude is the sum of the belief multiplied by outcome evaluation ($\sum bb_i be_i$).

Behavioral beliefs (bb_i) are measured by asking a respondent to rate the behavioral belief surrounding each of the five benefits for participating in the meal program on a 5-point scale ranging from “very unlikely” (1) to “very likely” (5). Outcome evaluations (be_i) are assessed by asking a respondent to evaluate the five salient beliefs about program participation on a 5-point scale ranging from “not a real benefit” (1) to “very real benefit” (5).

Table 3.3 Study Variables and the Corresponding Questionnaire Item Number

| Study variable | Questionnaire item number |
|--|---------------------------|
| Section 1 | |
| <i>Attitude</i> | |
| Attitude (direct measure) | 1 |
| Behavioral beliefs & outcome evaluation (indirect measure) | 13 & 16 |
| <i>Subjective norm</i> | |
| Subjective norm (direct measure) | 2,3 |
| Normative beliefs & motivation to comply (indirect measure) | 14 & 17 |
| <i>Perceived behavior control</i> | |
| Perceived behavior control (direct measure) | 4,5,6,7,8,9 |
| Control beliefs & perceived control power (indirect measure) | 15 & 18 |
| <i>Intention</i> | 10,11,12 |
| Section 2 | |
| <i>Socio-demographic characteristics</i> | |
| Gender | 1 |
| Age | 2 |
| Marital status | 3 |
| Living arrangement | 4 |
| Ethnicity | 5 |
| Education | 6 |
| Income | 9 |
| <i>Past behavior</i> | 7,8 |

Normative Beliefs

Nine normative beliefs themes were identified by the focus groups. Five salient beliefs (family members, friends, neighbor, cooks at the meal site, and health professionals) were identified through the salient belief study. Similar results to the elicitation study were reported by other researchers. For example, friends, health professionals (e.g., doctors, nurses, and dietitians), and family members (e.g., spouse, children, and relatives) were viewed as significant referents by older adults among TPB studies (Brenes, Strube, & Storandt, 1998; Conn, 1998; Roelands, Oost, Depoorter & Buysse, 2002). Kim et al. (2003) applied the TPB to predict dairy product consumption by older adults and found that cooks at senior centers had a significant effect on elderly intention.

The belief-based measure of subjective norm is the sum of normative beliefs (nb_i) multiplied by respondent's motivation (mc_i) to comply with each reference ($\sum nb_i mc_i$). Assessing

normative beliefs (nb_i) followed logic similar to measuring behavioral beliefs. Respondents were asked to rate the beliefs of influence of each relevant individual or group on their decision to participate in the program on 5-point scale ranging from definitely should not (1) to definitely should (5). Motivation to comply (mc_i) was measured by asking participants' general motivation to comply with respect to each accessible referent from very unlikely (1) to very likely (5).

Control Beliefs

The focus groups resulted in seventeen control beliefs themes. Five salient beliefs for control beliefs included participating in activities at senior centers, providing transportation, the welcoming feeling of the senior center, lack of motivation and ability to cook, and poor weather were identified from the salient beliefs study. Perceived program participation barriers described in the literature included: "don't need the program"; "lack of transportation"; "dislike the food provided"; "uncomfortable going or applying"; "unable to pay the contribution amount"; "inconvenient location"; "unaware of the program"; "restrictions on attendance"; "limited program space"; "time conflicts"; "unpleasant experience with previous meal"; "language barriers"; and "dislike physical environment of meal site" (Bermudez & Tucker, 2004; GAO, 2000; Lee, Frongillo & Olson, 2005; Ponza & Wray, 1990; Slezak, 2000). The results retrieved from the elicitation study were similar to previous studies.

The belief based perceived behavioral control is the sum of the control beliefs multiplied by perceived control power ($\sum cb_i pp_i$). Control beliefs (cb_i) are measured by asking the respondents to rate the ease or difficulty of participating in programs by each belief item on a 5-point scale ranging from very difficult (1) to very easy (5). Perceived control power (pp_i) is measured by asking participants to rate how likely or unlikely they are to participate in congregate meal programs if they encounter each control belief (cb_i) on a 5-point scale ranging from very unlikely (1) to very likely (5).

Measuring Predictor Constructs

Attitude toward Program Participation

Five-point scales were used to evaluate attitudes toward program participation. A statement "Eating meals at the senior centers during the week is _____" appeared before these

seven scales. The bipolar adjectives scales included valuable/worthless, beneficial/harmful, useful/useless, pleasant/unpleasant; healthy/unhealthy, boring/interesting and good/bad.

Subjective Norm

Two items asked seniors' opinions of important people in general, including "Most people who are important to me think I should eat meals at the senior center," and "When it comes to eating meals at the senior center, I would follow the advice of others who are important to me" with 5-point disagree/agree scales.

Perceived Behavior Control

Six items were used to measure PBC. PBC can assess self-efficacy and beliefs about controllability of the behavior. For self-efficacy, the example question is "I am confident that I can eat meals in the senior center" using 5-point disagree/agree scale. For controllability, the example question is "Whether or not I eat meals in the senior center is entirely up to me" using 5 point disagree/agree scale.

Past behavior

Respondents were asked "Have you ever eaten meals in the senior centers?" If the answer was yes, they continued to the next question. If the answer was no, they skipped the questions on past behavior. If the answer was yes, respondents were asked "How often did you eat meals at the senior center during last month?", and they marked one of eight responses from "only ate the meal one time" to "five times or more per week".

Participation Intention

Generalized intention is most commonly used for measuring participation intention. Three measurement items were used for testing adequate internal consistency: "I intend to eat meals at the senior center in the future"; "In the future, I will eat meals at the senior center if I choose to do so"; and "I plan to eat my meals at the senior center in the future" using 5-point disagree/agree scales. The resulting measurement items for intention were highly correlated as defined by Ajzen (2002).

Measuring Demographic Variables

Demographic questions were asked at the end of the questionnaire. Respondents' gender, age, marital status, living arrangement, ethnicity, education level, and income status were included as demographic variables.

Data Collection

The NCFH AAA executive director and foodservice manager were contacted at beginning of the study. The director suggested improvements to the study design and recommended a location for data collection. Additionally, the director suggested that the annual senior fair would be a place to collect data because attendees included more than 700 congregate meal program participants and non-participants. Other locations for data collection included senior exercise classes, senior living facilities and meetings that retirees' attend. The senior center and senior living facilities' managers were contacted to ascertain their willingness to participate in the study. Once they agreed to participate, a follow-up visit was scheduled for data collection.

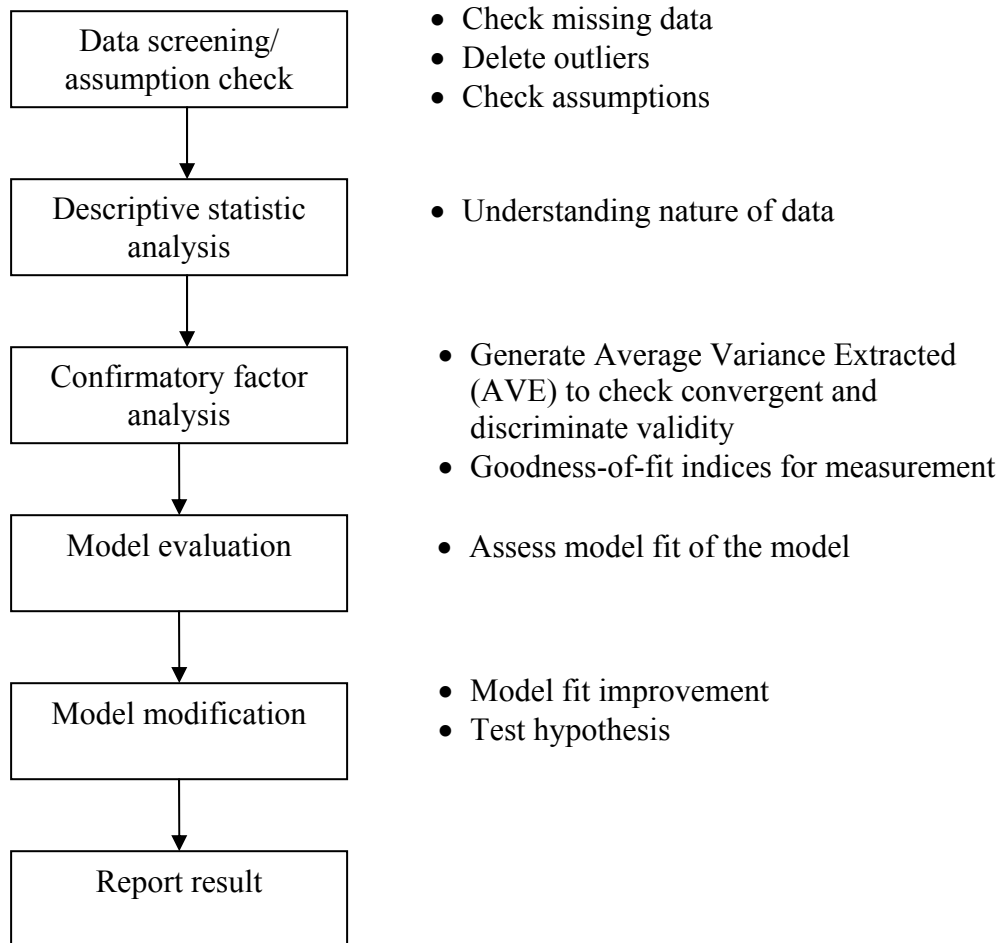
Data Analysis

The procedures for data analysis are presented in Figure 3.2. Statistical analysis was performed using SPSS for Windows 13.0 (SPSS Inc., Chicago) and AMOS 4.0 (Smallwater Corp, 2003). In the pilot study, reliability of the instrument was assessed using Cronbach's alpha. Data screening was performed to check for missing data. Descriptive statistical analysis was used to assess the nature of the data and to establish a demographic profile of respondents. The assumptions of multivariate analyses were checked, and Mahalanobis distance was tested to detect outliers. A confirmatory factor analysis (CFA) using AMOS 4.0 was performed to test the reliability and validity of measurement for latent constructs in the model. A reliability check was conducted. Composite reliability of a construct was computed to assess the reliability of attributes representing each construct in the measurement model. Composite reliability of .70 for all constructs in the measurement model (Nunnally & Bernstein, 1994) was used as an acceptable threshold. Factor loading .50 was used as the threshold value for convergent validity of measurements. Average variances extracted (AVE) can reflect the overall amount of variance

in the indicators accounted for by the latent construct (Hair et al., 2006). AVE tests convergent and discriminate validity.

SEM using AMOS 4.0 determined the causal relationships among constructs proposed in the extended TPB. The overall fit of the proposed model was assessed using goodness-of-fit indices as recommended by Byrne (2001) and Hair and his colleagues (2006). The goodness-of-fit indices used in this study include Chi-square statistics, Root Mean Square Error of Approximation (RMSEA), Comparative Fix Index (CFI), Tucker-Lewis Index (TLI), and Normed Fix Index (NFI). Standardized path coefficients were used to test hypothesized paths among constructs proposed in the structural model. The hypothesized relationships (H1-H7) were tested based on the results of SEM.

Figure 3.2 Procedures for Data Analysis



Project Approval

This study was approved by the Institutional Review Board Kansas State University. The cover letter for the questionnaire included participants' rights, the purpose of the study, methodology, and how the data was to be used and also provided additional instructions for completing the questionnaire.

References

- Ajzen, I. (1988). *Attitude, personality and behavior*. Milton Keynes, UK: Open University Press.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Ajzen, I. (2006, January). *Constructing a TPB questionnaire: conceptual and methodological consideration*. Retrieved Jun 12, 2008 from <http://people.umass.edu/aizen/pdf/tpb.measurement.pdf>
- Bermudez, O. I., & Tucker, K. L. (2004). Cultural aspects of food choices in various communities of elders, *Generations*, 28(3), 22-27.
- Brenes, G. A., Strube, M. J., & Storaandt, M. (1998). An application of the theory of planned behavior to exercise among older adults. *Journal of applied social psychology*, 28(24), 2274-2290.
- Byrne, (2001). *Structural equation modeling with AMOS*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Conn, V. S. (1998). Older women's beliefs about physical activity. *Public Health Nursing*, 15, (5), 370-378.
- Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., & Grimshaw, J., Foy, R., et al. (2004). *Constructing questionnaires based on the theory of planned behavior. A manual for health services researchers*. United Kingdom: Centre for Health Services Research, University of Newcastle. Retrieved Jan 26, 2008 from <http://www.rebeqi.org/ViewFile.aspx?itemID=212>
- General Accounting Office (GAO) (2000). *Food assistance options for improving nutrition for older Americans*, GAO/RCED-00-238, retrieved Apr 15, 2008 from <http://www.gao.gov/new.items/rc00238.pdf>
- Gretebeck, K. A. (2000). *Predicting physical activity in older adults: the theories of reasoned action and planned behavior*. Unpublished doctoral dissertation, Purdue University.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006) *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall.

- Kim, K., Reicks, M., & Sjoberg, S. (2003). Applying the theory of planned behavior to predict dairy product consumption by older adults. *Journal of Nutrition Education and Behavior*, 35, 294-301.
- Lee, M. J. (2005) *Effects of attitude and destination image on association members' meeting participation intentions: development of meeting participation model*. Unpublished doctoral dissertation, Kansas State University.
- Lee, J. S., Frongillo, E. A., & Olson, C. M. (2005). Conceptualizing and assessing nutrition needs: perspectives of local program providers. *Journal of Nutrition for the Elderly*, 24(3), 25-45.
- Nunnally, J. C., & Bernstein, I (1994). *Psychometric theory (3rd ed.)*. New York, NY: McGraw-Hill.
- Oh, H. & Hsu, C. (2001). Volitional degrees of gambling behaviors. *Annals of Tourism Research*, 28 (3), 618-637.
- Ponza, M., & Wray, L. (1990). *Final results of the elderly program study-evaluation of the food assistance needs of the low-income elderly and their participation in USDA programs*. Princeton, NJ: Mathematica Policy Research, Inc.
- Roelands, M., Oost, P. V., Depoorter, A., & Buysse, A. (2002) A social-cognitive model to predict the use of assistive devices for mobility and self-care in elderly people, *the Gerontologist*, 42(1), 39-50.
- Slezak, D. (2000, August 9). *Evaluation of nutrition programs prepared for suburban area agency on aging and community nutrition network*. Retrieved Apr 22, 2008 from http://nutritionandaging.fiu.edu/creative_solutions/Focus%20Groups%20Executive%20Summary.pdf
- Van der Plight, J., & Eiser, J. R. (1984). Dimensional salience, judgment and attitudes. In J.R. Eiser (Ed.), *Attitudinal judgment* (pp. 43-63). New York, NY: Springer-Verlag.

CHAPTER 4 - PRELIMINARY EVALUATION OF SALIENT BELIEFS ABOUT PARTICIPATION IN CONGREGATE MEAL PROGRAMS

Abstract

Congregate meal programs, authorized under Title III-C of the Older Americans Act, provide individuals 60 years of age and older nutritious meals in senior centers. The number of meals served has declined 18% from 1980 to 2002. The success of this program thus requires an understanding of how seniors decide whether to participate or not: that is the focus of this study. The sample population was the community-dwelling elderly living in the Kansas North Central-Flint Hills region. Using the Theory of Planned Behavior framework, we initiated an elicitation study that consisted of two phases: 1) focus groups and 2) a salient belief study. The participants tended to agree about advantages in participating in the program, including access to nutritious meals, increased chances for social interaction, saving money, less food waste and convenience. Family members were important in influencing participants' intention to participate. Overall, participants indicated that the following would make it easier to participate in the meal program if they participated in activities in the senior center, felt welcome at the centers, weren't able or didn't want to cook at home, transportation was provided, and the weather was nice. The skill level of the site manager and cooks played an important role in program success. Results provided useful information for foodservice managers and dietetic professionals who are in a position to recommend the program to seniors and reach non-participants.

Key Words: Theory of Planned Behavior, focus groups, salient beliefs, congregate meal program, perceived behavior control

Introduction

The elderly population in the United States is increasing. One in five individuals will be 65 or older by 2030 (Federal Interagency Forum on Aging-Related Statistics, 2008). Most seniors live in their home alone or with their spouse in the community: only 4.4 % of this population lives in institutional settings such as nursing facilities (AoA, 2007a). The growing

number of community-dwelling elderly increases the need for community based service programs administered by well-organized aged-related associations. For example, the Older Americans Act Nutrition Program (OAANP) is one of the largest community based service programs run by the Administration on Aging (AoA) and provides many benefits to seniors in the U.S.

OAANP includes congregate meal programs and home-delivered meal programs that provide nutritious meals to individuals who are 60 years and older. This program was authorized under OAA Title III and supported by the State Agency on Aging, and targeted to the seniors who might be at risk of losing their independence (USDHHS, AoA, 2003). The main purpose for the program is to eliminate the problems with social isolation and dietary inadequacy. The focus is on the free-living elderly who can go to the meal site. The home-delivered meal program provides hot or frozen meals to homebound elderly. The major difference between these two programs is that seniors who participated in congregate meal programs have opportunities to interact with both staff members and other seniors.

Although the congregate meal program provides the benefits of social interaction that home-delivered meals cannot provide, congregate meal program participation is on the decline. Reports from Congress about OAANP (O'Shaughnessy, 2004) show that from 1980 to 2002, the number of congregate meals served declined by 18%, while the number of home-delivered meals grew by almost 290%. Congregate meals served decreased from 132 million in 1980 to 108 million in 2002. This shift from congregate meal programs to home-delivered meal programs has continued. In 1980, congregate meals served were 78% of total meals served by OAANP with home-delivered meals served at 22%. (Ponza, Ohls, & Posner, 1994). In 2006, the percentage for congregate meal program participation dropped to 41% (AoA, 2007b), but home-delivered meals increased significantly from 22% to 59% (AoA, 2007b).

Research at the national, state, and local levels assesses the performance of OAANP. The National Evaluation of the Elderly Nutrition Program conducted in 1993-1995 (Ponza et al., 1996) found that program participants received approximately 40-50% of their daily intake of most nutrients, higher than the 33% Recommended Dietary Allowances. The results of the second national survey, reported that 58% of congregate meal participants and 62% of home-delivered meal participants received half or more of their daily food intake from program meals (POMP, 2006). One significant benefit of participating in the OAANP was better nutrition for

the participants (Gilbride et al., 1998; Neyman, Zidenberg-Cherr & McDonald, 1996; Ponza et al., 1996). Two national studies showed that participants of OAANP also socialized more than non-participants (Ponza et al., 1996; POMP, 2004, 2006)

The decline in congregate meal program participation while the elderly population increase may cause issues with increasing malnutrition among the elderly, a decrease in the quality of life, and premature death. To understand the shifts, an in-depth assessment of factors that affect seniors' intention to participate in congregate meal program is in order.

Theoretical Background

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is a valuable tool for predicting and understanding individual behavior. The TPB is an extension of the Theory of Reasoned Action (TRA). The TRA is based on the assumption that human beings are typically rational, and make systematic use of the information available to them (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). According to TRA, intention is a great predictor for behavior (Ajzen, 1988; Bagozzi & Yi, 1989). Moreover, a person's behavioral intention is determined by the attitudes that individuals hold toward the behavior and the person's perception of social pressure from individuals or groups placed on him/her to perform or not perform the behavior. However, TRA assumes that behavior is volitional. To improve the prediction power of TRA, one factor- perceived behavior control (PBC) was added, giving TPB model (Ajzen, 1988, 1991). PBC refers to people's perception of the ease or difficulty of performing the behavior of interest (Ajzen, 1991). Based on TPB, attitude, subjective norm and PBC are direct measures of predictor variables of behavioral intention.

Salient Beliefs

In addition to the direct measures, indirect measures, also called belief based measures, are included in TPB. If researchers want to measure attitude directly, they ask respondents about their overall attitude, or if indirectly, they ask respondents about specific behavioral beliefs and their evaluations of performance outcome. According to TPB, there are three types of beliefs. Behavioral beliefs refer to the subjective probability that a behavior will lead to a specific consequence and people's evaluations of these consequences (Ajzen & Fishbein, 1980). For

example, seniors may believe that participating in congregate meal programs will improve their health with nutritious and balanced meals and this benefit may be important to the individuals. Therefore this attitude toward congregate meal program participation intention is high. Normative beliefs measure the likelihood that important referents, either individuals or groups would approve or disapprove of the behavior and affect an individual's motivation to comply (Ajzen & Madden, 1986). For example, if a senior believes that his/her relative wants him/her to participate, and he/she values the opinion, the subjective norm for participation intention is high. Control beliefs are the beliefs about the presence of factors that facilitate or impede performance of the behavior and the perceived power of these factors (Ajzen, 1985). For example, fewer resources (no transportation) and more barriers (poor weather) reduce seniors' perception of control. Thus, participation in congregate meal programs would be more difficult and yield a lower intention to participate.

According to Ajzen and Fishbein (1980), new sets of beliefs and salient referents must be elicited for each new context, population, and behavior. Ajzen and Fishbein (1980) further recommended including sources of social norms that are salient to the respondents. Belief based measures can be retrieved from an elicitation study. An elicitation study can determine the behavioral, normative, and control beliefs of a population, providing the information about the cognitive foundation for an individuals' behavior. The researchers recommended procedures for conducting an elicitation study: 1) use open-ended questions to assess a population's beliefs; 2) perform content analysis and count the frequency of themes to rank-order the beliefs; and 3) determine the five to ten most salient beliefs (Ajzen & Fishbein, 1980).

The number of chosen salient beliefs affects the performance of the TPB model. If the researcher(s) selects too many beliefs, the validity of the TPB model might be challenged. Van der Pligt and Eiser (1984) suggest that three to five beliefs may represent the limit. They argue that researchers should investigate the beliefs that are most salient to specific individuals or groups and allow alternative processes for assessing salient beliefs. Thus, salient beliefs can be determined by ranking or rating each behavioral belief for importance related to a corresponding attitude (Van der Pligt & de Vries, 1998a). Budd (1986) followed this procedure and asked participants to choose the five most salient beliefs about cigarette smoking among a total of 18 beliefs. The results indicated that belief-attitude correlations with the five most salient beliefs were stronger than were correlations with the 13 least salient beliefs. In a similar study

conducted by Elliot, Jobber, and Sharp (1995) the five most salient beliefs predicted attitudes and intentions better than 14 inclusive belief items. Van der Plicht and de Vries (1998b) studied smoking and reported that smoking behavior can be predicted from three salient beliefs instead of 15 inclusive belief items.

The purpose of this study was to explore community-dwelling elderly beliefs for participating in congregate meal programs and to identify salient beliefs by category (behavioral beliefs, normative beliefs and control beliefs). Furthermore, results of that study were used to develop a reliable and valid questionnaire to be administered to a larger sample. Approval for conducting this study was received from the Institutional Review Board of the research university.

Methodology

Focus Group

The population was the community-dwelling elderly who lived in Kansas Area Agency on Aging (AAA) region of the North Central-Flint Hills (NCFH). Participants were recruited from one meal site and three senior centers selected by AAA executive director and foodservice manager based on the size of the meal program and the distance from the research institution. Four site managers were contacted, and all of them agreed to participate in focus groups.

Potential focus groups participants were recruited using flyers posted in each senior center; a sign-up sheet was provided. The site managers coordinated the location and schedule for each focus group. The goal was to recruit six to twelve seniors per focus group.

Focus groups were tape recorded. The length of each focus group ranged from 30- 60 minutes and was conducted by a moderator and a research assistant. An interview guide was developed by the research team following the focus group guidelines established by Krueger and Casey (2000) (Appendix D). Using the TPB theoretical framework, nine questions were adopted from Francis et al. (2004) to determine seniors' behavioral, normative, and control beliefs about participating in congregate meal programs (Table 4.1). The questions used "senior meal programs" instead of "congregate meal program," based on suggestions made by the AAA executive director because "senior meal programs" conveys a more positive image than "congregate meal programs."

Table 4.1 Focus Group Questions

| Behavioral beliefs |
|--|
| <ol style="list-style-type: none">1. What do you believe are the advantages of participating in senior meal programs?2. What do you believe are the disadvantages of participating in senior meal programs?3. Is there anything else you associate with your views about participating in senior meal program? |
| Normative beliefs |
| <ol style="list-style-type: none">4. Are there any individuals or groups who would approve of your senior meal program participation?5. Are there any individuals or groups who would disapprove of your senior meal program participation?6. Is there anything else you associate with other people's views about senior meal program participation? |
| Control beliefs |
| <ol style="list-style-type: none">7. What factors or circumstances would enable you to participate in senior meal programs?8. What factors or circumstances would make it difficult or impossible for you to participate in senior meal programs?9. Are there any other issues that come to mind when you think about participating in senior meal programs? |

At beginning of each session, the moderator explained the purpose of the study and provided an overview of the focus group process and statements about anonymity and confidentiality. The moderator explained that the focus groups were voluntary and emphasized that there were no right or wrong answers. Each participant received a copy of the consent form (Appendix E). The moderator described the consent form to the participants to ensure they understood the form before they signed it. To reduce the confusion between the concepts of congregate meals and home delivered meal programs, the definition of congregate meal programs “eating meals at senior centers/meal sites” was emphasized. During the session, participants were asked to discuss the topic after the moderator raised the question. Each participant was encouraged to speak up until no more views were expressed. The moderator clarified answers. At the end of the session, demographic information was obtained from the participants including gender, age, education level, and frequency of participation in the meal program.

Focus groups results were transcribed by the research assistant. Detailed field notes and transcripts were maintained for content analysis. Content was reviewed for significant patterns in focus group responses. Information was categorized by common themes. Haddock and Zanna (1998) suggested that the process of content analysis can help in understanding the measurement of predictor variables (attitude, subjective norm, perceived behavior control). The moderator and research assistant assessed the categorization of conversation and the content of each category. The responses were confidential and anonymous.

Salient Belief Study

Using the suggestions of Ajzen and Fishbein (1980), the salient beliefs were organized by frequency count and ranked-ordered from the most to the least salient based on the findings of the focus group. However, the results from the focus groups were unlike those found by previous researchers. To further identify and clarify the salient beliefs, a phase II-salient beliefs study was added to the elicitation study. A questionnaire was developed for the salient beliefs study and included two sections: 1) a listing of the behavioral, normative, and control beliefs and 2) demographics. The list of belief items were based on the findings of the focus group and a review of the literature (Ponza & Wray, 1990; GAO, 2000; Slezak, 2000; Bermudez & Tucker, 2004; Lee, Frongillo & Olson, 2005). The six behavioral belief items were social interaction, nutritious and balanced meals, low-price, convenience, less waste, and special diets. Ten referent groups were listed: daughters/sons, spouse, relatives, cooks at the senior center, friends, neighbors, health professionals (doctors, nurse and dietitians), churches, local businesses (e.g., banks) and community organizations (e.g., Lions Club or Rotary). Various control belief items were retrieved from the focus group, to reduce confusion control beliefs were separated into two subsections. One was the factors that might make senior participation easier. The other was the barriers to participation in the program. Each subsection contained eleven belief items. Demographic information, such as gender, age, marital status, living arrangement, race, highest education, and frequency of program participation, were included the questionnaire. A copy of the questionnaire is in Appendix C. Participants were presented with all belief items by category and asked to choose the five beliefs most salient to them. Van der Pligt and Eiser (1984) suggest three to five beliefs can appropriately represent all individual salient beliefs. To increase study generalizability, samples were not limited to age 60 and over and included some sporadic

program participants. The convenience sample was recruited from two senior centers and one caregiver workshop located in Kansas NCFH region. Table 4.2 shows the salient frequency ranked in descending order from most to least important.

Table 4.2 Candidate Items for Beliefs: Results from Elicitation Study

| Belief constructs | Belief themes | Salient frequency* |
|---------------------------|--|---------------------------|
| <i>Behavioral Beliefs</i> | | |
| | Convenience | 42 |
| | Social interaction | 40 |
| | Low-priced | 39 |
| | Nutrition and balanced meals | 36 |
| | Less waste | 25 |
| | Special diet provided | 12 |
| <i>Normative Beliefs</i> | | |
| | Family members ^a | 64 |
| | Friends | 30 |
| | Neighbor | 15 |
| | Cooks at the meal site | 13 |
| | Health professionals | 13 |
| | Faith groups | 7 |
| | Local business | 4 |
| | Local civic groups | 3 |
| <i>Control Beliefs</i> | | |
| | Activities at senior center ^b | 57 |
| | Transportation ^c | 49 |
| | Inclusive culture of senior centers | 33 |
| | Lack of motivation and ability to cook | 31 |
| | Weather | 28 |
| | Companionship | 27 |
| | Time conflict | 21 |
| | Don't like/can't eat the food | 21 |
| | Misunderstanding programs | 20 |
| | Physical environment | 14 |
| | Did not know about the programs | 10 |
| | Health problems | 9 |
| | No meal site in the community | 5 |

^a Family member included daughter/sons, spouse, and relatives.

^b The activities included volunteer work, meetings, and games.

^c Transportation included cannot drive, no transportation, travel distance, and transportation provided.

* Because some of respondents didn't select the maximum five salient beliefs, the total salient frequency by each category might not match the total number of study sample multiplied by five salient beliefs.

Results

Focus Group

Sample Characteristics

Four focus groups were organized in three senior centers and at one meal site at a senior apartment living facility. Each focus group included seven to 14 participants and lasted 30-60 minutes. Of the 39 participants, seven were males and 32 were females. With the exception of one all female group, each focus group was mixed male and female. The age range was 62-92 years with a mean of 78 years. Most participants had a high school degree (74%). Fifty-one percent of participants received congregate meals 4-5 times per week. Table 4.3 illustrates the profile of the four focus groups and participants' characteristics.

Table 4.3 Focus Group Profile and Participants' Characteristics

| | Site A | Site B | Site C | Site D | Total |
|------------------------|---------------|---------------|-----------|---------------|-------|
| Number of participants | 9 | 14 | 7 | 9 | 39 |
| Gender | | | | | |
| Male | 4 | 0 | 1 | 2 | 7 |
| Female | 5 | 14 | 6 | 7 | 32 |
| Age (Mean) | 74 | 79 | 79 | 79 | 78 |
| Program location | Senior center | Senior center | Meal site | Senior center | |
| Duration (minutes) | 30 | 50 | 60 | 60 | |

Behavioral Beliefs

Seniors who participated in these focus groups identified six advantages and one disadvantage in participating in congregate meal programs (Table 4.4). Participants indicated that congregate meal programs can provide opportunities to make new friends and meet different people. Participants viewed social contact as a cure for depression and relief for loneliness. They said that participating in congregate meal programs is one reason that they were able to get up and kept going in the morning. One even mentioned that "If I didn't go to the senior center, I would rot at my house." Attendance at the nutrition sites kept them active.

Nutrition implications were benefits that most participants addressed. The participants in the focus groups agreed that congregate meal programs provided a nutritious balanced meal in quantities appropriate for people their age. Consuming meals on site prevented them from

Table 4.4 Behavioral Beliefs and Sample Quotes

| Categories | Sample Quotes |
|--------------------------|---|
| Advantage | |
| 1. Nutrition implication | <i>"We all get balanced meals."</i> <i>"I will not snack too much."</i> <i>"One good meal a day."</i> <i>"Nice to have one hot meal."</i> |
| 2. Social interaction | <i>"The friendships you make."</i> <i>"I have a chance to talk with other people."</i> <i>"I can hang out with different people."</i> <i>"It expands your horizon."</i> <i>"If I didn't go to the senior center, I would rot at my home."</i> |
| 3. Special diets | <i>"The girls (cooks) know certain people can't have certain things to eat."</i> <i>"They are good about finding something else to replace it."</i> |
| 4. Low-priced | <i>"You cannot find a meal that cheap."</i> <i>"Frozen meals or individual meals (from supermarket) are expensive."</i> <i>"It saves my grocery bills."</i> |
| 5. Convenience | <i>"You don't have to clean up after meals."</i> <i>"I don't have to cook"</i> <i>"Don't have to cook for one person, especially sometimes it's hard to cook for one person."</i> |
| 6. Less waste | <i>"If I cannot finish a dish (at home) today or later, I might throw it away. It's a waste."</i> |
| Disadvantage | |
| 1. Limit option | <i>"Cook might not serve food that you like"</i> <i>"If they (cooks) fixed something you don't like, they don't substitute well."</i> <i>"Some foods I just don't eat, such as liver and fish."</i> |
| 2. No disadvantage | <i>"I cannot think of any...It's just great."</i> <i>"I just want to say, there are no disadvantages I can see."</i> |

snacking at home. Three participants stated that the program provided special diets such as diabetic meals and low-sodium meals upon request and with medical recommendations.

The lack of energy or motivation to prepare meals at home and clean-up after meals was one reason for respondents to participate in the program. When a participant had previously cooked for a family, this indicated that it was hard to "cook for one." Attending congregate meal programs can avoid the waste of buying food in larger quantities. The variety served also was a behavioral belief.

Participants viewed the programs as low priced meals. One stated that "You cannot find a meal that cheap." Others worried that "I don't believe senior centers receive enough money from

the state (for the program).” They viewed participating in the meal program as a bargain that reduced their amount they have to spend at the grocery store.

Participants identified few disadvantages. The limited menu options program contained was the only limitation for participating in congregate meal programs. If the meals provided today were ones participants didn’t like, then he/she might not eat. Although the site cook tried to prepare other foods instead of regular meals on the menu, substitutes were not easy.

Normative Beliefs

Family members were expected to affect participants’ beliefs about congregate meal programs. The approval of family members did influences participants’ behaviors. Specifically, children have more influence than spouse or another relative. Site cooks are also important roles in providing opinions about nutritious meals. If site cooks show support and encourage seniors to participate, seniors tend to follow their advices. Health professions, such as doctors, also are keys for participation. Other referent groups were community organizations (like the Lions Club and Rotary), churches, and local business groups (like banks) that affected participation beliefs.

Table 4.5 shows each normative belief and sample comments.

Table 4.5 Normative Beliefs and Sample Quotes

| Categories | | Sample Quotes |
|-------------------|---------------------|--|
| Approve | | |
| 1. | Family member | <i>“My sons approved.” “My grandchildren approved.” “All family members approved.”</i> |
| 2. | Health professional | Doctors, nurses and dietitians* |
| 3. | Other Individuals | Cooks at nutrition sites, friends and neighbors * <i>“The cook knows what participants want.”</i> |
| 4. | Local civic group | Lions and Rotary club* |
| 5. | Faith group | <i>“Physicians and faith groups work together to support congregate meal programs.”</i> |
| 6. | Local business | <i>“Some businesses in this community support this program and provide holiday special meals like Christmas and Thanksgiving meals.”</i> |
| Disapprove | | |
| 1. | No disapprove | <i>“I can’t imagine anyone would disapprove.” “Never heard about it.”</i> |

*summarized all reference groups

Control Beliefs

Nineteen control beliefs were elicited from the focus group. Eight belief themes were identified as factors that contribute to ease of participation. Eleven factors were recognized as the barriers to participation. Belief themes and sample quotes are provided in Table 4.6. The inclusive culture of senior centers is an important perspective. The knowledgeable and friendly staff and the welcoming atmosphere foster participation. Staff involvement with congregate meals was an indicator of program success. All focus group participants relayed the importance of the site manager and cooks. For example, if the menu provided something that an individual didn't like, cooks at the site would substitute another food. Similarly, the inclusive and welcoming culture created by the senior members at sites contributed to reasons to visit the center. One participant said that "there were no reserved seats at their locations." The companionships and friendships made during congregate meals resulted in raising the value of the program. One senior mentioned that he participated because his wife accompanied him.

The menu is another concern for seniors in deciding to participate in the program. If they like the food on a specific day, they are more willing to eat on site. For seniors with dietary restrictions or dietary requirements, if the programs provided special diets, seniors were apt to participate. The physical atmosphere at the meal sites such as seating space, mobility of tables/chairs, accessibility, comfortable temperature, attractive decor, and adequate lighting were control beliefs identified by the focus groups.

Senior centers provided programs, activities, meetings, and volunteer opportunities. Seniors tend to go to the centers to participate in these meeting or activities such as monthly senior council meeting, folk dancing, playing cards, playing pool, playing bingo and birthday parties. Services included health screenings, social work consultation, dietary evaluations and tax services. Volunteer opportunities available at the senior centers enhanced satisfaction with the program. In some cases, seniors came to the centers originally to participate in activities, service or volunteer work, but stayed for lunch with their friends. Others were there to eat lunch on site and participated in other services as a result. In general, focus group participants saw the activities as another benefit of socialization that increases program participation. Respondents recognized that participating in activities, meetings and volunteer work in senior centers were the most obvious and effective ways to show their support for the senior center.

Table 4.6 Control beliefs and sample quotes

| Categories | Sample Quotes |
|--|---|
| Facilitators | |
| 1. Transportation | <i>“Transportation is provided by church groups.” “We have a city bus to bring people in.” “It’s easy to come down here.”</i> |
| 2. Inclusiveness of senior center | <i>“I enjoy every minute when we come in (the center).” “I got involved in this center and I will continue to be involved for rest of my life.” “People tend to be good here (the center).” “There is no saved seat. Anybody can sit any place they want.”</i> |
| 3. Menu preference | <i>“I will check the menu and pick one I like. Especially fish, if the menu has fish, I would like to come.” “People will evaluate the monthly menu then pick the one they like and come to meal site on that day.” “If the menu provided something I don’t like such as liver, I won’t eat at meal site that day.”</i> |
| 4. Meeting, activities and volunteer work in senior center | <i>Meeting such as National Association of Retired Federal Employees, Senior Council Meeting, Modern Woodmen, and 4-H meetings* “Senior Dance night on every 4th week Friday and evening meals are provided for seniors on that day. Some participants will stay and have dinner together.”</i> |
| 5. Lack of motivation and ability to cook | <i>“I just didn’t want to cook at home.” “I can’t see to cook anymore. Because my vision has deteriorated. Otherwise, I would like to cook.”</i> |
| 6. Companionship | <i>“I don’t like to eat alone” “I live alone and I enjoy the company here.” “I participate in the program because my wife comes here with me. It’s good to do things together. It’s part of our everyday routine.”</i> |
| 7. Physical environment | <i>“The dining room here is handicapped accessible. I can move around easily and get my meals.”</i> |
| Inhibitors | |
| 1. Transportation | <i>“No longer can drive.” “No drivers” “Don’t have driver license.”</i> |
| 2. Distance from meal site | <i>“If people live out of town, they cannot come.” “Gas prices are getting high.”</i> |
| 3. Poor weather | <i>“If the weather is bad, then senior center will close and no meal will be provided.”</i> |
| 4. Time conflict | <i>“Sometimes I have a doctor’s appointment at the same that meals were provided, then I can’t go.”</i> |
| 5. No meal site in the community | <i>“Some satellite meal sites located in small towns or rural areas rely on a bigger meal site where the central kitchen is. If this bigger site didn’t exist, then other satellite sites cannot survive. Very rural communities will go without.”</i> |

| | |
|-----------------------------------|--|
| 6. Didn't know about the programs | <i>"People don't exactly know what we (seniors who go to senior center and participate in the program regularly) are doing."</i> |
| 7. Age bias | <i>"I had heard people say that I am not old enough to participate. They hate to admit their age."</i> |
| 8. Pride | <i>"Too good to eat down here."</i> |
| 9. Stigma of charity | <i>"This program is a government sponsored program. Some people don't think they need it." "It's for charity." "A lot of people think they earn too much and this program is for extremely needy people." "Some people connect the meal program with poor people, only poor people participate in this program."</i> |
| 10. Health problem | <i>"I was sick for a long period of time, so I couldn't participate in the program."</i> |

*summary of all the meeting that seniors might attend.

Lack of motivation to cook and the inability to prepare meals led many seniors to participate in the program. For some seniors, congregate meals might be the only hot and nutritious meal they consume in a day. Health problems such as surgery or illness could be a control belief. During the recovery period, seniors might receive home-delivered meals instead of congregate meals.

Misunderstanding the congregate meal programs was the most mentioned factor by focus group participants that might influence participation. Three misconceptions of beliefs were age bias, the stigma of charity, and pride. Age bias was the belief that participation was limited to a specific age, and seniors who were healthy and had not passed a specific age should not participate. Some seniors didn't view themselves as old and didn't want to be associated with those who participate in the program. Other seniors were concerned about the stigma of charity and believed the program was for low-income elderly. They didn't want others to believe they were poor because of their participation. Participation appeared to be a sign of losing independence. Some elderly were too proud of their independence to participate in congregate meal program. Respondents also mentioned that some seniors were unaware of congregate meal programs or there was no meal site in their area.

Problems with transportation were the most common control beliefs that seniors identified. Some participants relied on transportation provided by local city groups, churches or the community based services from the State Department of Aging. Some of them took city

buses to senior centers or meal sites. Some respondents did not participate in the program because they could no longer drive, they did not have a driver licenses, or there was no one to give them a ride to the meal sites. The traveling distance from their home to meal sites also was a barrier. If it is very far, seniors might want to stay at home for lunch or go to local diners instead of driving to the meal sites.

The weather was viewed by participants as a control belief to participation. If the weather was bad, it was too risky for seniors. Fear of falling was a control belief. Time conflicts with the meal time schedule was a factor in deciding to participate. Focus group participants commented that doctor appointments, work schedules, or hair appointments might cause conflicts.

Salient Belief Study

Sample Characteristics

Forty-three participants (four male and 39 females) from two senior centers and one caregiver workshop completed the questionnaires. Three samples were deleted from the initial sample (N=46) because of missing data on the age question. The age range was from 50 to 90 years of age with a mean of 73 years. Most participants were Caucasian (88%), married or widowed (80%), lived alone (55%), and had at least a high school degree (98%). Eight out of 42 participants never participated in congregate meal programs. Among those who were participants (n=34), 13 of them participated less than or equal to one time per month.

Salient Beliefs

The five most salient beliefs items selected by the participants for each factor (behavioral beliefs, normative beliefs and control beliefs) were convenience, social interaction, low-price, nutritious and balanced meals, and less waste. The normative salient beliefs included family members, friends, neighbors, cooks at the meal sites and health professionals. Participating in activities at senior centers, transportation, the inclusive culture of seniors, lack of motivation and ability to cook, and poor weather were the most salient control beliefs. Table 4.2 shows the belief items and salient frequency.

Discussion

Socialization was the most frequently mentioned advantage of congregate meal program participation. Eating for the seniors is an important psychosocial activity and can be a symbol of creativity, prestige, friendship, and reward (Briley, 1994). However, emotional stress, loss of appetite, and reduced food consumption might occur as a result of losing a spouse, changing roles, making new friends, and the experience of illness (Briley, 1994). No socialization at meals may result in decreased food intake for the elderly. Participating in congregate meal programs is a way to resolve the problem of eating alone. Results from this study confirmed findings from previous studies (Ponza & Wray, 1990; Slezak, 2000): socialization such as social interaction, social support, relief of loneliness and depression, stimulation, and self-satisfaction can be the results of participating in a congregate meal program.

Convenience was the most frequently mentioned benefit for congregate meal program participation. The results supported the findings of Lin (1999), who reported that convenience was the main reason seniors like the program. Cooking meals for one person is harder than cooking for a family. It may lower seniors' motivation to cook at home. Meal preparation processes that include shopping, preparing, cooking, and cleaning might not be easy tasks for seniors, especially those with disability. Program directors might want focus on the "convenience" that the program offers to attract seniors to the program. Less food waste was also identified as a salient belief for congregate meal program participation. Because most respondents were age 71 or older and experienced the Great Depression and World War II, they are conscious of income and waste. If participating in congregate meal program yields less food waste than dining out or cooking at home, participation would be viewed as a benefit.

The results of this study are also consistent with other previous research (Crockett, Heller, Merkel, & Peterson, 1990; Brenes, Strube, & Storandt, 1998; Conn, 1998; Roelands, Oost, Depoorter, & Buysse, 2002; Patch, Tapsell, & Williams, 2005) which showed that family members, friends and health professionals are significant referents for older adults. When program directors try to reach potential participants, they might consider including the senior's family members and friends to increase participation. Cooks at senior centers also had a significant impact on the elderly's intention to participate because they might be the first and only ones to promote the program benefits of consuming nutritious meals. Similar results were found by Kim et al. (2003), who applied TPB to predict dairy product consumption in older

adults. However, some seniors also mentioned that they were not be influenced by others and were more likely to depend on their own decision (Crockett et al., 1990).

Participating in activities at a senior center is the most salient control beliefs items selected by phase two study respondents. Senior centers hold various activities, programs, services and meetings that can make congregate meal program participation more attractive. The number of activities was an indicator for senior center participation (Walker et al., 2004). Some activities, such as exercise classes, oil painting, card games, bingo, sewing classes...etc. always yielded good responses from seniors. Blood pressure checks, tax services and nutrition consultation are services important to senior center success. Sometimes, the monthly or annual meeting for retirement organizations might be held in the centers. In some situations, seniors came to the centers because of those activities and stayed for lunch. If congregate meal programs can be operated where a variety of fun and popular on site activities are offered, participation increases. Additionally, seniors view volunteering at meal sites or senior centers as a way to participate. Slezak (2000) mentioned that volunteer work at the site enhances self-satisfaction and increases participation in the meal program.

Transportation was second most mentioned salient control beliefs. Seniors believed that participation in the program would be easier if transportation were provided. Likewise, program providers noted that providing transportation was an important issue (Wellman et al., 1999). Results of this study are consistent with previous studies that show lack of transportation is a barrier for program participation (Ponza & Wray, 1990; GAO, 2000, Slezak, 2000, Bermudez & Tucker, 2004). Similar results apply to senior center participation (Walker et al., 2004). Participants explained that local church groups have vans to transport them to senior centers or meal sites and back to their homes. Some senior centers offer transportation services. Taking public transportation might be another way to increase participation. Alternative transportation like car pools is also an option. Site managers can list who can drive and who needs transportation. Matching up those seniors helps resolve transportation problems.

The third most selected salient control belief is the inclusive culture of a senior center or meal sites. One reason for not participating in a senior meal program was that people who attend are cliquish and not welcoming (Walker et al., 2004). In addition, Slezak (2000) showed that the level of interaction between staff and seniors can be a component of a successful program. Knowledgeable and friendly staff will affect seniors' intention to participate, especially for sites

that serve meals to culturally diverse seniors (FIU, 2004). If the participants felt that they are being rushed or ignored by staff, participation declined. Training staff to foster a welcoming environment might help increase participation. Some activities such as monthly birthday celebrations for each senior member can create an opportunity to be more inclusive. Senior centers or meal sites also can hold a welcome party for new members. Creating an inclusive culture and welcome feeling should be an aim for program managers, center staff, and the seniors.

Focus group participants commented that some seniors were not aware of congregate meal programs. Both site manager and senior council committees discussed and tried to find effective methods to promote meal programs such as advertising on local radio stations and posting program information in community newspapers. Word of mouth was among the most effective ways of advertising the program (Slezak, 2000).

The study had some limitations. Participants were recruited from senior centers, meal sites or workshops located in a Midwestern state. Generalizing to other populations may be an issue. Seniors volunteered to participate in the focus groups, so the sample population were those who were actively involved in community activities and willing to share their thoughts. Thus, this sampling strategy may have resulted in bias. The recruiting procedure should include seniors chosen from various backgrounds. Another limitation of this study was the problem of using focus groups with the elderly. The focus group attracted seniors who were in better health and were able to read, listen, and answer questions. Therefore, seniors who had vision or hearing problems or physical limitations did not participate.

Conclusions and Implications

The initial elicitation of 39 individuals for the focus groups yielded factors affecting participation intention including benefits of participation, influences from referents and perceived barriers. The results of the salient beliefs study further clarified the five most significant belief items by belief factor. AAA staffs must promote the benefits of the program. Various referent groups were named by respondents. Therefore, nutrition education is not only for seniors but also for their significant others. Factors that facilitate and inhibit participation also were noted. Site managers or program directors should work to alleviate barriers to participation.

Some strategies that could enhance program participation are providing public transportation and including fun and exciting activities at meal sites.

The results of this study can provide useful information for directors of aging departments and site managers who are in charge of meal services. For example, based on the results of this study, they might develop a “best practices” model to increase participation. Interventions to educate seniors about consuming nutritious meals may increase participation. Because no instrument had previously used the TPB framework to measure seniors’ beliefs of meal program participation, results can be used to develop a valid and reliable questionnaire to further measure factors affect participation. Additionally, the questionnaires can incorporate other variables like participants’ satisfaction and socio-demographics to comprehensively evaluate community-dwelling elderly participation.

The older population is a unique group who are willing to share their opinions and express their thoughts about the program. In some focus groups, participants articulated at length about their attitudes toward the program. Most respondents in this study spoke highly of the program. However, focus groups might not be enough to explore attributes for each belief factor. Further in-depth research methods like one-on-one interviews might be more appropriate to discover participation intention factors to predict program participation.

References

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.
- Ajzen, I. (1988). *Attitudes, personality and behavior*. Chicago, IL: The Dorsey Press
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall Inc.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavior control. *Journal of Experimental Social Psychology*, 22, 453-474.
- AoA (2007a). *US Department of Health and Human Services. A profile of older Americans: 2007*. Retrieved Mar 10, 2008 from <http://www.aoa.gov/prof/statistics/profile/2007/2007profile.pdf>
- AoA (2007b). *National aging program information systems*. Retrieved Dec 12, 2008 from <http://www.aoa.gov/prof/agingnet/NAPIS/napis.aspx>
- Bagozzi, R. P., & Yi, Y. (1989). The degree of intention formation as a moderator of the attitude-behavior relationship. *Social Psychology Quarterly*, 52(4), 266-279.
- Bermudez, O. I., & Tucker, K. L. (2004). Cultural aspects of food choices in various communities of elders, *Generations*, 28(3), 22-27.
- Brenes, G. A., Strube, M. J., & Storandt, M. (1998). An application of the theory of planned behavior to exercise among older adults. *Journal of applied social psychology*, 28(24), 2274-2290.
- Briley, M. E. (1994). Food preference of the elderly. *Nutrition Reviews*, 52(8), S21-S23.
- Budd, R. J. (1986). Predicting cigarette use: The need to incorporate measures of salience in the theory of reasoned action. *Journal of Applied Social Psychology*, 16, 663-685.
- Conn, V. S. (1998). Older women's beliefs about physical activity. *Public Health Nursing*, 15, (5), 370-378.

- Crockett, S. J., Heller, K. F., Merkel, J. M., Peterson, J. M. (1990) Assessing beliefs of older rural Americans about nutrition education: use of the focus group approach. *Journal of the American Dietetic Association*, 90(4), 563-567.
- Elliott, R., Jobber, D., & Sharp, J. (1995). Using the theory of reasoned action to understand organizational behavior: the role of belief salience. *British Journal of Social Psychology*, 34(2), 161-172.
- Federal Interagency Forum on Aging-Related Statistics (2008). *Older Americans 2008, key indicators of well-being*. Washington, DC: U.S. Government Printing Office. Retrieved Apr 17, 2008 from http://www.agingstats.gov/agingstatsdotnet/Main_Site/Data/2008_Documents/OA_2008.pdf
- Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., & Grimshaw, J., et. al. (2004). *Constructing Questionnaires based on the theory of planned behavior. A manual for health services researchers*. United Kingdom: Centre for Health Services Research, University of Newcastle. Retrieved Jan 26, 2008 from <http://www.rebeqi.org/ViewFile.aspx?itemID=212>
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. California: Addison-Wesley.
- Florida International University (FIU) (2004). Providing food service to meet the needs of culturally diverse participants. Retrieved Sep 8, 2008 from http://nutritionandaging.fiu.edu/creative_solutions/cultural_diversity.asp
- General Accounting Office (GAO) (2000). *Food assistance options for improving nutrition for older Americans*, GAO/RCED-00-238, retrieved Apr 15, 2008 from <http://www.gao.gov/new.items/rc00238.pdf>
- Gilbride, J. A., Amella, E. J., Breines, E. B., Mariano, C., & Mezey, M. (1998). Nutrition and health status assessment of community-residing elderly in New York City: A pilot study. *Journal of the American Dietetic Association*, 98(5), 554-558.
- Haddock G., & Zanna, M. P. (1998). On the use of open-ended measures to assess attitudinal components. *British Journal of Social Psychology*, 37, 129-14.

- Kim, K., Reicks, M., & Sjoberg, S. (2003). Applying the theory of planned behavior to predict dairy product consumption by older adults. *Journal of Nutrition Education and Behavior*, 35, 294-301.
- Kruger, R. A., & Casey, M. A. (2000) *Focus groups: A practical guide for applied research*. California: Sage.
- Lee, J. S., Frongillo, E. A., & Olson, C. M. (2005). Conceptualizing and assessing nutrition needs: perspectives of local program providers. *Journal of Nutrition for the Elderly*, 24(3), 25-45.
- Lin, J. C. (1999). *The nutritional effects of the elderly nutrition program: Title III-C for the Menomonie congregate site meal program participants*. Unpublished master thesis, University of Wisconsin-Stout.
- Neyman, M. R., Zidenberg-Cherr, S., & McDonald, R. B. (1996). Effect of participation in congregate site meal programs on nutritional status of the healthy elderly. *Journal of the American Dietetic Association*, 96(5), 475-483.
- O'Shaughnessy, C. (2004). *CRS report for congress-Older Americans Act Nutrition Program*. Retrieved Apr 23, 2007 <http://www.nationalaglawcenter.org/assets/crs/RS21202.pdf>
- Patch, C. S., Tapsell, L. C., & Williams, P. G. (2005). Overweight consumers' salient beliefs on omega-3-enriched functional foods in Australia's Illawarra Region. *Journal of Nutrition Education Behavior*, 37, 83-89.
- Performance Outcomes Measures Project (POMP), (2004). *Highlights from the pilot study: first national survey of Older Americans Act Title III service recipients-paper No. 2*. Retrieved Apr 10, 2008 from <https://www.gpra.net/surveys/2ndhighlights.pdf>
- POMP (2006, June 1). *Highlights from the pilot study: second national survey of Older Americans Act Title III service recipients*. Retrieved Apr 4, 2008 from <https://www.gpra.net/nationalsurvey/files/2ndhighlights.pdf>
- Ponza, M., Ohls, J. C., & Posner, B. M. (1994). *Elderly nutrition program evaluation literature review*. Princeton, NJ: Mathematica Policy Research, Inc.
- Ponza, M., Ohls, J.C., Millen, B.E., McCool, A.M., Needels, K.E., Rosenberg, L., et al. (1996). *Serving Elders at Risk. The Older Americans Act nutrition programs: national evaluation of the elderly nutrition program*. Princeton, NJ: Mathematica Policy Research, Inc.

- Ponza, M., & Wray, L. (1990). *Final results of the elderly program study-evaluation of the food assistance needs of the low-income elderly and their participation in USDA programs*. Princeton, NJ: Mathematica Policy Research, Inc.
- Roelands, M., Oost, P. V., Depoorter, A., & Buysse, A. (2002) A social-cognitive model to predict the use of assistive devices for mobility and self-care in elderly people, *the Gerontologist*, 42(1), 39-50.
- Slezak, D. (2000, August 9). *Evaluation of nutrition programs prepared for suburban area agency on aging and community nutrition network*. Retrieved Apr 22, 2008 from http://nutritionandaging.fiu.edu/creative_solutions/Focus%20Groups%20Executive%20Summary.pdf
- U.S. Department of Health and Human Service (USDHHS), AoA (2003). *Elderly nutrition program fact sheet*. Retrieved Sept 8, 2007 from http://www.aoa.gov/press/fact/pdf/fs_nutrition.pdf
- Van der Pligt, J., & Eiser, J. R. (1984). Dimensional salience, judgment and attitudes. In J. R. Eiser (Ed.), *Attitudinal judgment* (p.161-177). New York, NY: Springer-Verlag.
- Van der Pligt, J., & de Vries, N. (1998a). Expectancy-value models of health behaviors: the role of salience and anticipated affect. *Psychology and Health*, 13, 289-305.
- Van der Pligt, J., & de Vries, N. (1998b). Belief importance in expectancy-value models of attitudes. *Journal of Applied Social Psychology*, 28, 1339-1354.
- Walker, J., Bisbee, C., Porter, R., & Flanders, J. (2004). *Educational Gerontology*, 30, 353-366.
- Wellman, N. S., Smith, J., Alfonso, M., & Lloyd, J. (1999, December). *Nutrition 2030 grassroots survey report*. Miami, FL: Florida International University. Retrieve Apr 22, 2008 from http://nutritionandaging.fiu.edu/downloads/Grassroots_Survey.PDF

CHAPTER 5 - PREDICTING CONGREGATE MEAL PROGRAM PARTICIPATION: APPLYING THE THEORY OF PLANNED BEHAVIOR

Abstract

Congregate meal program participation is decreasing, which highlights the need for understanding factors that affect participation. This study applies the Theory of Planned Behavior to explain intention of community-dwelling elderly to participate in congregate meal programs. Results show that the data fits the TPB model moderately well; all predictor variables (attitude, subjective norm, perceived behavior control and past behavior) had a significant positive effect on participation intention. Among the four factors, perceived behavior control had the greatest prediction power on intention. Based on the findings of this study, innovative services are suggested to program providers to increase congregate meal program participation.

Key words: Theory of Planned Behavior, congregate meal program, participation intention, past behavior, salient beliefs

Introduction

Nutrition is critical to the daily life of seniors affecting their health status, physical abilities and quality of life. Improvement in nutrient intake can help seniors age successfully. Monitoring nutritional status for seniors not only benefits them but positively affects society by providing positive health outcomes, reduced health care costs, less dependence on caregivers, and decreased hospitalization stays and time required to recover from illness (Carey & Gillespie, 1995; Gallagher-Allred, Voss, Finn, & McCamish, 1996; Chima, et al., 1997; Kuczmarski & Weddle, 2005).

The Older Americans Act Nutrition Program (OAANP), formerly known as the Elderly Nutrition Program covers a range of food and nutrition services to promote seniors' physical wellness, functional independence and management of chronic disease. It was authorized under Older Americans Act (OAA) title III and is supported by state Agencies on Aging. Both congregate meal programs and home-delivered meal programs are included in OAANPs. These

meal programs provide meals to individuals who are 60 years of age or older and were originated to eliminate problems with dietary inadequacy and social isolation. The legislation intended to make these programs available to older adults who might be at risk of losing their independence (USDHHS, AoA, 2003).

Declining participation and loss of funding for congregate meal programs heighten the need to understand the factors that affect seniors' participation in congregate meal programs. Specifically, understanding non-participants' or infrequent participants' attitudes toward the program can help increase participation. A number of studies have examined the benefits and barriers of participating in congregate meal programs. For example, the benefits including socialization and recreational activities provided by congregate meal program (Ponza & Wray, 1990; Slezak, 2000) and the barriers including feel uncomfortable applying, lack of transportation, and unaware of the program (Ponza & Wray, 1990; GAO, 2000; Slezak, 2000; Bermudez & Tucker, 2004; Lee, Frongillo & Olson, 2005). However, these studies used a qualitative study design such as focus groups or interviews and descriptive based research. Prior studies have not analyzed the causal relationship between predictor variables and participation intention. A theoretical model, the Theory of Planned Behavior (TPB), may better explain participation and was chosen because it is a well-developed model for predicting human behavior and has been adapted to the health behavior and consumer behavior fields. This study uses TPB to explain the complicated process of congregate meal program participation. One extra predictor factor, past behavior, was added because it is an important predictor of behavior intention and future behavior (Ouellette & Wood, 1998).

Salient behavioral beliefs, normative beliefs and control beliefs were identified through an elicitation study. The purpose of this study is to test the effect of belief constructs on attitude, subjective norm and perceived behavior control (PBC) as well as discover the specific belief items that influence each belief construct. Researchers can then assess the causal relationships between the predictor variables and participation intention. The last step is to investigate each predictor variable's influence on program participation intention. Seven hypotheses are examined in this study and detailed explanations are provided.

Review of Literature

Congregate Meal Program Participation

Participation in for congregate meal programs has decreased from 2.4 million in 1995 to 1.7 million in 2006, a 30% reduction in participation (O'Shaughnessy, 2004; AoA, 2007). During the same time, participation in home-delivered meal programs fluctuated slightly, with a total number of participants in 2006 of 0.9 million (O'Shaughnessy, 2004; AoA, 2007). However, meals served continue to shift from congregate meal programs to home-delivered meal programs. In 1980, the congregate meals were 78% of total meals served by OAANP (Ponza, Ohls & Posner, 1994). The most recent data shows that the percentage of total meals served as congregate meals decreased steadily, to 41% in 2006 (Ponza, Ohls, & Posner, 1994; O'Shaughnessy, 2004; AoA, 2007). In contrast, home-delivered meals increased from 22% to 59%.

Participants in congregate meal programs must have a specific level of mobility in contrast to participants who receive home-delivered meals. The congregate meal program is especially attractive to elderly lack of cooking facilities or knowledge of food preparation, those who do not like cooking, or those who want to share meals in community settings (Ponza & Wray, 1990). Those individuals who can no longer cook at home are target clients for congregate meal programs. The latest national survey of the OAA Title III conducted during 2004 (POMP, 2006) discovered that most congregate meal program participants were female (69%), Caucasian (87%), age 75 years or older (62%), low-income (57%), living alone (52%), and high school graduates (75%); they participated in the program one to two times per week (28%). Additionally, Ponza and his colleagues' study (1996) showed that 80-90% of OAANP participants had incomes below 200% of the Department of Health and Human Service poverty level, which is twice the rate for the overall elderly population in the U.S. More than twice as many OAANP participants live alone than the general U.S elderly population (Ponza et al., 1996).

Senior's perceptions about participating in congregate meal programs centered around two components. First, the meal itself with taste, smell, and color of food, was important for program success. Ponza and Wray (1990) noted that meal quality, menu variety, and meal settings were important predictors for participation in congregate meal programs. The

availability of ethnic meals also affects meal program participation, especially for those from various cultural and language backgrounds (Choi, 2002). Second, the fellowship and the recreational activities provided by the program were major predictors for program participation (Ponza & Wray, 1990). Slezak (2000) conducted a focus group to evaluate participation in congregate meal programs; results showed that socialization was the most frequently mentioned advantage (social interaction, social support, relief from loneliness/depression, stimulation, self-satisfaction and volunteer work). Seniors preferred meals prepared onsite and tended to enjoy the meals more (Kendrick & Slezak, 1989).

Only 11% of eligible elderly nationwide, age 65 or older, participated in the congregate meal programs (Clark, Cohen, Burt, & Schulte, 1993). Various studies have identified barriers to participation which can be categorized into three subsections: 1) perception of need, 2) program features and 3) program awareness. Table 5.1 lists the barriers to participating in meal programs based on five previous studies.

Perception of need. One main reason for not participating in congregate meal programs is the pride the elderly take in their independence. Thus, they may be hesitant to accept food assistance. Especially for those who have lived through the depression, they might view food assistance as compromising their independence (GAO, 2000; Slezak, 2000; Bermudez & Tucker, 2004; Lee, Frongillo & Olson, 2005). For some elderly, pride and reluctance to accept “charity” were major factors prohibiting participation (Ponza & Wray, 1990). Some cannot afford the suggested donation (Ponza & Wray, 1990; Lee et al., 2005) and thus are reluctant to participate in the program. Elderly who were uncomfortable in group settings and/or perceived the program is for “old folks” only may choose not to participate.

Program features. Transportation availability is a common barrier to participation in congregate meal programs (Slezak, 2000), especially for the elderly who live in rural areas or have physical disabilities that limit their ability to drive. Ponza and Wray (1990) received similar feedback from program participants. Lack of program flexibility with food substitutions and serving times (Ponza & Wray, 1990; Slezak, 2000) was another barrier mentioned by participants. For example, a program might offer one entrée or limited side dishes at meal time and no other food item choices. Some meal programs are only open within a narrow time frame. If seniors have time conflicts, like doctor’s appointments or personal appointments, they cannot participate in the program. Senior centers are open for everyone eligible to participate in the

Table 5.1 Barriers to Participating in OAANP

| Reasons for NON-participation | Ponza & Wray (1990) | GAO (2000) | Slezak (2000)^a | Bermudez & Tucker (2004) | Lee, Frongillo & Olson (2005)^b |
|--|--------------------------------|-------------------|----------------------------------|-------------------------------------|--|
| Don't need the program | | x | | | x |
| Lack of transportation | x | x | x | x | |
| Don't like or cannot eat the food | x | | | x | |
| Feel uncomfortable going or don't like a stranger at home | x | | x | x | |
| Feel uncomfortable applying (age bias, program for charity) | x | x | x | x | x |
| Unable to pay for contribution | x | | | | x |
| Dislike location of program | x | | | | |
| Unaware of the program | x | x | x | | x |
| Restriction on attendance | x | | x | x | |
| Program is full (especially for Home-delivered meal program) | x | x | | | |
| Time conflict | x | | x | | |
| Unpleasant experience with a previous meal | x | | | | |
| Language barrier | | | | x | |
| Dislike physical environment of meal sites | x | | | | |

Note: ^a For congregate program participants ^b From providers perspective

program but some seniors are too shy to make the first move. Some seniors might believe that the center is not welcoming.

Program awareness. Lack of program awareness is also a reason seniors do not participate in meal programs (GAO, 2000). Widespread misinformation also has been a barrier to participation (Ponza & Wray, 1990; GAO, 2000; Slezak, 2000). Some of non-participants revealed that they were completely unaware of meal programs (Ponza & Wray, 1990). Others might recognize the program but often lack specific information about availability, eligibility requirements, and procedures for application. Strategies such as the effective outreach created by

the site manager, a referral mechanism established by healthcare providers, and seniors' word-of-mouth about the experience can improve program awareness.

Theoretical Framework

To better understand the factors that affect congregate meal program participation, a theoretical framework based on TPB was used. A detailed explanation of the theory is provided below.

TPB (Ajzen, 1985, 1991; Ajzen & Madden, 1986) explains intention to perform behavior and seeks to understand the psychological determinants of behavior. It is an extension of the Theory of Reasoned Action (TRA). TRA assumed that individuals are typically rational and make judgments by using systematic information (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). According to TRA, intention is a great predictor for volitional behavior (Ajzen, 1988; Bagozzi & Yi, 1989) and is affected by two fundamental factors: 1) attitude and 2) subjective norm (Ajzen, 1985). Limitations of the TRA are that it assumes that behavior is under total volitional control. Although a person may intend to perform a behavior, he/she may be prevented from acting because of time constraints, limited resources, and inadequate opportunities (Ajzen, 1985). The limitation, "only predicting volition behavior," of TRA has been removed and perceived behavioral control (PBC) was added to measure non-volitional behavior. PBC refers to people's perception of the ease or difficulty of performing the behavior of interest (Ajzen, 1991) and hypothesized as directly affecting both intention and behavior. Meta-analysis studies for TPB have demonstrated that PBC, when added to the TRA model, can increase the predictive power of intention (Ajzen & Madden, 1986; Ajzen, 1991; Godin & Kok, 1996; Hausenblas, Carron & Mack, 1997; Warburton & Terry, 2000; Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Armitage & Conner, 2001; Hagger, Chatzisarantis, & Biddle, 2002). A person's intention to perform a behavior or complete the actual behavior is predicted by attitude, subjective norm, and PBC. Intention can predict behavior if no change in intention occurs before performing the behavior.

Based on previous literature, certain barriers or control factors such as lack of transportation and time constraints affect program participation (Ponza & Wray, 1990; GAO, 2000; Slezak, 2000; Bermudez & Tucker, 2004). In this study, TPB is regarded as an appropriate model for examining elderly decisions to participate in congregate meal programs. Although

TPB is generally applicable to human behaviors, it must be modified and alternatives provided to explain some human behaviors (Oh & Hsu, 2001). In this study, the role of past behavior was incorporated to test the causal relationship between predictor variables and intention because unpleasant previous participation experience could affect participation intention (Ponza & Wray, 1990).

Beliefs Based Measures of TPB

Originally, the beliefs based construct was adopted from expectancy-value theory (Fishbein & Ajzen, 1975). A person's decision to perform or not to perform behavior is based on beliefs relevant to the behavior. Ajzen (2002) illustrated that beliefs are important in both TRA and TPB because they provide the cognitive and affective foundations for attitudes, subjective norms, and PBC. Three beliefs based measurements of the TPB include behavioral beliefs, normative beliefs, and control beliefs.

Behavioral beliefs refer to the subjective probability that an individual's behavior will lead to a certain consequence (Ajzen & Fishbein, 1980). For example, if the seniors believe that eating meals on site bring positive consequences like improving their nutritional intake and providing more opportunities to socialize, they hold positive feelings about participating in the meal program resulting in favorable attitudes toward congregate meal program participation.

Normative beliefs focus on the likelihood that important referent individuals or groups would approve or disapprove of the behavior (Ajzen & Madden, 1986). For instance, when the elderly believe that most referents, like family members and friends, want him/her to participate in the program and their motivation to please the referent is high, the perception of pressure from the referents is increased.

Control beliefs focus on factors that may facilitate or inhibit performance of the behavior and the perceived power of these factors (Ajzen, 1985). PBC is a function of control beliefs, which are the individual's perception of the extent to which he/she holds factors that may increase or decrease the perceived difficulty of performing the behavior (Ajzen, 1991). In this study, seniors believe participating might be affected by some facilitators or inhibitors such as their ability to drive, weather conditions, and their views of the controllability and self-efficacy of those factors. If seniors believe transportation is a barrier, and they have no control over transportation, they will not participate in the program.

A number of empirical studies using TRA and TPB found significant relationships between belief based measurements and predictor variables. Armitage and Conner's (2001) meta-analysis of TPB with 161 TPB studies shows that the average correlation for behavioral beliefs to attitude, normative beliefs to subjective norm, and control beliefs to PBC are .50, .50, and .52, respectively. Ajzen and Madden (1986) measured 169 undergraduate students' class participation and found a significant correlation between belief items and predictor variables ($r=.51$ for attitude, $r=.47$ for subjective norm, $r=.54$ for PBC). Because empirical evidence shows that beliefs based factors are strongly related to predictor variables, three hypotheses have been formulated.

Hypothesis 1: Behavioral beliefs toward congregate meal program participation are positively associated with attitudes about program participation.

Hypothesis 2: Normative beliefs about congregate meal program participation are positively associated with subjective norms about program participation.

Hypothesis 3: Control beliefs of congregate meal program participation are positively associated with perceived behavior control about program participation.

Predictor Variables of Intention

Attitude

Attitude is a person's general favorable or unfavorable feeling toward some stimulus object (Fishbein & Ajzen, 1975) and an important antecedent of behavioral intention (Albrecht & Carpenter, 1976). In a meta-analysis of TRA (Sheppard, Hartwick, & Warshaw, 1988), the average correlation for predicting behavioral intention from attitude toward behavior is .67 ($p<.001$). Another meta-analysis by Armitage and Conner (2001) for TPB found the average correlation of attitude and behavioral intention is .47 ($p<.001$). Hagger and other researchers (2002), in their meta-analysis of TRA and TPB in physical activities across 72 studies, concluded that for TRA, attitude was the most significant predictor for intention ($\beta=.51$, $p<.01$). For the TPB, similar results were found, and attitude was a significant predictor of intention ($\beta=.33$, $p<.01$). Based on previous research, a positive relationship exists between attitude and behavioral intention.

Hypothesis 4: Attitude toward program participation has a positive effect on participation intention.

Subjective Norm

A subjective norm refers to perceived social pressure to perform or not to perform the behavior (Ajzen, 1991), assuming that an individual will intend to perform certain behaviors when he/she perceives that significant others or groups think he/she should. For example, seniors may decide to participate in the program because their daughter or sons said he/she needs to. Armitage and Conner (2001) reviewed 161 TPB studies and found that the average correlation of intention and subjective norm is .34. Compared with other predictor variables, the subjective norm-intention correlation seemed lower than other relationships (Armitage & Conner, 2001). Wankel and Mummery (1993) used national survey data for measuring physical activity. The study intended to find the differences among various age and gender sub-groups by applying the TPB model. The study had results similar to other research, showing that subjective norm was the weakest factor among the three predictor variables. However, subjective norm increased with aging, especially for those 60 years and older, and its predictive power for intention was better than attitude. Based on previous findings, the predictive power of subjective norm might differ for the elderly population and the relationship might become weaker or stronger. Thus, researchers should treat this group with caution when designing and explaining each TPB path.

The relationships between subjective norm and intention varied among studies. Using TPB, Kim, Reicks, and Sjoberg (2003) found subjective norm were not significantly related to intention in predicting whether the elderly would consume dairy products. The explanation for non-significant relationships was senior living arrangements. Most senior samples lived alone and had minimal socialization opportunities with family members or friends. As a result, their participation intention was not affected by referents. On the other hand, some studies have found subjective norm was a small but significant determinant of intention among older adults in studies on physical exercise (Courneya, 1995) and using the assistive devices (Roelands, Oost, Depoorter & Buysse, 2002). With some exceptions, Warburton and Terry (2000) found that the predictive power of subjective norm for elderly volunteer intention was stronger than attitude. The authors suggested that researchers should not overlook any of predictor factors, especially subjective norm.

Hypothesis 5: Subjective norms about program participation have a positive effect on participation intention.

Perceived Behavior Control

PBC focuses on the extent to which the person believes that he/she has control over internal or external factors that may facilitate or constrain behavior (Ajzen, 1991). In TPB assumptions, PBC was the only non-volitional variable to determine behavioral intention. Ajzen (1991) stated that people are less likely to form an intention to perform a behavior if the individual believes that he/she does not have any resources or opportunities even though he/she holds positive attitudes toward the behavior and believes that important others would approve of the behavior. Kim and others (2003) found that PBC can predict the intention to consume dairy products, but the prediction power of PBC was lower than attitudes. Godin and Kok's (1996) meta-analysis for health related behavior found that PBC added 13% of variance to intention and 12% of variance to the behavior. Armitage and Conner (2001) discovered that the average correlation between perceived behavioral control and behavioral intention was significant ($r=.43$, $p<.01$). They also confirmed that, overall, PBC added an average of 6% to prediction of behavioral intention. Thus, the elderly who have more control over inhibiting factors or situational variables are more likely to participate in the program, leading to the following hypothesis.

Hypothesis 6: Perceived behavior control over program participation has a positive effect on participation intention

Past Behavior

Ajzen (1991, p.199) stated, " Theory of planned behavior is, in principle, open to the inclusion of additional predictors if it can show they capture a significant proportion of the variance in intention or behavior after the theory's current variables have been taken into account." Past behavior was a successful predictor of behavioral intention and future behavior. Conner and Armitage (1998) reviewed six additional variables for TPB. The author reported that past behavior is one additional predictor variable that strongly affects intention and future behavior. Past behavior explained an extra 7% of the variance in intention after taking into account attitude, subjective norm, and PBC. Ouellette and Wood's (1998) meta-analyses concluded, in 19 out of 22 studies, past behavior was a significant factor affecting behavior intention after controlling for attitude and subjective norm.

A number of studies in various fields have confirmed that past behavior can be a significant determinant for intention and future behavior. Applying TPB to health related

behavior, Norman and Smith (1995) examined exercise behavior over six months, finding that prior behavior was the strongest predictor. Additionally, Conner and colleagues (1999) used an extended TPB model (including one additional variable, self-efficacy) to examine the behavior of alcohol consumption and found past behavior can predict intention. In adapting TRA or TPB in hospitality management research, Ryu and Jang (2006) used the TRA to measure student intention to experience local cuisine in a travel destination and found that past behavior had significant positive effects on intention. Sonmez and Graefe (1998) revealed that having past travel experience to a specific region increased a person's intention to return to the same place. Similar results can also be found in Lam and Hsu (2004), who discovered that past tourist behavior was related to future travel intention for potential travelers from China. Oh and Hsu (2001) examined the predictors for gambling behavior by applying TPB and found previous gambling activity was a predictor of future gambling intention and behavior.

Some issues might arise when including past behavior as an additional factor for TPB. The predictive power of the relationship between previous and present behavior has proved to be stronger only when the intention and behavior is stable over time (Bamberg, Ajzen & Schmidt, 2003). Thus, past behavior should be considered for inclusion in TPB and TRA when repeat behavior occurs (Bamberg et al., 2003). Albarracin et al. (2001) used TRA and TPB meta-analysis to measure condom use behavior and found when past behavior was added to the TRA model, the influence of subjective norm on intentions became small. Similar results occurred in the TPB model. Similarly, the study argued that predictor variables, particularly PBC, have a mediating effect between past behavior and future behavior or intention (Hagger et al., 2002). However, Conner et al. (1999) and Reineck, Schmidt, and Ajzen (1996) found that past behavior is not entirely mediated by TPB predictor variables. They concluded that past behavior was a direct predictor of intention. Based on empirical research, it is hypothesized that congregate meal program participation intention can be predicted by the past behavior of the participant.

Hypothesis 7: Past behavior has a positive effect on participation intention.

Methodology

Population and Sample

The population included 1) the community-dwelling elderly, 2) who are 60 years of age or older, and 3) reside in Kansas North-Central Flint Hills (NCFH) region. The region spans 18

counties and includes 45 nutrition programs served at nutrition sites or senior centers. The region was chosen because of proximity to the research site and funding availability. The convenience samples were recruited from senior centers, senior fairs, senior apartment living facilities, and senior organizations' meetings.

Questionnaire Development

The questionnaire development included an elicitation study and a review of literature. The elicitation study was conducted based on suggestions from Ajzen and Fishbein (1980) that a new set of beliefs and salient referents must be elicited for each new context, population, and behavior. Furthermore, it is important to ascertain beliefs that are salient to respondents. A draft of the questionnaire was reviewed by six panel experts including local Area Agency on Aging (AAA) personnel, gerontology professionals, and regular program participants to clarify the questionnaire instructions, the cover letter, and the design of the questionnaire (font size, layout, and measurement scales). The panel experts suggested modifications to the font size, and ambiguous sentences were rephrased to enhance the questionnaires' readability and simplicity. The instructions for administering the survey were modified to increase clarity. A pilot test, with 63 seniors from two senior centers and one retirement group, was conducted to assess measurement reliability. The cronbach's alpha for each construct was from .73 to .92 which exceeded the recommended satisfaction level of .70 (Nunnally & Bernstein, 1994) except for PBC. To improve the reliability of the PBC construct, one question was rephrased, reverse scales were eliminated, and two more questions were included. See Appendix C for the final questionnaire.

The instrument contains two sections: 1) factors affecting senior meal program participation intention and 2) demographic information. The term "senior meal programs" was substituted for "congregate meal programs" at the suggestion of the AAA executive director because the former conveys a more positive image. Ajzen (2006) suggested that researchers must explicitly describe the behavior for their respondents, and the goal behavior should be defined in terms of its target, action, context, and time (TACT) at the beginning of the questionnaire. All the measures in the questionnaire should follow the same level of generality (Francis et al., 2004). Thus, in this study, the congregate meal program participation was specifically stated as "participating (action) in senior meal program (target) in central dining areas (context) during

weekday lunchtime (time)”; this description was included in the cover letter. Each measurement item was developed from both the literature review and an elicitation study. For measuring salient belief constructs, an elicitation study was conducted to develop a set of measurement items. To measure the hypothetical constructs (attitude, subjective norm, perceived behavior control, past behavior, intention) the measurement items were adapted from several validated studies (Ajzen, 1988, 1991; Gretebeck, 2000; Francis et al., 2004; Lee, 2005). Participants were asked to review each question and provide reactions based on a 5-point rating scale (1 as strongly disagree and 5 as strongly agree). To reduce the potential bias of forced selection, an option of “I don’t know” was included for each question except for the sociodemographic characteristic questions.

Salient Beliefs

The purpose of the elicitation study was to define the salient belief measures. The elicitation study included phase I focus group interviews (N=39) and phase II salient beliefs study (N=43). For the focus group interviews, nine open-ended questions (Francis et al., 2004) were used to elicit behavioral, normative, and control belief themes. Next, five salient beliefs were selected from each belief category, based on the suggestions of van der Pligt and Eiser (1984).

Five salient behavioral beliefs, convenience, social interaction, low-price, nutritious and balanced meals, and less waste, were elicited from the salient beliefs study. Two questions were included for each of the five belief themes. First, the perceived likelihood of the behavior was measured by asking respondents “eating meals at the senior center would....” to rate each behavioral belief on a 5-point rating scale ranging from very unlikely (1) to very likely (5). Second, outcome evaluation was assessed by the statement “there are a number of possible benefits of eating in the senior center. From 1 (not a real benefit) to 5 (very real benefit to me), rate each possible outcome below”. Consequently, the perceived likelihood of the behavior and the outcome evaluation were multiplied together (eg., behavioral beliefs X outcome evaluation) to become one of the measurement variables of the behavioral belief factor.

The subjective norm comprises five measurement variables, each including the normative beliefs multiplied by the respondent’s motivation to comply. Five referent groups (family members, friends, neighbor, cooks at the meal sites, and health professionals) were identified through the elicitation study. Respondents were asked to rate the question “what do you believe

each of the group below thinks about you eating meals at the senior center?” on 5-point scale ranging from definitely should not (1) to definitely should (5). Respondents’ motivation to comply was assessed by the statement “Each of groups below may have different views about whether you should eat at the senior center and how likely would you be to take their advice?” The rating scale was very unlikely (1) to very likely (5).

Control beliefs were drawn from the elicitation of integrated inhibitors and facilitators for program participation. The five most salient control beliefs for participating in congregate meal programs were 1) activities at senior centers, 2) available transportation , 3) welcoming culture at the senior center, 4) lack of motivation and ability to cook at home, and 5) poor weather. Control beliefs include five measurement variables. Each measurement variable is the control belief multiplied by its perceived power to be easier or more difficult to perform the behavior. The question preceding the control beliefs was “how easy is it for you to eat meals in the senior center if”; answers were measured on a 5-point Likert scale ranging from very difficult (1) to very easy (5). The question for perceived power was “how likely are you to eat meals at the senior center if....” rated on 5-point scale ranging from very unlikely (1) to very likely (5).

Predicting Variables and Intention

Attitude was measured using five-point adjective scales ranging from 1 to 5. A statement “Eating meals at the senior center during the week is.....” illustrated before the scales. The bipolar adjective scales included worthless/valuable, useless/useful, harmful/beneficial, unpleasant/pleasant, unhealthy/healthy, boring/interesting, and bad/good.

The subjective norm was measured with the two questions “Most people who are important to me think I should eat meals at the senior center” and “When it comes to eating meals at the senior center, I would follow the advice of others who are important to me.” A five-point rating scale was used, ranging strongly disagree (1) to strongly agree (5).

Six questions were used to measure PBC by assessing the person’s self-efficacy and beliefs about control in performing the behavior (Ajzen, 2002). Three questions measured self-efficacy; one example question was “whether or not I eat meals in the senior center is entirely up to me” using a 5-point scale ranging from strongly disagree (1) to strongly agree (5). The other three questions were used to measure controllability. Measurement items like “I am confident that I can eat meals in the senior center” used the same scale.

Past behavior was measured by asking about frequency of program participation, similar to questions used in earlier research (Ouellette & Wood, 1998; Oh & Hsu, 2001; Lam & Hsu, 2004). Three questions measured intention; one example was “I intend to eat meals at the senior center in the future” with scores from strongly disagree (1) to strongly agree (5).

Demographic Characteristics

Demographic characteristics included gender, age, marital status, living arrangements, race, education level, and household income.

Data Collection

Researchers contacted the NCFH AAA directors to explain the purposes of the study. The director provided useful suggestions and data collection advice, recommending effective strategies to gather input from seniors. Before distributing the questionnaires, approval was received from managers and group leaders, and detailed information about further arrangements was determined. Table 5.2 shows all data collection sites: one senior fair, seven senior centers, three senior living facilities (two apartments and one independent living), the YMCA, and a meeting. The sites spanned nine counties covering half of the NCFH region.

Data included in the analyses met the following criteria: 1) the age of respondent (60 or older), 2) past participation frequency, and 3) each survey with not more than half missing values or “I don’t know” answers. Surveys were excluded if responses didn’t satisfy any of the criteria mentioned above. Data collection at all 15 sites yielded 358 usable samples.

Missing Data Treatment

In this study, two situations were categorized as missing data. If the respondents skipped a specific question, the author identified this as actual missing data. If the respondent answered “I don’t know” to a question, that also was considered missing data. Researchers have argued that in some circumstances “I don’t know” responses can be translated as neutral, falling halfway between strongly disagree and strongly agree (Acock, 2005). However, in this study, when the respondents chose “I don’t know,” they meant they did not have an appropriate answer or it didn’t apply to the situation. For example, one of the normative beliefs question asked “how likely would you take your family members (e.g., sons/daughters) advice about eating meals at senior centers?” If the respondents had no children or their children didn’t care whether their

Table 5.2 Data Collection Sites

| Sites | City/Town | County | Initial sample (N=358) | Final sample (N=238) |
|--|---------------|--------------|---------------------------|-------------------------|
| Senior Fair | | | | |
| <i>Regional Senior Fair</i> | Salina | Salina | 97 | 57 |
| Senior Center | | | | |
| <i>Senior Center A</i> | St Marys | Pottawatomie | 5 | 3 |
| <i>Senior Center B</i> | Council Grove | Morris | 32 | 26 |
| <i>Senior Center C</i> | Belleville | Republic | 21 | 15 |
| <i>Senior Center D</i> | Concordia | Cloud | 17 | 13 |
| <i>Senior Center E</i> | Emporia | Lyon | 22 | 18 |
| <i>Senior Center F</i> | Marion | Marion | 33 | 29 |
| <i>Senior Center G</i> | Salina | Salina | 43 | 35 |
| Senior exercise class | | | | |
| <i>YMCA</i> | Salina | Salina | 41 | 20 |
| Senior Living | | | | |
| <i>Senior Apartment Living A</i> | Abilene | Dickinson | 10 | 5 |
| <i>Independent Living Facility</i> | Junction City | Geary | 11 | 5 |
| <i>Senior Apartment Living B</i> | Salina | Salina | 4 | 1 |
| Meeting | | | | |
| <i>National Active and Retired Federal Employees Meeting</i> | Manhattan | Riley | 20 | 12 |
| Other | | | | |
| <i>K-State campus</i> | Manhattan | Riley | 2 | 1 |

parents participated in the program, the most applicable answer for them would be “I don’t know.” Therefore, in this study, trying to replace values for “I don’t know” items was inappropriate. Surveys with “I don’t know” responses were coded as “99” to distinguish them from surveys with actual missing data. Little and Rubin (2002) claimed that making a decision about what to do with responses “I don’t know” is especially challenging.

Some steps were implemented to handle actual missing data. The first step was calculating each individuals composite mean score for each factor by using valid data and replacing the composite mean for the missing data. However, if more than half the total indicators under one factor were missing, the missing value was not replaced. Hair et al. (2006)

indicated that this method was the most widely used and easiest to apply. The mean substitution was based on the fact that the mean is a reasonable estimate value for a randomly selected observation from a normal distribution (Acock, 2005). The factor mean substitution would provide a better estimate than overall means because all indicators under one factor correlated highly with each other. The total amount of actual missing data that could not be replaced was combined with the number of “I don’t know” answers in each case. If the case had more than five missing data points, including actual missing data without replacement and “I don’t know” responses, the entire survey was deleted. According to Hair et al. (2006), missing data less than 10% (5 missing values in this study) for an individual case can generally be ignored. In this study, the net result was 248 completed surveys.

Data Analysis

The data were coded and verified by two different individuals to reduce data entry error. Statistical analysis was performed using SPSS for Windows 13.0 (SPSS Inc., Chicago) and AMOS 4.0 (Smallwater Corp, 1999). Descriptive statistical analysis was used to assess the nature of the data and develop the respondents’ demographic characteristics.

A two-step modeling approach suggested by Anderson and Gerbing (1998) was used for data analysis. In the first step, confirmatory factor analysis (CFA) was used to assess measurement model fit and re-specified the model. Using CFA assured that each construct was defined by at least two indicators, and each indicator was intended to be an indicator only for a specific construct. Because there was only one indicator for past behavior, CFA did not include the factor of past behavior. The validity and reliability of measurement for factors were tested before performing Structural Equation Modeling (SEM). If the measurement model resulted in proper fit and was appropriate to apply, the next step in the data analysis was conducted. The second step was to evaluate the structural model by measuring overall model fit and to determine the causal relationships between factors. The overall fit of the proposed model was assessed using goodness-of-fit indices as recommended by Byrne (2001) and Hair et al. (2006). Standardized path coefficients were used to test the hypothesized path among constructs proposed in the structure model.

Results

Data Screening

The data were screened before being analyzed, and assumptions were checked to ascertain any violations of multivariate analysis. The univariate test of normality examined the normal distribution of each variable. The factor of attitude had a pattern of severe negative skewness. The inverse transformation was performed to achieve the best results. The multivariate outlier was detected using Mahalanobis distance. Ten cases were found significant (Mahalanobis'D (34) > 65.25, $p < .001$) and removed. As a result, the final sample included 238 complete cases.

Descriptive Statistics

Respondent Demographic Characteristics

Among the total 238 usable samples, 69 were males (29%) and 169 were females (71%). Forty-four percent of participants were between 70 and 79 with a mean age of 77 years. Approximately 80% of participants were 70 or older. Forty five percent of the respondents were married and 41% were widowed. Half of participants lived alone. Only a few (3%) lived with children. Ninety-eight percent were Caucasian. Most participants (61%) had a high school education, 8% had an associate's degree, and 21% had a bachelor's degree or higher. Only 21 participants (9%) reported he/she had never participated in congregate meal programs. On the other hand, 70 (29%) were frequent participants (5 times or more). More than half (55%) earned an annual household income more than \$20,000 (the results were based on 198 respondents' answers). Forty participants did not answer the question, possibly because they felt the question was intrusive. Table 5.3 provides the demographic characteristic of the sample population.

Table 5.3 Respondents' Demographic Characteristics

| Characteristic | Frequency | Percent (%) |
|--|------------------|--------------------|
| Gender (N= 238) | | |
| Male | 69 | 29.0 |
| Female | 169 | 71.0 |
| Age (N= 238) | | |
| 60-69 | 49 | 20.6 |
| 70-79 | 104 | 43.7 |
| 80-89 | 70 | 29.4 |
| Over 90 | 15 | 6.3 |
| Marital status (N= 237) | | |
| Single | 14 | 5.9 |
| Married | 106 | 44.7 |
| Widowed | 97 | 40.9 |
| Divorced | 20 | 8.4 |
| Living arrangement (N=238) | | |
| Living alone | 118 | 49.6 |
| Living with a spouse | 106 | 44.5 |
| Living with your child/children | 8 | 3.4 |
| other | 6 | 2.5 |
| Race (N=238) | | |
| Caucasian | 232 | 97.5 |
| Hispanic | 1 | 0.4 |
| African Americans | 1 | 0.4 |
| Asian/Pacific Islander | 2 | 0.8 |
| American Indian/ Native Alaskan | 1 | 0.4 |
| Other | 1 | 0.4 |
| Education (N=237) | | |
| Elementary | 7 | 3.0 |
| Some high school | 12 | 5.1 |
| High school graduate | 145 | 61.2 |
| Associate degree | 20 | 8.4 |
| Bachelor's degree | 27 | 11.4 |
| Master's degree or higher | 26 | 11 |
| Frequency of past participation experience (N=238) | | |
| None | 21 | 8.8 |
| Only ate the meal one time | 15 | 6.3 |
| Less than or equal to one time per month | 33 | 13.9 |
| 2-3 times per month | 24 | 10.1 |
| 1 time per week | 14 | 5.9 |
| 2 times per week | 13 | 5.5 |
| 3 times per week | 26 | 10.9 |
| 4 times per week | 22 | 9.2 |
| 5 times or more per week | 70 | 29.4 |

| Household income (N=198) | | |
|--------------------------|----|------|
| \$10,000 or less | 23 | 11.6 |
| \$10,001-\$15,000 | 43 | 21.7 |
| \$15,001-\$20,000 | 24 | 12.1 |
| \$20,001-\$25,000 | 27 | 13.6 |
| \$25,001-\$30,000 | 17 | 8.6 |
| \$30,001-\$35,000 | 15 | 7.6 |
| \$35,001-\$40,000 | 9 | 4.5 |
| \$40,001 or more | 40 | 20.2 |

Descriptive of Measurement Items

Table 5.4 presents the mean and standard deviation for predictor variables. Means for the seven attitude measures ranged from 4.52 to 4.71. Respondents rated “congregate meal program participation was harmful/ beneficial” ($4.71 \pm .68$). The two measures for the subjective norm had mean values of 3.87 and 4.08. The mean values for the six PBC measures ranged from 4.46 to 4.62. The three measures for intention ranged from 4.28 to 4.47.

Table 5.4 Descriptive Statistic of Measurement Items and Missing Data for Predictor Variables and Intention

| Variable | Measurement items* | Mean \pm SD ^a | Missing data ^b (N=358) | |
|-----------------------------|--|----------------------------|-----------------------------------|----------------|
| | | | Actual Missing data | “I don’t know” |
| Attitude (Att) | Eating meals at the senior center during the week is _____. | | | |
| Att1 | Very worthless.....very valuable | 4.65 \pm .74 | 14 | 19 |
| Att2 | Very useless.....very useful | 4.69 \pm .70 | 22 | 24 |
| Att3 | Very harmful.....very beneficial | 4.71 \pm .68 | 23 | 24 |
| Att4 | Very unpleasant.....very pleasant | 4.64 \pm .76 | 18 | 31 |
| Att5 | Very unhealthy.....very healthy | 4.64 \pm .73 | 15 | 28 |
| Att6 | Very boring.....very interesting | 4.52 \pm .81 | 29 | 26 |
| Att7 | Very bad.....very good | 4.65 \pm .72 | 26 | 27 |
| Subjective Norm (SN) | | | | |
| SN1 | Most people who are important to me think I should eat at the center. | 3.87 \pm 1.01 | 9 | 56 |
| SN2 | When it comes to eating meals at the senior center, I would follow the advice of others who are important to me. | 4.08 \pm .89 | 12 | 28 |

| Perceived Behavioral Control (PBC) | | | | |
|---|--|-----------|---|----|
| PBC1 | Whether or not I eat meals in the senior center is entirely up to me. | 4.46 ±.61 | 2 | 3 |
| PBC2 | The choice to eat meals in the senior center is completely on me. | 4.51 ±.56 | 5 | 2 |
| PBC3 | For the most part, eating meals in the senior center is under my personal control. | 4.51 ±.59 | 4 | 4 |
| PBC4 | I am confident that I can eat meals in the senior center. | 4.62 ±.52 | 3 | 6 |
| PBC5 | If I want, I could easily eat meals in the senior center. | 4.59 ±.53 | 3 | 7 |
| PBC6 | It would be very easy for me to eat meals in the senior center. | 4.51 ±.65 | 4 | 10 |
| Intention (Int) | | | | |
| Int1 | I intend to eat meals at the senior center in the future. | 4.30 ±.84 | 6 | 33 |
| Int2 | In the future, I will eat meals at the senior center if I choose to do so. | 4.47 ±.64 | 2 | 11 |
| Int3 | I plan to eat my meals at the senior center in the future | 4.28 ±.83 | 8 | 35 |

* Scale range from 1(strongly disagree) to 5(strongly agree)

^a Standard Deviation

^b Based on initial sample (N=358)

Specific belief items that influenced belief constructs are provided in Table 5.5. Among the five behavioral beliefs, participants viewed consuming nutrition and balanced meals (21.30±5.08) as the most beneficial. Neighbors had the least influence on program participation (14.55±6.56) among the four referent groups, which included family members (16.36±6.56), friends (15.68±6.37), cooks at the meal site (16.79±6.86), and health professionals (17.42±6.43). The welcome feeling at the senior center was the highest perceived facilitating factor affecting participation (20.84±5.28).

Table 5.5 Descriptive Statistics of Measurement Items and Missing Data for Belief Constructs

| Variable | Measurement items* | Mean \pm SD ^a | Missing data ^b (N=358) | | | |
|--------------|--|----------------------------|-----------------------------------|-----------|----------------|-----------|
| | | | Actual Missing data | | "I don't know" | |
| BBxOE | | | <i>BB</i> | <i>OE</i> | <i>BB</i> | <i>OE</i> |
| BB1xOE1 | Social interaction | 21.04 \pm 4.98 | 3 | 3 | 4 | 5 |
| BB2xOE2 | Well-balanced, nutritious meals | 21.20 \pm 5.07 | 3 | 3 | 4 | 3 |
| BB3xOE3 | Low-price | 21.00 \pm 5.55 | 2 | 2 | 25 | 23 |
| BB4xOE4 | Convenience | 20.26 \pm 5.67 | 3 | 3 | 6 | 6 |
| BB5xOE5 | Less waste | 19.90 \pm 5.57 | 5 | 4 | 24 | 25 |
| NBxMC | | | <i>NB</i> | <i>MC</i> | <i>NB</i> | <i>MC</i> |
| NB1xMC1 | Family members | 16.36 \pm 6.56 | 8 | 5 | 69 | 25 |
| NB2xMC2 | Friends | 15.68 \pm 6.37 | 8 | 5 | 71 | 37 |
| NB3xMC3 | Neighbors | 14.55 \pm 6.56 | 9 | 7 | 98 | 55 |
| NB4xMC4 | Cooks at the meal site | 16.79 \pm 6.85 | 8 | 7 | 85 | 49 |
| NB5xMC5 | Health professionals | 17.42 \pm 6.43 | 5 | 7 | 93 | 42 |
| CBxPP | | | <i>CB</i> | <i>PP</i> | <i>CB</i> | <i>PP</i> |
| CB1xPP1 | Activities at the senior center | 18.99 \pm 6.15 | 9 | 7 | 21 | 16 |
| CB2xPP2 | Transportation | 19.21 \pm 5.70 | 8 | 7 | 14 | 18 |
| CB3xPP3 | Felt welcome at the senior center | 20.84 \pm 5.28 | 6 | 4 | 11 | 10 |
| CB4xPP4 | Lack of motivation and ability to cook | 19.03 \pm 6.28 | 9 | 4 | 15 | 15 |
| CB5xPP5 | Nice weather | 19.91 \pm 5.75 | 13 | 8 | 9 | 13 |

* Scale range from 1(strongly disagree) to 5(strongly agree)

^a Standard Deviation

^b Based on initial sample (N=358)

Note: BB=Behavioral Beliefs, OE=Outcome Evaluation, NB=Normative Beliefs, MC=Motivation to Comply, CB=Control Beliefs, PP=Perceived Power

Missing data

There was a substantial amount of missing data among the initial sample. Table 5.6 shows the percentage of missing data, both data actually missing and "I don't know" responses in the initial sample (N=358). The respondents tended to skip attitude questions, which provided the highest percentage of missing data (6%). On the other hand, actual missing values for other factors ranged from 1% to 3%. Approximately one fourth of respondents answered "I don't know" for normative beliefs questions that asked participants "what do you believe the reference

Table 5.6 Descriptive Statistics of Missing Data on Initial sample

| Factor | Missing data (%) | “I don’t know” (%) |
|------------------------------|-------------------------|---------------------------|
| Attitude | 5.87 | 7.14 |
| Subjective Norm | 2.93 | 11.73 |
| Perceived Behavioral Control | 0.98 | 1.49 |
| Intention | 1.49 | 7.36 |
| BBxOE | | |
| BB | 0.89 | 3.52 |
| OE | 0.84 | 3.64 |
| NBxMC | | |
| NB | 2.12 | 23.24 |
| MC | 1.73 | 11.62 |
| CBxPP | | |
| CB | 2.51 | 3.91 |
| PP | 1.68 | 4.02 |

Note: BB=Behavioral Beliefs, OE=Outcome Evaluation, NB=Normative Beliefs, MC=Motivation to Comply, CB=Control Beliefs, PP=Perceived Power

groups think you should/should not eat meal at senior center?” Most respondents answered “I don’t know” to the question about neighbors as the referent group (Table 5.5). The subsequent questions asking participants about motivation to comply with the referent groups’ recommendations had a high percentage (11%) of “I don’t know” answers. Twelve percent of the sample responded “I don’t know” for subjective norm questions.

Measurement Model

Confirmatory Factor Analysis identified whether the measurement items reliably estimated constructs in this study. Seven constructs were included. Past behavior was excluded because there was only one indicator for this construct. In this study, five indicators for each salient belief were loaded separately instead of summed to one indicator. According to Ajzen and Fishbein (1980), the belief-based measurement is composed of the likelihood of performing specific behavior (*bbi*), multiplied by the outcome (*bei*), and summed over all the salient beliefs ($\sum bbibe$). The sum of salient beliefs is the only indicator of the belief factors. However, preliminary analysis with summed belief variables yielded a low model fit (Oh & Hsu, 2001). Thus, to increase overall model fit and understand the specific loading effect of each belief item, we used belief factors with five loading items.

Construct validity was measured using CFA. Based on Hair et al. (2006), construct validity assessed the set of measurement items that reflect the theoretical latent constructs and designed to accurately measure corresponding constructs. The construct validity included convergent validity and discriminant validity. Convergent validity means that the items that are indicators of a specific construct should share a high proportion of the common variance. Factor loadings, Average Variance Extracted (AVE) and construct reliability value measure convergent validity. In this study, the standardized factor loadings for each item were all significant at $p < .001$ and were equal to or more than .50 (Table 5.7), as suggested by Hair et al. (2006). The cutoff point of .70 for the composite reliability value was determined based on the recommendations of Hair et al. (2006). AVE should be .50 or more, indicating an adequate convergence (Fornell & Larcker, 1981; Hair et al., 2006). In this study, all constructs achieved the required level.

Table 5.7 Factor loading, construct reliability, and AVE

| Construct | Standardized Factor Loadings | Composite Reliability | Average Variance Extracted (AVE) |
|--|-------------------------------------|------------------------------|---|
| Attitude (Att) | | | |
| <i>Att1/Att2/Att3/Att4/Att5/Att6/Att7</i> | .80/.78/.85/.87/.81/.79/.87 | .94 | .68 |
| Subjective Norm (SN) | | | |
| <i>SN1/SN2</i> | .96/.52 | .73 | .60 |
| Perceived Behavioral Control (PBC) | | | |
| <i>PBC1/PBC2/PBC3/PBC4/PBC5/PBC6</i> | .69/.71/.66/.84/.88/.68 | .88 | .56 |
| Intention (Int) | | | |
| <i>Int1/Int2/Int3</i> | .92/.75/.94 | .91 | .76 |
| BBxOE | | | |
| <i>BB1xOE1/BB2xOE2/BB3xOE3/BB4xOE4/BB5xOE5</i> | .67/.72/.85/.86/.88 | .90 | .64 |
| NBxMC | | | |
| <i>NB1xMC1/NB2xMC2/NB3xMC3/NB4xMC4/NB5xMC5</i> | .90/.96/.94/.75/.78 | .94 | .76 |
| CBxPP | | | |
| <i>CB1xPP1/CB2xPP2/CB3xPP3/CB4xPP4/CB5xPP5</i> | .66/.85/.89/.66/.77 | .88 | .60 |

Note: BBxOE=Behavioral Beliefs x Outcome Evaluation, NBxMC=Normative Beliefs x Motivation to Comply, CBxPP= Control Beliefs x Perceived Power

Discriminant validity was used to check that each construct is actually distinct from other constructs. It is measured by comparing the AVE and the square of the correlation between the two factors. If AVE is more than the squared correlation, this indicates an acceptable discriminate validity (Hair et al., 2006). As shown in Table 5.8, AVE of each construct was higher than its corresponding square correlation with other constructs. The construct of this study satisfied discriminate validity.

Table 5.8 Correlations Matrix, the Square Correlations, AVE, Means and Standard Deviation of Measurement Model

| Correlation among latent constructs (squared)* | | | | | | | | | |
|--|--------------|-----|--------------|--------------|--------------|--------------|--------------|--------------|-------|
| | No. of items | AVE | Att | SN | PBC | Int | BBxOE | NBxMC | CBxPP |
| Att | 7 | .68 | 1.00 | | | | | | |
| SN | 2 | .60 | .46 (.21) | 1.00 | | | | | |
| PBC | 6 | .56 | .27 (.07) | .26 (.07) | 1.00 | | | | |
| Int | 3 | .76 | .48 (.23) | .59 (.35) | .61 (.37) | 1.00 | | | |
| BBxOE | 5 | .64 | .47 (.22) | .53 (.28) | .43 (.18) | .65 (.42) | 1.00 | | |
| NBxMC | 5 | .76 | .28 (.08) | .52 (.27) | .31 (.10) | .46 (.21) | .52 (.27) | 1.00 | |
| CBxPP | 5 | .60 | .43 (.18) | .50 (.25) | .55 (.30) | .69 (.48) | .71 (.50) | .49 (.24) | 1.00 |
| Mean | - | - | 4.62 | 3.98 | 4.53 | 4.36 | 20.44 | 16.09 | 19.58 |
| SD | - | - | 0.66 | 0.82 | 0.46 | 0.71 | 4.52 | 5.99 | 4.80 |

Goodness-of-fit statistics:

$$\chi^2 = 1059.4, df = 471 \quad (p < .001)$$

$$\chi^2 / df = 2.25$$

$$CFI = .979$$

$$TLI = .975$$

$$NFI = .963$$

$$RMSEA = .073$$

*All correlation coefficients are significant at .05 level.

Note: Att=Attitude; SN=Subjective Norm; PBC=Perceived Behavior Control; Int=Intention; BBxOE=Behavioral Beliefs x Outcome Evaluation; NBxMC=Normative Beliefs x Motivation to Comply; CBxPP= Control Beliefs x Perceived Power; AVE=Average Variance Extracted; CFI=Comparative Fit Index; TLI=Tucker-Lewis Index; NFI=Normed Fit Index; RMSEA=Root Mean Square Error of Approximation

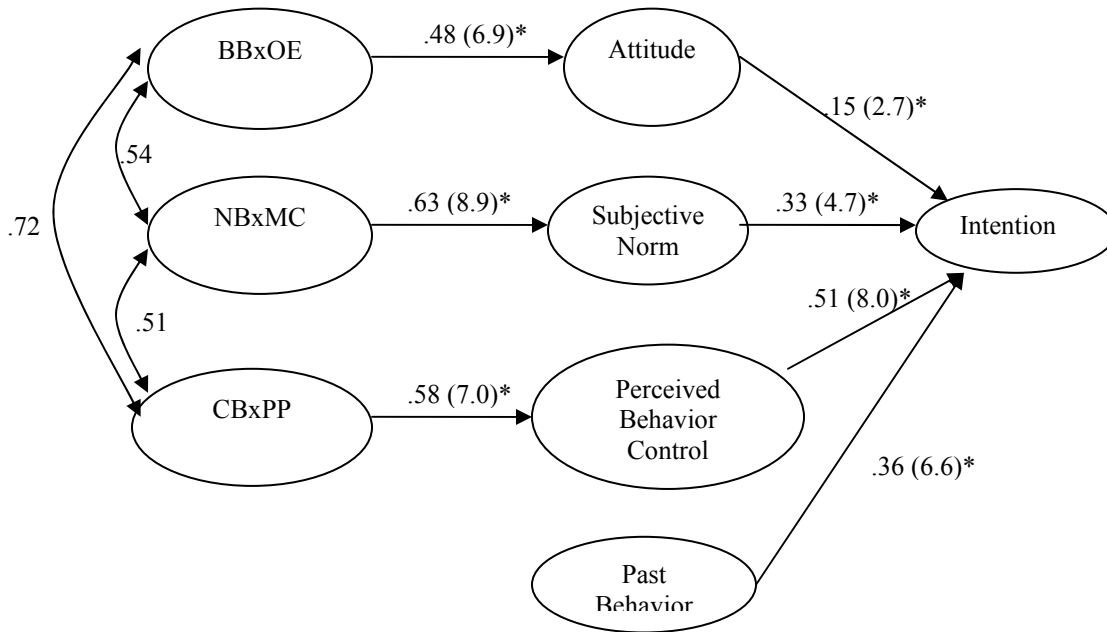
Measurement items under each factor are given in Tables 5.4 and 5.5. The overall model fit of the measurement model was evaluated through AMOS output. The Chi-square (χ^2) statistic showed the measurement model was significant ($\chi^2=1059.439$, $df=471$, $p<.001$). Other model fit indices used in this study including comparative fit index (CFI), Tucker-Lewis index (TLI), normed fit index (NFI), and root mean square error approximation (RMSEA). The goodness of fit indices showed the data were all at an acceptable level and the measurement model fit moderately well ($\chi^2/df=2.25$, $CFI=.979$, $TLI=.975$, $NFI=.963$, $RMSEA=.073$) (Table 5.8).

Structural Model

The structural model was tested using AMOS. At first, the proposed model was evaluated and showed poor model fit. In order to improve model fit, the correlation between each independent variable (behavioral beliefs, normative beliefs, control beliefs) was added. The revised model had improved fit and resulted in close to or higher than common suggested levels (Byrne, 2001). Thus, the responses from community-dwelling elderly fit the revised model. Figure 5.1 and Table 5.9 show the results of the structural equation modeling and the overall goodness of fit ($\chi^2=1238.8$, $df=515$, $\chi^2/df=2.405$, $CFI=.975$, $TLI=.971$, $NFI=.957$, $RMSEA=.077$).

Hypothesis tests were checked by using the standardized path coefficient retrieved from the results of SEM. As illustrated in Table 5.9, t-values were significant at $p<.01$ and show that all hypotheses (H1-H7) were statistically supported. The path coefficient between belief measures and predictor variables showed significant positive relationships and ranged from .48 to .63. Among all predictor variables for the TPB model, PBC has strongest effect on participation intention ($\beta=.51$, $t=8.10$, $p<.01$), followed by past behavior ($\beta=.36$, $t=6.64$, $p<.01$). Attitude has the least impact on participation intention ($\beta=.15$, $t=2.71$, $p<.01$). The combination of all predictor variables, subjective norm, PBC, and past behavior, explain 63% of the variance in participation intention.

Figure 5.1 Causal Relationships of Study Factors



*p<.01

Note: BBxOE=Behavioral Beliefs x Outcome Evaluation, NBxMC=Normative Beliefs x Motivation to Comply, CBxPP= Control Beliefs x Perceived Power

| Hypothesized Path | Standardized Parameter Estimate | t | p |
|--|---------------------------------|-----|------|
| H1: BBxOE→Attitude | .48 | 6.9 | .000 |
| H2: NBxMC→ Subjective Norm | .63 | 8.9 | .000 |
| H3: CBxPP→Perceived Behavior Control | .58 | 7.0 | .000 |
| H4: Attitude→Intention | .15 | 2.7 | .007 |
| H5: Subjective Norm→Intention | .33 | 4.7 | .000 |
| H6: Perceived Behavior Control→Intention | .51 | 8.0 | .000 |
| H7: Past Behavior→Intention | .36 | 6.6 | .000 |
| R ² (BI)=.63 | | | |

Goodness-of-fit statistics:
 $\chi^2 = 1238.8$, $df = 515$ ($p < .001$)
 $\chi^2 / df = 2.405$
 CFI=.975
 TLI=.971
 NFI=.957
 RMSEA=.077

Table 5.9 Hypothesis Test: Parameter Estimate and Fit Indices

Note: BBxOE=Behavioral Beliefs x Outcome Evaluation, NBxMC=Normative Beliefs x Motivation to Comply, CBxPP= Control Beliefs x Perceived Power

Discussion

The demographic characteristics of study participants were compared to the most recent AoA National Survey of Older Americans Program (AoA, 2006). The gender distributions for both samples were similar. Approximately 70% of participants were female. In the current study, however, the population was younger, married, Caucasian, and had more education than the national sample. This study was conducted in Kansas where 94% of people who are age 65 and over are Caucasian (U.S. Census Bureau, 2000). This fact explains the higher percentage of Caucasians in the study sample compared to the national sample (94% vs. 87%) (U.S. Census Bureau, 2000). Half of the respondents lived alone for both populations. The number of respondents who participate in congregate meal program 5 times or more per week was higher in the current study than in the national sample (29% versus 21%), possibly because data were collected from senior centers, which increases the chances to recruit program participants. The national sample was randomly generated via telephone interviews that improved generalizability. The national sample had more seniors from low income households. In our study, the low response rate to income question might create bias. Maintaining privacy is a concern among this population.

Further analyses eliminated the potential bias caused by invalid cases and missing data. There were no significant differences between two groups in the demographic variables such as gender ($\chi^2=1.48$, $p=.22$), age ($\chi^2=.06$, $p=.1.00$), marital status ($\chi^2=1.00$, $p=.80$), living arrangement ($\chi^2=2.40$, $p=.49$), race ($\chi^2=4.84$, $p=.44$), education level ($\chi^2=2.26$, $p=.89$) and income ($\chi^2=4.3$, $p=.75$). However, significant differences were found between two groups in participation frequency ($\chi^2=27.34$, $p=.001$). Possible reasons might be unfamiliarity with or confusion about some questions. Those who had never participated in the program or participated only once might not understand some of the questions. For example, if they didn't know how the referent group might influence their personal intention to eat meals at the center, their answers to subjective norm might be "I don't know" or they might leave the question blank. They might also face similar problems with other questions yielding large amounts of missing data. On the other hand, those who are regular program participants can answer the question based on past history. Therefore, missing data might not be a serious issue because the total sample had similar demographics.

Correlations of behavioral beliefs with attitude, normative beliefs with subjective norm, and control beliefs with PBC are .48, .63, and .58, respectively. All are significant at $p < 0.001$. The correlation between belief measures and predictor variables were similar to Armitage and Conner's (2001) meta-analysis of 161 TPB studies (.50, .50, and .52) and Ajzen and Madden (1986), who measured 169 undergraduate students' class participation (.51, .47, and .54), where normative beliefs and subjective norm were not highly correlated. In this study, a higher correlation was observed between these two constructs. The rationale for the higher correlation might be fragmenting belief items. Previous studies used summed belief items as a predictor for the factors of attitude, subjective norm, and PBC (Ajzen & Fishbein, 1980); the problem with summed belief is that each item might measure a different aspect. The result is low reliability among belief constructs. Unlike other studies, we loaded the selected salient beliefs into one factor, and all belief constructs had a high reliability rate. Future research applying TPB should consider using each belief item instead of summed beliefs to obtain higher correlations between belief based measures and predictor variables.

Missing data among the belief based measurement must be addressed. Because the questions for measuring beliefs were similar to the outcome evaluation questions, some respondents may have thought that the same questions were asked twice. We attempted to prevent this perception by adding an explanation between the two subsections as some respondents completed the surveys. The reliability of the belief measurement should be checked when applying TPB to different populations.

A significant correlation was found among the belief based constructs in this study. There is evidence of interactions among behavioral beliefs, normative beliefs, and control beliefs (Shimp & Kavas, 1984; Oliver & Bearden, 1985; Taylor & Todd, 1995; Lam & Hsu, 2004; Ryu & Jang, 2006). Thus, the constructs of behavioral beliefs, normative beliefs, and control beliefs are not independent of one another. Some studies also report the crossover effect between belief based structures, that behavioral beliefs might influence subjective norms or normative beliefs might affect attitude (Shimp & Kavas, 1984; Oliver & Bearden, 1985; Taylor and Todd, 1995). The present study shows that the belief constructs do indeed influence each other.

The relationship between attitude and participation intention was significant and positive, although they had the lowest parameter estimates of the four predictor variables. Seniors who hold positive feelings about the program are more willing to participate. On the other hand, for

those with a negative attitude toward the program, their intention to participate was reduced. There are two possible reasons for the weak relationship between those two factors. First, adding past behavior into the model might reduce the correlation coefficient between attitude and intention. Oh and Hsu (2001) explained that irrational or non-evaluative attitudinal factors could be absorbed if past behavior were included in the TPB model. Thus, the predictive power of past behavior increased, and the effect of attitude on intention decreased.

The second reason for the weak relationship is associated with measuring attitude. Ajzen (1988) stated that the best-known multi-item instrument for directly measuring attitude is the semantic differential scale, which consists of a set of bipolar evaluative adjective pairs with each adjective pair placed on opposite ends of 5 point scale. The respondent is asked to mark each scale to best reflect their attitude toward participation. Instructions and sample questions were provided at the beginning of questionnaire. However, some subjects in this study had difficulty answering these questions. They were confused by the adjective pair. Respondents answered only one attitude question because they assumed only one adjective depicted their attitude and left the other blank. Missing data was high, with an average of 12% (5.9% for actual missing and 7.1% for “I don’t know”; Table 5.4) among all cases. The missing data percentage is much higher than for other constructs, indicating that participants had difficulty in responding. Mullen, Hersey, and Iverson (1987) and Young et al. (1991) confirmed that reviewing the measurement items and the format for the attitude construct and making a judgment might be a conceptual challenge for seniors. The frustration of answering attitudinal questions about program participation reduces the reliability and validity of measurements. It also affects the predictive power of attitude and leads to a weak significant effect on participation intention.

Subjective norm is also important in predicting participation intention ($\beta=.33$). Respondent intention to participate in congregational meal programs was affected by perceived social pressure from important referent groups. The results in this study support the findings of Wankel and Mummery (1993), who found that subjective norm is associated with intention to do physical activity among older adults. Its predictive power is better than attitude. Warburton and Terry (2000) reported similar findings in their study of volunteering among the elderly .

Although a significant relationship was found between normative beliefs and subjective norm as well as subjective norm and intention, a substantial amount of missing data might affect the causal relationship and reliability and validity of the theoretical model. In Tables 5.5, 5.6, and

5.7, respondents replied “I don’t know” for two measurements of subjective norm in the initial sample (N=358) and gave the highest percentage (12%) of “I don’t know” answers among all predictor variables. For the normative belief items, 27% of participants answered “I don’t know” for the question about “what do you believe neighbors think about you eating meals at senior center,” which is the highest percentage among all four referent groups (family members, friends, cooks at the meal site, and health professionals). To reduce the opportunities to answer “I don’t know,” questions need to be clear. The elicitation study should use the sample that represents the actual study sample to retrieve more accurate salient beliefs. Researchers also should handle “I don’t know” items cautiously.

PBC had a significant positive effect on participation intention. The results are consistent with Godin and Kok (1996), Povey et al. (2000), and Kim et al. (2003). Among four predictor variables in this study, PBC was the most effective predictor for participation intention ($\beta=.51$). This indicates that when the participants had a higher degree of controllability or self-efficacy such as the ability to drive to meal sites, participation intention would increase. A possible reason for the causal relationship between PBC and intention might be facilitators and inhibitors affecting program participation. Those factors had more effects than other predictor variables on intention. For example, although seniors acknowledge the benefits of participating in congregate meal programs, they could not or did not want to eat meals in the center because they did not feel welcome.

Past behavior had a significant positive relationship with participation intention ($\beta=.36$). Seniors with more previous participation experience would be more willing to participate in the program in the future. The results were consistent with Ajzen’s (1991) statement that when individuals perform a behavior from conscious intention, past behavior becomes a contributing factor. Program directors and site managers should focus on repeat participants and understand what attracts return visits. Word-of-mouth about program participation is important to managers and directors because positive beliefs were usually generated by this process. Lin (1999) interviewed seventeen seniors and found that 82% of congregate meal program participants would recommend the program to their friends. Alternatively, Ponza and Wray (1990) suggested that unpleasant experiences with previous meals could be a barrier to program participation. Thus, enhancing satisfaction should help a program be successful. Program directors and site

managers should pay attention to the needs of participants and meet or exceed expectations for food and services.

Limitations and Future Study

This study used a convenience sample and was conducted in only one region of the Area Agency on Aging of one Midwestern state, so the findings may not generalize to programs in other regions or states. Future research should use national samples to test the hypotheses. The volume of missing data cannot be ignored. Reasons for missing data might be ambiguous statements or the questionnaire format. In future studies, the “I don’t know” response could be removed to force a response. A panel of experts that uses the “speak out loud” technique, asking participants to read and answer each question could improve clarity, eliminate unclear questions and increase study reliability and validity.

Information about actual behavior was excluded from this study because of the complexity of data collection and inability to ensure anonymity. In the future, actual congregate meal program participation data should be included in the TPB model. In the present study, predictor variables (attitude, subjective norm, PBC, and past behavior) accounted for 63% of participation intention. Additional factors may increase the predictive power of the TPB model. Sociodemographic information could hold other determinant variables. For example, seniors from low income families might have different attitudes toward participation intention. Studies showed that 57% of congregate meal program participants were from low income households (AoA, 2006). Comparing income groups could further explain which groups (low income versus high-income) to target when trying to increase participation intention.

The influence of past behavior on congregate meal program participation should be further observed. Ouellette and Wood (1998) explained that past behavior translates to future behavior in two ways. Past behavior can predict future habitual behavior directly without mediating behavioral intention. However, when the behavior was hard to perform or there were unstable conditions, people tend to make conscious decisions. Thus, past behavior could contribute to intention, and intention becomes a predictor for conscious behavior. Adding actual behavior as data allows researchers to ascertain if seniors’ decisions to participate in meal programs are from habitual or conscious decisions. If program participation is from a habitual decision, program directors should increase their efforts to retain frequent participants. On the

other hand, seniors might participate in the program if they plan thoroughly. To promote program participation, program directors can focus on creating a positive image of the program that fosters conscious decisions by seniors.

Implications

Based on findings of this study, a number of implications can be derived. Theoretical implications and practical implications are provided below.

Theoretical Implications

This study enriched the current body of knowledge about congregate meal program participation by applying the TPB theoretical model. It further uncovered various factors that might influence program participation intention. A number of studies have focused on exploring the factors that affect congregate meal program participation or evaluated the outcome of program participation such as nutritional benefits, socialization, and food insecurity. These researchers used only descriptive or simple comparative methods. No study has used theory to investigate this topic. In fact, this study was the first to incorporate a theoretical framework and establish a sound foundation to examine community-dwelling elderly congregate meal program participation.

This study incorporated the suggestion of Oh and Hsu (2001) that a simultaneous inclusion of additional constructs corresponds to recent theoretical developments in human behavior. Past behavior as an extra predictor variable for TPB was included as an appropriate way to better predict program participation. Based on the results of this study, past behavior is a predictor for participation intention. Adding past behavior to TPB helps the model become a comprehensive tool for predicting behavior that can be applied to other populations or disciplines.

Practical Implications

Program managers should focus special attention on perceived resources (facilitator) or perceived control (inhibitor) over congregate meal program participation. One reason to encourage seniors to participate in the program is lack of motivation or inability to cook at home. Program providers can provide innovative services such as congregate breakfast programs, weekend congregate meals, or congregate supper programs to enhance participation.

Transportation services must also be part of the meal program. Public transportation companies might work with a department of aging to schedule transportation to meal sites. A welcoming feeling in senior centers is critical for increasing participation. A home-like ambiance instead of an institutional atmosphere might be a way to increase program participation (FIU, 2002). Make sure there are enough spaces at the table for seniors with physical disabilities; the ability to maneuver around the meal site would help those with physical limitations. Regular training to help staff understand the importance of treating senior center attendees as family could be another way to increase participation.

Subjective norm also significantly affects participation intention. This means that seniors are influenced by their referent groups. Program providers promote the program to those groups who significantly influence seniors' participation intention. The local aging organization could work with nutrition educators and dietitians to organize the nutrition education workshops that are open for seniors and their family members and friends. The agenda might include a discussion about the meal experience at senior centers. Dietitians need to focus on the nutritional intake and social interaction, both of which were rated highly by program participants (Table 5.6); this might be more effective than advertising. Dietitians can recommend the program to seniors. Furthermore, they ensure seniors' nutritional health and quality of life.

Because of the effect of past behavior on participation intention, program providers should focus on reaching potential program participants as well as implementing strategies to effectively retain frequent participants. On site administrators could hold monthly birthday parties for those who regularly participate in program. Senior center managers, staff, and center attendees can nominate "the frequent participant." Regular program participation also means financial stability for the program.

Conclusions

This is the first study to adapt the theory of planned behavior to examine predictors for congregate meal program participation intention. The study suggested that TPB is a robust model for predicting congregate meal program participation intention. The combination of four factors predicts about 63% of the variance for intention. The relationship among TPB predictor variables (attitude, subjective norm, PBC, and past behavior) and intention are all significant and positively related. PBC had the most significant relationship to intention. A great number of

previous studies examined and discovered barriers and challenges to participation in congregate meal program. Past behavior was identified as a great predictor of congregate meal program participation. Some marketing strategies that focus on increasing repeat participation need to be developed. Extending TPB and replicating this study with other populations of seniors from various geographic areas can further ensure the validity of the model and increase the generalizability.

References

- Acock, A. C. (2005). Working with missing values. *Journal of Marriage and Family*, 67, 1012-1028.
- Ajzen, I. (1985). From intention to action: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control, from cognition to behavior* (pp.11-39). New York: Springer-Verlag.
- Ajzen, I. (1988). *Attitudes, personality and behavior*. Chicago, IL: The Dorsey Press
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Ajzen, I. (2006, January). *Constructing a TPB questionnaire: conceptual and methodological consideration*. Retrieved Jun 12, 2008 from <http://people.umass.edu/aizen/pdf/tpb.measurement.pdf>.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavior control. *Journal of Experimental Social Psychology*, 22, 453-474.
- Albarracin, D., Johnson, B. T., Fishbein, M., & Muellerleile, P.A. (2001). Theories of reason action and planned behaviors as models of condom use: A meta-analysis. *Psychological Bulletin*, 127(1), 142-161.
- Albrecht, S. L., & Carpenter, K. E. (1976). Attitudes as predictors of behavior versus behavior intentions: a convergence of research traditions. *Sociometry*, 39(1), 1-10.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423.
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analysis review. *British Journal of Social Science*, 40(4), 471-499.
- AoA (2006, June 1). *Highlights from the pilot study: second national survey of Older Americans Act Title III service recipients*. Retrieved May 19, 2008 from <https://www.gpra.net/nationalsurvey/files/2ndhighlights.pdf>

- AoA (2007). *National aging program information systems*. Retrieved May 10, 2008 from <http://www.aoa.gov/prof/agingnet/napis/napis.asp>
- Bagozzi, R. P., & Yi, Y. (1989). The degree of intention formation as a moderator of the attitude-behavior relationship. *Social Psychology Quarterly*, 52(4), 266-279.
- Bamberg, S., Ajzen, I., & Schmidt, P. (2003). Choice of travel mode in the theory of planned behavior: the roles of past behavior, habit, and reasoned action. *Basic and Applied Social Psychology*, 25(3), 175-187.
- Bermudez, O. I., & Tucker, K. L. (2004). Cultural aspects of food choices in various communities of elders, *Generations*, 28(3), 22-27.
- Byrne, (2001). *Structural equation modeling with AMOS*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Carey, M., & Gillespie, S. (1995). Position of the American Dietetic Association: Cost-effectiveness of medical nutrition therapy. *Journal of the American Dietetic Association*, 95(1), 88-91.
- Chima, C. S., Barco, K., Dewitt, M. L. A., Maeda, M., Teran, J. C., & Mullen, K. D. (1997). Relationship of nutritional status to length of stay, hospital costs, and discharge status of patients hospitalized in the medicine service. *Journal of the American Dietetic Association*, 97, 975-978.
- Clark, R. L., Cohen, B. E., Burt, M. R., & Schulte, M. M. (1993). *Who uses food assistance programs? Factors associated with use among the elderly*. Washington, DC: The Urban Institute.
- Choi, N. G. (2002). Asia American elderly participants in congregate dining programs: An exploratory study, *Journal of Nutrition for the Elderly*, 21(3), 1-13.
- Conner, M., & Armitage, C. J (1998). Extending the theory of planned behavior: a review and avenues for further research. *Journal of Applied Social Psychology*, 28, 15, 1429-1464.
- Conner, M., Warren, R., Close, S., & Sparks, P. (1999). Alcohol consumption and the theory of planned behavior: an examination of the cognitive mediate of past behavior. *Journal of Applied Social Psychology*, 29(8), 1676-1704.
- Courneya, K. S. (1995). Understanding readiness for regular physical activity in older individuals: An application of the theory of planned behavior. *Health Psychology*, 14, 80-87.

- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading MA: Addison-Wesley.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18, 39-50.
- Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., & Grimshaw, J., Foy, R., et al. (2004). *Constructing questionnaires based on the theory of planned behavior. A manual for health services researchers*. United Kingdom: Centre for Health Services Research, University of Newcastle. Retrieved Jan 26, 2008 from <http://www.rebeqi.org/ViewFile.aspx?itemID=212>
- Florida International University (FIU) (2002, Feb 1). Addressing the image of older Americans congregate nutrition programs. Retrieved Nov 15, 2008 from http://nutritionandaging.fiu.edu/creative_solutions/image_oanp.asp
- Gallagher-Allred, C. R. Voss, A. C., Finn, S. C., & McCamish, M. A (1996). Malnutrition and clinical outcomes: The case for medical nutrition therapy. *Journal of the American Dietetic Association*, 96, 361-369.
- General Accounting Office (GAO) (2000). *Food assistance options for improving nutrition for older Americans*, GAO/RCED-00-238, retrieved Apr 15, 2008 from <http://www.gao.gov/new.items/rc00238.pdf>
- Godin, G., & Kok, G. (1996). The theory of planned behavior: a review of its applications to health-related behaviors. *American Journal of Health Promotion*, 11, 87-98.
- Gretebeck, K. A. (2000). *Predicting physical activity in older adults: the theories of reasoned action and planned behavior*. Unpublished doctoral dissertation, Purdue University.
- Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J. H. (2002). A meta-analytic review of the theory of reasoned action and planned behavior in physical activity: predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*, 24, 3-32.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006) *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall.
- Hausenblas, H. A., Carron, A. V., & Mack, D. E. (1997). Application of the theory of reasoned action and planned behavior to exercise behavior: a meta-analysis. *Journal of Sport & Exercise Psychology*, 19, 36-51.

- Kendrick, O. W., & Slezak, D. (1989). Nutrition program for the elderly: Participants' perception of food quality by type of food service system, *Journal of Nutrition for the Elderly*, 9(1), 27-38.
- Kim, K., Reicks, M., & Sjoberg, S. (2003). Applying the theory of planned behavior to predict dairy product consumption by older adults. *Journal of Nutrition Education and Behavior*, 35, 294-301.
- Kuczmarski, M. F., & Weddle, D.O. (2005). Position paper of the American Dietetic Association: nutrition across the spectrum of aging. *Journal of the American Dietetic Association*, 105, 616-633.
- Lam, T., & Hsu, C. (2004). Theory of planned behavior: potential travelers from China. *Journal of Hospitality & Tourism Research*, 28(4), 463-482
- Lee, M. J. (2005) *Effects of attitude and destination image on association members' meeting participation intentions: development of meeting participation model*. Unpublished doctoral dissertation, Kansas State University.
- Lee, J. S., Frongillo, E. A., & Olson, C. M. (2005). Conceptualizing and assessing nutrition needs: perspectives of local program providers. *Journal of Nutrition for the Elderly*, 24(3), 25-45.
- Lin, J. C. (1999). *The nutritional effects of the elderly nutrition program: Title III-C for the Menomonie congregate site meal program participants*. Unpublished master thesis, University of Wisconsin-Stout.
- Little, J. R., & Rubin, D. (2002). *Statistical analysis with missing data (2nd ed.)*. New York: Wiley.
- Mullen, P. D., Hersey, J. C., & Iverson, D. C. (1987). Health behavior models compared. *Social Science & Medicine*, 24, 973-981.
- Norman, P., & Smith, L. (1995). The theory of planned behavior and exercise: an investigation into the role of prior behavior, behavior intentions and attitude variability. *European Journal of Social Psychology*, 25, 403-415.
- Nunnally, J. C., & Bernstein, I (1994). *Psychometric theory (3rd ed.)*. New York, NY: McGraw-Hill.
- Oh, H. & Hsu, C. (2001). Volitional degrees of gambling behaviors. *Annals of Tourism Research*, 28 (3), 618-637.

- Oliver, R., & Bearden, W. O. (1985). Crossover effects in the theory of reasoned action: a moderating influence attend. *Journal of Consumer Research*, 12(3), 324-340.
- O'Shaughnessy, C. (2004). *CRS report for congress-Older Americans Act Nutrition Program*. Retrieved Apr 23, 2007 <http://www.nationalaglawcenter.org/assets/crs/RS21202.pdf>
- Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin*, 124(1), 54-74.
- POMP (2006, June 1). *Highlights from the pilot study: second national survey of Older Americans Act Title III service recipients*. Retrieved Apr 4, 2008 from <https://www.gpra.net/nationalsurvey/files/2ndhighlights.pdf>
- Ponza, M., & Wray, L. (1990). *Final results of the elderly program study-evaluation of the food assistance needs of the low-income elderly and their participation in USDA programs*. Princeton, NJ: Mathematica Policy Research, Inc.
- Ponza, M., Ohls, J. C., & Posner, B. M. (1994). *Elderly nutrition program evaluation literature review*. Princeton, NJ: Mathematica Policy Research, Inc.
- Ponza, M., Ohls, J.C., Millen, B.E., McCool, A.M., Needels, K.E., Rosenberg, L., et al. (1996). *Serving Elders at Risk. The Older Americans Act nutrition programs: national evaluation of the elderly nutrition program*. Princeton, NJ: Mathematica Policy Research, Inc.
- Povey, R., Conner, M., Sparks, P., James, R., & Shepherd, R. (2000). Application of the theory of planned behavior to two dietary behaviors: roles of perceived control and self-efficacy. *British Journal of Health Psychology*, 5, 121-139.
- Reinecke, J., Schmidt, P., & Ajzen, I (1996). Application of the theory of planned behavior to adolescents' condom use: A panel study. *Journal of Apply Social Psychology*, 26, 749-772.
- Roelands, M., Oost, P. V., Depoorter, A., & Buysse, A. (2002) A social-cognitive model to predict the use of assistive devices for mobility and self-care in elderly people, *The Gerontologist*, 42(1), 39-50.
- Ryn, K., & Jang, S. (2006). Intention to experience local cuisine in a travel destination: the modified theory of reasoned action. *Journal of Hospitality & Tourism Research*, 30(4), 507-516.

- Sheppard, B. H., Hartwick, J., & Warshaw, P. P. (1988). The theory of reasoned action: a meta analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15(3), 325-343.
- Shimp, T. A., & Kavas, A. (1984). The theory of reasoned action applied to coupon usage. *Journal of Consumer Research*, 11, 795-809
- Slezak, D. (2000, August 9). *Evaluation of nutrition programs prepared for suburban area agency on aging and community nutrition network*. Retrieved Apr 22, 2008 from http://nutritionandaging.fiu.edu/creative_solutions/Focus%20Groups%20Executive%20Summary.pdf
- Sonmez, S. F. & Graefe, A. R. (1998) Determining future travel behavior from past travel experience and perceptions of risk and safety. *Journal of Travel Research*, 37(2), 171-178.
- Taylor, S., & Todd, P. (1995). Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International Journal of Research in Marketing*, 12(2), 137-155.
- U.S Census of Bureau (2000). *Census 2000 demographic profile highlights: selected population group: white alone*. Retrieved Nov 15, 2008 from [http://factfinder.census.gov/servlet/SAFFIteratedFacts?_event=&geo_id=04000US20&_geoContext=01000US%7C04000US20&_street=&_county=&_cityTown=&_state=04000US20&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&_useEV=&pctxt=fph&pgsl=010&_submenuId=factsheet_2&ds_name=DEC_2000_SAFF&_ci_nbr=002&qr_name=DEC_2000_SAFF_R1040®=DEC_2000_SAFF_R1040%3A002&_keyword=&_industry=.](http://factfinder.census.gov/servlet/SAFFIteratedFacts?_event=&geo_id=04000US20&_geoContext=01000US%7C04000US20&_street=&_county=&_cityTown=&_state=04000US20&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&_useEV=&pctxt=fph&pgsl=010&_submenuId=factsheet_2&ds_name=DEC_2000_SAFF&_ci_nbr=002&qr_name=DEC_2000_SAFF_R1040®=DEC_2000_SAFF_R1040%3A002&_keyword=&_industry=)
- U.S. Department of Health and Human Service (USDHHS), AoA (2003). *Elderly nutrition program fact sheet*. Retrieved Sept 8, 2007 from http://www.aoa.gov/press/fact/pdf/fs_nutrition.pdf
- Van der Pligt, J., & Eiser, J. R. (1984). Dimensional salience, judgment and attitudes. In J. R. Eiser (Ed.), *Attitudinal judgment* (p.161-177). New York, NY: Springer-Verlag.
- Wankel, L. M. & Mummery, W. K. (1993). Using national survey data incorporating the theory of planned behavior: implications for social marketing strategies in physical activity. *Journal of Applied Sport Psychology*, 5, 158-177.

- Warburton, J., & Terry, D. J. (2000). Volunteer decision making by older people: A test of a revised theory of planned behavior. *Basic and Applied Social Psychology*, 22(3), 245-257.
- Young, H. M., Lierman, L., Powell-Cope, G., Kasprzyk, D., & Benoliel, J. Q (1991). Operationalizing the theory of planned behavior. *Research in Nursing and Health*, 14, 137-144.

CHAPTER 6 - Summary and Conclusions

The number of congregate meals served to older adults decreased by 18% from 1980 to 2002, while home delivered meals increased almost 290% during the same period (O'Shaughnessy, 2004). Additionally, funding for congregate meal programs was transferred to either home delivered meals or other support services. Thus, 17% of the funding for congregate meal programs was lost due to the reallocation of funds (AoA, 2008). The benefits of congregate meal programs, such as social interaction and nutritious, well balanced meals, is supported by previous studies (Gilbride et al., 1998; Neyman, Zidenberg-Cherr, & McDonald, 1996; POMP, 2006; Ponza & Wray, 1990; Ponza et al., 1996; Slezak, 2000). Specifically, the social benefits that are part of congregate meal program participation distinguish the program from the home delivered meal program. However, the increasing numbers of elderly, along with declining program participation, require understanding the factors that influence participation intention.

Previous congregate meal program studies center on participants' nutritional risks, physical constraints, and quality of life. No study used a theoretical framework to evaluate congregate meal program participation. Only few studies have assessed perception of both participants and non-participants. Thus, the present study used both populations to increase the reliability and validity of the study.

The main purpose of this study was to understand community-dwelling elderly congregate meal program participation intention using TPB. To meet this objective, the methodology included an elicitation study with focus groups and a salient beliefs study. A questionnaire was then developed, reviewed by an expert panel, pilot tested, and administered to 358 individuals in 15 settings. The factors in this study including three belief based factors (behavioral beliefs, normative beliefs, and control beliefs), four predictor variables of intention (attitude, subjective norm, PBC, and past behavior), and one dependent variable (intention) can help to understand causal relationships using structural equation modeling (SEM).

Summary of Findings

The Elicitation Study

From the elicitation study, five salient behavioral beliefs were generated: convenience (n=42), social interaction (n=40), low-prices (n=39), nutritions and balanced meals (n=36), and less waste (n=25). Family members (n=64), friends (n=30), neighbors (n=15), cooks at the meal site (n=13), and health professionals (n=13) were important referents who affected seniors' program participation intention. The salient control beliefs included activities at senior centers (n=57), availability of transportation (n=49), the inclusive culture of senior centers (n=33), lack of motivation and ability to cook (n=31), and poor weather (n=28).

Model Evaluation

Based on the results of the elicitation study and literature review, a questionnaire was developed to measure seven constructs (behavioral beliefs, normative beliefs, control beliefs, attitude, subjective norm, PBC, past behavior, and intention) using TPB (Ajzen, 1988, 1991, 2006; Gretebeck, 2000; Francis et al, 2004; Lee, 2005). Using a convenience sample from a senior fair, senior centers, senior living places, senior exercise classes, and a retirement group meeting, 358 initial samples were collected. After data screening and an assumption check, 238 completed samples with 69 males and 169 females were included in the final sample.

CFA was used to identify whether the measurement items could reliably estimate constructs in this study. The result of goodness of fit indices indicated that data fit the measurement model moderated well ($\chi^2=1059.4$, $df=471$, $p<.001$, $\chi^2/df=2.2$, CFI=.98, TLI=.98, NFI=.96, RMSEA=.073). Construct validity was measured using CFA. Hair et al. (2006) reported this construct validity is used to assess the set of measurement items that reflected the theoretical latent constructs and were designed to accurately measure corresponding constructs. The construct validity included convergent validity and discriminant validity. In this study, the standardized factor loadings for each item were significant at $p<.001$ and were more than or equal to .50, which meets the requirements recommended by Hair et al. (2006). The cutoff point of .70 for composite reliability value was determined, again based on the recommendations of Hair et al. (2006). AVE was set at .50 or higher to demonstrate adequate convergence (Fornell & Larcker, 1981; Hair et al., 2006). In this study, all constructs achieved the required level. Discriminant validity was used to check that each construct was distinct from other constructs. It

was measured by comparing AVE of two factors and the square of the correlation between the two factors. If AVE is more than the square correlation, good discriminate validity results (Hair et al., 2006). In this study, AVE of each construct was higher than its corresponding square correlation. The constructs in this study satisfied discriminate validity.

The data in the study fits the model ($\chi^2=1238.8$, $df=515$, $p<.001$, $\chi^2/df=2.4$, CFI=.98, TLI=.97, NLI=.96, RMSEA=.077). Hypothesis tests were checked using the standardized path coefficient retrieved from the results of the SEM. The following were the results of the hypothesis test.

Hypothesis 1: Behavioral beliefs toward congregate meal program participation are positively associated with attitudes about program participation. (Supported)

Hypothesis 2: Normative beliefs about congregate meal program participation are positively associated with subjective norms about program participation. (Supported)

Hypothesis 3: Control beliefs of congregate meal program participation are positively associated with perceived behavior control about program participation. (Supported)

Hypothesis 4: Attitudes toward program participation has a positive effect on participation intention. (Supported)

Hypothesis 5: Subjective norms about program participation have a positive effect on participation intention. (Supported)

Hypothesis 6: Perceived behavior control about program participation has a positive effect on participation intention. (Supported)

Hypothesis 7: Past behavior is a significant predictor of participation intention. (Supported)

The path coefficient between belief measures and predictor variables showed significant positive relationships and ranged from .48 to .63. Among all predictor variables for the TPB model, PBC had the strongest effect on participation intention ($\beta=.51$, $t=8.0$, $p<.01$), followed by past behavior ($\beta=.36$, $t=6.6$, $p<.01$) and subjective norm ($\beta=.33$, $t=4.7$, $p<.01$). Attitude had the least impact on participation intention ($\beta=.15$, $t=2.7$, $p<.01$). The combination of all predictor variables explained 63% of variance on participation intention.

Other Findings

This study also used descriptive analysis to evaluate specific belief items that influence belief constructs. Among the five behavioral beliefs, participants viewed consuming nutritious and well balanced meals (21.30 ± 5.08) as the most beneficial. The social interaction was rated second highest for the study participants (21.04 ± 4.98). The results were similar to previous studies (Ponza & Wray, 1990; Slezak, 2000). Neighbors had the least influence on program participation (14.55 ± 6.56), with the other four referent groups registering as more important: family members (16.36 ± 6.56), friends (15.68 ± 6.37), cooks at the meal site (16.79 ± 6.86), and health professionals (17.42 ± 6.43). Participants viewed the welcoming nature of the facility as an important factor influencing program participation (20.84 ± 5.28). Walker et al. (2004) reported that individuals who didn't participate in congregate meal programs were influenced by the cliquish atmosphere of existing operations.

Missing data were an issue in this study. Six percent of the respondents skipped the attitude questions. The number of participants who answered "I don't know" was substantially higher than those who actually did not answer. Twenty-three percent of the respondents answered "I don't know" for the normative beliefs questions, and 12% of them selected "I don't know" for consequent questions asking about their motivation to comply. Specifically, neighbors were the referent group that most respondents answered "I don't know" ($n=98$). To eliminate potential bias caused by missing data, the demographic information of the final sample ($n=238$) was compared with the deleted sample ($n=120$). Chi-square test of independence results showed no significant differences between gender ($\chi^2=1.48$, $p=.22$), age ($\chi^2=.06$, $p=.1.00$), marital status ($\chi^2=1.00$, $p=.80$), living arrangement ($\chi^2=2.40$, $p=.49$), race ($\chi^2=4.84$, $p=.44$), education level ($\chi^2=2.26$, $p=.89$), or income ($\chi^2=4.3$, $p=.75$). Thus, the study sample had similar backgrounds. Participation frequency ($\chi^2=27.34$, $p=.001$) was the only difference found between the two samples. Seniors who never participated in the program might not understand some of the questions. Therefore, the researcher handled this issue with cautious.

Implications

Theoretical Implications

The results of the elicitation study identified the five most salient beliefs for behavioral, normative, and control beliefs. This preliminary information provides a robust framework for

using TPB to understand congregate meal program participation. Based on the results, the researchers developed a reliable measure to examine participation intention.

This study was the first study to incorporate the theoretical framework and establish a foundation to expand our understanding of community-dwelling elderly congregate meal program participation. Previous studies focused on descriptive analysis to evaluate the outcomes of meal program participation. These included nutritional benefits, socialization, and food insecurity. Using structural equation modeling, the relationship between each factor was evaluated and all path coefficients were significantly positively related. The results enrich our attempts to understand congregate meal programs and support the application of TPB for participation intention.

In the present study, past behavior was included in the TPB model. Oh and Hsu (2001) suggested that a simultaneous inclusion of this additional construct corresponds to recent developments in understanding human behavior. Results of our study show that past behavior has strong predictive power for participation intention, more than attitude. Because of the weak causal relationship between attitude and intention, the residual effect of past behavior on future behavior was even stronger (Ajzen, 1991). Including past behavior in the present model increased the predictive power of the model and makes the model a more comprehensive tool for this population.

Practical Implications

Results of this study also provide practical implication for directors of the Area Agency on Aging (AAA), senior center managers, foodservice directors, and dietitians. Following are suggestion that can help practitioners improve program participation based on the findings of this study.

- Implementing innovative services such as congregate breakfast programs, weekend congregate meals, and congregate supper programs
- Providing transportation through public transportation, the department of aging, local civic groups, and faith groups
- Establishing a welcoming atmosphere
- Creating a comfortable physical environment

- Providing nutrition education to promote the benefits of congregate meal program participation
- Educating family members who can influence senior participation intention
- Implementing marketing strategies such as word of mouth
- Training staff to treat seniors as a family

Limitations and Future Study

The study was developed to explain the intention to participate in congregate meal program. Actual behavior was not captured because of the complexity of this type of study design, subject recruitment, the nature of the sample, and the need for anonymity. Previous TPB studies have shown strong relationships between behavioral intention and actual behavior (Ajzen, 2002). The decision to use only intention as a dependent variable instead of actual behavior is warranted. Ajzen and Fishbein (1980) stated that to enhance the predictive power of actual behavior based on intention, measuring intention should be as close as possible in time to observing or measuring the behavior. However, in most TPB studies, the measure of actual behavior was usually several days, weeks, or months after measuring intention. According to Sutton (1998), the “gap” between intention and behavior might lower the predictive power of intention because intention changes over time. On the other hand, if researchers assume that behavioral intention remains stable over time, the correlation between intention and behavior might be higher (Sutton, 1998). However, to further understand the prediction power of the TPB model and the relationship between intention and behavior, actual behavior should be measured in future studies.

Measuring attitude and beliefs using one instrument poses conceptual challenges for senior participants. Attitudes in this study were measured with seven 5-point semantic differential scales and pairs of adjectives (e.g., worthless/valuable, useless/useful, harmful/beneficial, unpleasant/pleasant, unhealthy/healthy, boring/interesting, bad/good). Respondents who were not familiar with the format or didn’t understand how to answer the question would skip the question or answer “I don’t know.” In this beliefs based instrument, moreover, some of the questions sounded similar but measured different items. For example, one question measured salient beliefs and another measured outcome evaluations. Mullen, Hersey, and Iverson (1987) commented that some participants replied that they had already answered the

questions; the questions were identical, and respondents perceived them to be the same. The similarity of study items frustrates respondents as well as inhibiting their ability to answer questions (Young et al., 1991). This situation might threaten the reliability of the instrument and cause bias. To eliminate this problem, one belief measurement might be sufficient and outcome evaluation items excluded. Gagne and Godin (2000) and Sutton, McVey, and Glanz (1999) examined the summative index of belief measurements. The sum of belief measurements weighted by outcome evaluation items had the same predictive power for attitude. For future studies, researchers may consider using only belief constructs as indirect measures of predictor variables. This would reduce the length of surveys and reduce confusion about similar questions, possibly increasing participation rate and study validity.

This study included both participants and non-participants in congregate meal programs. Those who had not participated in the program might have had trouble answering the questions. Once they were frustrated with one question, they might skip all the questions or answer “I don’t know” instead of providing a true response, possibly compromising the reliability of study. An effective method to resolve this problem is to create a scenario at the beginning of the questionnaire. Researchers could present participants with an actual decision with important consequences using a Likert-type scale (Sutton, 1998) to familiarize participants with the questions to follow.

The study sample was community-dwelling elderly living in one region within a Midwestern state. Generalizability of the study is not practical. About 98% of the respondents were Caucasians. The same study conducted with a more diverse population might yield different findings. Multi-group analysis, such as urban and rural, Caucasian and Hispanic, low-income and high income might yield different results. Young et al. (1991) found the TPB model useful in studying individuals from different culture backgrounds.

The data were collected from a convenience sample. Therefore, the sample might not represent the elderly population. To recruit community-dwelling elderly, researchers collected data from locations. However, some seniors who were not active in any community activities or lived alone would be excluded from the sample. Thus, this study was unable to truly explain the characteristics of non-respondents because of the use of a convenience sample. Future studies should consider sampling various senior gathering places such as local diners or coffee shops or

even homes to interview seniors. The sample should contain community-dwelling elderly who are less socially active.

Predictor variables, attitude, subjective norm, perceived behavior control, and past behavior, explained 63% of participants' behavior intention. Future studies should consider a wide range of predictor variables such as perceived constraint, self-efficacy, and satisfaction level with service and food to enhance the inclusiveness of TPB model. Characteristics of the respondent might be viewed as an important predictor for behavior intention and actual behavior. Ajzen (1991) stated that demographic variables moderated between predictor variables and behavioral intention. Congregate meal program participation behaviors, gender, and age differences might affect seniors' participation intention. The female elderly might be more active than males and thus more willing to participate. As seniors age, physical constraints become more serious and hinder participation intention. To further understand the relationships in the TPB model, demographic and other variables should be incorporated.

When individuals are asked about their future behavior intention, they base their judgment on recent behavior. In this study, seniors might answer the question based on that day's meal experience. If participants disliked the food served on the day that the study was conducted, negative attitudes toward the program might result and lessen future participation intention. Alternatively, if participants liked the food served, the attitude attributes might be rated higher. To reduce the bias caused by recent behavior, the questionnaire should be administered at various times throughout the day.

Conclusions

An elicitation study might require more than one step. TPB is an appropriate model to evaluate intention and possibly resulting behavior. This population is insightful about how to improve the program. Additional ways to improve program participation must be identified. This data will be shared with directors and dietitians for evaluation. In this tough economic climate, a focus on the customer is most important, so serving customers well will increase their participation. Continual evaluation can help to identify the needs of program customers. That should be a top priority of directors and site managers. Many of these seniors have seen their retirement funds diminished, and a nutritious meal is one small way to ease their financial burdens and the frustrations associated with budgets.

References

- Ajzen, I. (1988). *Attitude, personality and behavior*. Milton Keynes, UK: Open University Press.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Ajzen, I. (2006, January). *Constructing a TPB questionnaire: conceptual and methodological consideration*. Retrieved Jun 12, 2008 from <http://people.umass.edu/aizen/pdf/tpb.measurement.pdf>.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall Inc.
- AoA (2008). *FY2006 U. S. Profile of OAA programs*. Retrieved Mar 10, 2008 from <http://www.aoa.gov/prof/agingnet/napis/SPR/2006SPR/Profiles/us.pdf>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18, 39-50.
- Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., & Grimshaw, J., Foy, R., et al. (2004). *Constructing questionnaires based on the theory of planned behavior. A manual for health services researchers*. United Kingdom: Centre for Health Services Research, University of Newcastle. Retrieved Jan 26, 2008 from <http://www.rebeqi.org/ViewFile.aspx?itemID=212>
- Gagne, C. & Godin, G., (2000). The theory of planned behavior: some measurement issues concerning beliefs-based variables. *Journal of applied social psychology*, 30(10), 2173-2193.
- Gilbride, J. A., Amella, E. J., Breines, E. B., Mariano, C., & Mezey, M. (1998). Nutrition and health status assessment of community-residing elderly in New York City: A pilot study. *Journal of the American Dietetic Association*, 98(5), 554-558.
- Gretebeck, K. A. (2000). *Predicting physical activity in older adults: the theories of reasoned action and planned behavior*. Unpublished doctoral dissertation, Purdue University.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006) *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall.

- Lee, M. J. (2005) *Effects of attitude and destination image on association members' meeting participation intentions: development of meeting participation model*. Unpublished doctoral dissertation, Kansas State University.
- Mullen, P. D., Hersey, J. C., & Iverson, D. C. (1987). Health behavior models compared. *Social Science & Medicine*, 24, 973-981.
- Neyman, M. R., Zidenberg-Cherr, S., & McDonald, R. B. (1996). Effect of participation in congregate site meal programs on nutritional status of the healthy elderly. *Journal of the American Dietetic Association*, 96(5), 475-483.
- Oh, H. & Hsu, C. (2001). Volitional degrees of gambling behaviors. *Annals of Tourism Research*, 28 (3), 618-637.
- O'Shaughnessy, C. (2004). *CRS report for congress-Older Americans Act Nutrition Program*. Retrieved Apr 23, 2007 <http://www.nationalaglawcenter.org/assets/crs/RS21202.pdf>
- POMP (2006, June 1). *Highlights from the pilot study: second national survey of Older Americans Act Title III service recipients*. Retrieved Apr 4, 2008 from <https://www.gpra.net/nationalsurvey/files/2ndhighlights.pdf>
- Ponza, M., & Wray, L. (1990). *Final results of the elderly program study-evaluation of the food assistance needs of the low-income elderly and their participation in USDA programs*. Princeton, NJ: Mathematica Policy Research, Inc.
- Ponza, M., Ohls, J.C., Millen, B.E., McCool, A.M., Needels, K.E., Rosenberg, L., et al. (1996). *Serving Elders at Risk. The Older Americans Act nutrition programs: national evaluation of the elderly nutrition program*. Princeton, NJ: Mathematica Policy Research, Inc.
- Slezak, D. (2000, August 9). *Evaluation of nutrition programs prepared for suburban area agency on aging and community nutrition network*. Retrieved Apr 22, 2008 from http://nutritionandaging.fiu.edu/creative_solutions/Focus%20Groups%20Executive%20Summary.pdf
- Sutton, S. (1998). Predicting and explaining intentions and behavior: how well are we doing? *Journal of Applied Social Psychology*, 28(15), 1317-1338.
- Sutton, S., McVey, D., & Glanz, A. (1999). A comparative test of the theory of reasoned action and the theory of planned behavior in the prediction of condom use intentions in a national sample of English young people. *Health Psychology*, 18, 72-81.
- Walker, J., Bisbee, C., Porter, R., & Flanders, J. (2004). *Educational Gerontology*, 30, 353-366.

Young, H. M., Lierman, L., Powell-Cope, G., Kasprzyk, D., & Benoliel, J. Q (1991).
Operationalizing the theory of planned behavior. *Research in Nursing and Health*,
14, 137-144.

Appendix A - Salient Beliefs Questionnaire

Senior meal program participation beliefs

Introduction: This questionnaire will help us understand your beliefs about senior meal program participation. Senior meal refers to meal served during weekday lunchtime in central dining areas. This survey will take approximately about 5-10 minutes to complete. Your participation is voluntary and responses will remain confidential. If you need any help in completing the survey, please feel free to ask for assistance. If you have any questions, please contact Dr. Rebecca Gould at 785-532-2298 or Carrie Lee at 785-532-2211.

Thank you for your help!

Section 1. Top 5 Beliefs

Direction: Please pick the top 5 of following people or groups who would most approve of you eating meals at the senior center.

- Daughters/ sons
- Spouse
- Relatives
- Cooks at the senior center
- Friends
- Neighbors
- Health professionals (doctors, nurse and dietitians)
- Churches
- Local businesses (ex. banks)
- Community organizations (ex. Lions club or Rotary)

Direction: Please pick the top 5 of following advantages of eating meals at the senior centers.

- Social interaction
- Nutrition and balanced meals
- Low-price
- Convenience
- Less waste
- Special diet provided

Direction: Please pick the top 5 of the following factors that would make it easier for you to eat meals at the senior center.

- Transportation provided to the center
- Welcoming atmosphere at the senior center
- The opportunities to volunteer at the senior center
- The convenience of meeting at the senior center
- The opportunities to participate in activities (ex. card game, crafts and bingo) at the senior center
- Lack motivation to cook at home
- Inability to cook at home

- Accompanied by friends
- Accompanied by spouse
- The ability to received special diets
- Easy to get around the dining room

Direction: Please pick the top 5 of the following factors that would make it difficult for you to eat meals at the senior center.

- Cannot drive or no transportation
- Poor weather
- Time conflicts
- Travel distance from home to senior centers or meal sites
- No meal site in the community
- Dislike the menu
- Did not know about the program
- Believe I am not old enough to participate in senior meals
- Believe senior meals are only for charity
- I am too pride and to participate in senior meals
- Health problems

Section 2. About yourself

1. What is your gender? Male Female
2. What YEAR were you born? 19 (year)
3. What is your marital status? Single Married
 Widowed Divorced
4. What is your living arrangement? Living alone
 Living with a spouse
 Living with your child/children
 Living with relatives
 Other (please indicate _____)
5. What is your race? Caucasian
 Hispanic
 African Americans
 Asian/Pacific Islander
 American Indian/ Native Alaskan
6. What is your highest education level? Elementary
 Some high school
 High school graduate
 Associate degree

Appendix B - Guidelines for Panel Reviews

Guideline for Panel Reviews

1. Does the cover letter clearly indicate the purpose of the study? If not, please indicate suggestions for improvement.
2. Is the information in the cover letter clear and appropriate for elderly respondents? If not, please indicate suggestions for improvements.
3. Are the letter size, space, and format appropriate for elderly respondents? If not, please indicate suggestions for improvements.
4. For section 1, are the questions/statements clearly stated? If not, please indicate suggestions for improvement.

Appendix C - Final Questionnaire

Questionnaire Cover Letter

September 16, 2008

Dear Kansans,

A research team from the Department of Hospitality Management and Dietetics at Kansas State University are understanding beliefs about participating in senior meal programs. For this study, **senior meals** mean the meals that are provided seniors in **central dining areas** and usually served during weekday lunchtime. As a Kansan living in the North Central-Flint Hills region, you have been chosen to participate in this study. Results of this study will help program providers to develop programs that meet seniors' needs.

This questionnaire will take approximately 15 minutes to complete. Some of the questions may appear to be similar, but the small difference between them is important for research purposes. For each question, please circle the answer or fill in the blank that best shows your thoughts about participating in senior meal programs. Your participation is voluntary. Your response will remain confidential. Only a summary of the results will be reported. If you need assistance completing the survey, please feel free to ask for help.

If you have any questions about this study, please contact Dr. Rebecca Gould at 785-532-2298 or ragou@ksu.edu, or Kuei-I (Carrie) Lee at 785-532-2211 or kil8899@ksu.edu.

Thank you for your time and help. Your input is valued.

Sincerely,

Kuei-I (Carrie) Lee
Ph.D Candidate

Rebecca Gould, Ph.D., R.D.
Professor, HMD

For question about your rights as a participant or the manner the study is conducted, you may contact Dr. Rick Scheidt, Chair of Committee on Research Involving Human Subjects, (785) 532-3224, 203 Fairchild Hall, Kansas State University, Manhattan, KS, 66506

Section 1. Direction: Please circle the number that best provides your opinion on the 5-point rating scale. For example: If you were asked to rate “The weather today” using the 5-point scale below, what would be your response.

| | | Very Bad | Bad | Neutral | Good | Very Good | | I don't know or Not applicable |
|----|------------|----------|-----|---------|------|-----------|-------------|--------------------------------|
| a. | Bad | 1 | 2 | 3 | 4 | 5 | Good | O |

If you think today’s weather is “Very Good”, then circle the NUMBER 5

| | | Very Bad | Bad | Neutral | Good | Very Good | | I don't know or Not applicable |
|----|------------|----------|-----|---------|------|-----------|-------------|--------------------------------|
| a. | Bad | 1 | 2 | 3 | 4 | 5 | Good | O |

Please be sure to answer all questions, do not skip any and circle only one number for each item.

Direction: Look at the word on the left and on the right of each line below, and circle the number that reflects your attitude about senior meals.

1. Eating meals at the senior center during the week is

| | | Very | Some-what | Neutral | Some-what | Very | | I don't know |
|----|-------------------|------|-----------|---------|-----------|------|--------------------|--------------|
| a. | Worthless | 1 | 2 | 3 | 4 | 5 | Valuable | O |
| b. | Useless | 1 | 2 | 3 | 4 | 5 | Useful | O |
| c. | Harmful | 1 | 2 | 3 | 4 | 5 | Beneficial | O |
| d. | Unpleasant | 1 | 2 | 3 | 4 | 5 | Pleasant | O |
| e. | Unhealthy | 1 | 2 | 3 | 4 | 5 | Healthy | O |
| f. | Boring | 1 | 2 | 3 | 4 | 5 | Interesting | O |
| g. | Bad | 1 | 2 | 3 | 4 | 5 | Good | O |

Direction: Circle the number that best describes your response to each statement.

| | | Strongly Disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree | I don't know |
|----|--|-------------------|----------|---------------------------|-------|----------------|--------------|
| 2. | Most people who are important to me think I should eat meals at the senior center. | 1 | 2 | 3 | 4 | 5 | O |
| 3. | When it comes to eating meals at the senior center, I would follow the advice of others who are important to me. | 1 | 2 | 3 | 4 | 5 | O |

| | Strongly Disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree | I don't know |
|---|-------------------|----------|---------------------------|-------|----------------|--------------|
| 4. Whether or not I eat meals in the senior center is entirely up to me. | 1 | 2 | 3 | 4 | 5 | O |
| 5. The choice to eat meals in the senior center is completely on me. | 1 | 2 | 3 | 4 | 5 | O |
| 6. For the most part, eating meals in the senior center is under my personal control. | 1 | 2 | 3 | 4 | 5 | O |
| 7. I am confident that I can eat meals in the senior center. | 1 | 2 | 3 | 4 | 5 | O |
| 8. If I want, I could easily eat meals in the senior center | 1 | 2 | 3 | 4 | 5 | O |
| 9. It would be very easy for me to eat meals in the senior center. | 1 | 2 | 3 | 4 | 5 | O |
| 10. I intend to eat meals at the senior center in the future. | 1 | 2 | 3 | 4 | 5 | O |
| 11. In the future, I will eat meals at the senior center if I choose to do so. | 1 | 2 | 3 | 4 | 5 | O |
| 12. I plan to eat my meals at the senior center in the future. | 1 | 2 | 3 | 4 | 5 | O |

Direction: Circle the number that best describes your response to each statement.

| 13. Eating meals at the senior center would | Very Unlikely | Unlikely | Neither | Likely | Very Likely | I don't know |
|--|---------------|----------|---------|--------|-------------|--------------|
| a. Provide more opportunities to socialize | 1 | 2 | 3 | 4 | 5 | O |
| b. Provide a well-balanced, nutritious meal | 1 | 2 | 3 | 4 | 5 | O |
| c. Save money | 1 | 2 | 3 | 4 | 5 | O |
| d. Be convenient | 1 | 2 | 3 | 4 | 5 | O |
| e. Cause less food waste | 1 | 2 | 3 | 4 | 5 | O |

| 14. What do you believe each of the groups below thinks about you eating meals at the senior center? | Definitely Should Not | Should Not | Neither | Should | Definitely Should | I don't know |
|---|-----------------------|------------|---------|--------|-------------------|--------------|
| a. Family members such as daughters, sons, spouse and relatives | 1 | 2 | 3 | 4 | 5 | O |
| b. Friends | 1 | 2 | 3 | 4 | 5 | O |
| c. Neighbors | 1 | 2 | 3 | 4 | 5 | O |
| d. Cooks at the meal site | 1 | 2 | 3 | 4 | 5 | O |
| e. Health professionals such as doctors, nurses and dietitians | 1 | 2 | 3 | 4 | 5 | O |

| 15. How easy is it for you to eat meals in the senior center IF..... | Very Difficult | Difficult | Neither | Easy | Very Easy | I don't know |
|---|----------------|-----------|---------|------|-----------|--------------|
| a. You participated in activities such as volunteer work, meetings and games in the senior center | 1 | 2 | 3 | 4 | 5 | O |
| b. You had transportation | 1 | 2 | 3 | 4 | 5 | O |
| c. You felt welcome at the senior center | 1 | 2 | 3 | 4 | 5 | O |
| d. You were unable or unmotivated to cook at home | 1 | 2 | 3 | 4 | 5 | O |
| e. The weather was nice | 1 | 2 | 3 | 4 | 5 | O |

****The following questions are asking you to rate the “OUTCOME” of each belief.****

| 16. There are a number of possible benefits of eating in the senior center. From 1(not a real benefit) to 5 (very real benefit to me), rate each possible outcome below. | Not a Real Benefit | Not A Benefit | Neither | A Benefit | Very Real Benefit | I don't know |
|---|--------------------|---------------|---------|-----------|-------------------|--------------|
| a. Provides more opportunities to socialize | 1 | 2 | 3 | 4 | 5 | O |
| b. Provides a well-balanced, nutritious meal | 1 | 2 | 3 | 4 | 5 | O |
| c. Saves money | 1 | 2 | 3 | 4 | 5 | O |
| d. Is convenient | 1 | 2 | 3 | 4 | 5 | O |
| e. Causes less food waste | 1 | 2 | 3 | 4 | 5 | O |

| 17. Each of groups below may have different views about whether you should eat at the senior center. How likely would you be to take their advice? | Very Unlikely | Unlikely | Neither | Likely | Very Likely | I don't know |
|--|---------------|----------|---------|--------|-------------|--------------|
| a. Family members such as daughters, sons, spouse and relatives | 1 | 2 | 3 | 4 | 5 | O |
| b. Friends | 1 | 2 | 3 | 4 | 5 | O |
| c. Neighbors | 1 | 2 | 3 | 4 | 5 | O |
| d. Cooks at the meal site | 1 | 2 | 3 | 4 | 5 | O |
| e. Health professionals such as doctors, nurses and dietitians | 1 | 2 | 3 | 4 | 5 | O |

| 18. How likely are you to eat meals in the senior center IF..... | Very Unlikely | Unlikely | Neither | Likely | Very Likely | I don't know |
|---|---------------|----------|---------|--------|-------------|--------------|
| a. You participated in activities such as volunteer work, meetings and games in the senior center | 1 | 2 | 3 | 4 | 5 | O |
| b. You had transportation | 1 | 2 | 3 | 4 | 5 | O |
| c. You felt welcome at the senior center | 1 | 2 | 3 | 4 | 5 | O |
| d. You were unable or unmotivated to cook at home | 1 | 2 | 3 | 4 | 5 | O |
| e. The weather was nice | 1 | 2 | 3 | 4 | 5 | O |

Section 2. Direction: please provide the following information about you.

1. What is your gender? _____ Male _____ Female
2. What YEAR were you born? 19_____(year)
3. What is your marital status? _____ Single _____ Married
_____ Widowed _____ Divorced
4. What is your living arrangement?
_____ Living alone
_____ Living with a spouse
_____ Living with your child/children
_____ Living with relatives
_____ Other (please indicate _____)

5. What is your race? _____ Caucasian
 _____ Hispanic
 _____ African Americans
 _____ Asian/Pacific Islander
 _____ American Indian/ Native Alaskan
 _____ Other (please specify _____)
6. What is your highest education level? _____ Elementary
 _____ Some high school
 _____ High school graduate
 _____ Associate degree
 _____ Bachelor's degree
 _____ Master's degree or higher
7. Have you ever eaten meals in the senior centers? _____ Yes _____ No
 ↳ Please go to Q.9
8. How often did you eat meals at the senior center during last month?
 _____ Only ate the meal one time such as
 holiday meal
 _____ less than or equal to one time per
 month
 _____ 2-3 times per month
 _____ 1 time per week
 _____ 2 times per week
 _____ 3 times per week
 _____ 4 times per week
 _____ 5 times or more per week
9. Thinking about the total combined income from all sources for all persons in this household,
 what was your total household annual income?
 _____ \$10,000 or less
 _____ \$10,001-\$15,000
 _____ \$15,001-\$20,000
 _____ \$20,001-\$25,000
 _____ \$25,001-\$30,000
 _____ \$30,001-\$35,000
 _____ \$35,001-\$40,000
 _____ \$40,001 or more

Thank you very much for your help.

Appendix D - Focus Group Research Guidelines

Researchers Guide for Focus Group

PURPOSE

Assessing beliefs of older Kansans about participating in senior meal program in order to explore specific attribute for each construct of theory of planned behavior

INTRODUCTION

Hello, and welcome to our session today. Thanks for taking the time to join our discussion about senior meal program. My name is _____ and I am the _____ from Kansas State University. Assisting me is _____. The purpose of this study is to evaluate your beliefs about participating in senior meal programs. The senior meal program that we define here are those meals that are provided for people who are age 60 and older and served in community dining center, specifically those who eat on site. This focus group is an opportunity for you to speak out about strengths and improvables of the program. We value all the information that you share with us.

GUIDELINES

Before we begin, let me remind you about some rules for our discussion.

Please speak out. We are tape recording the session to make sure we don't miss any of your responses, and we also want everyone in the room to hear you.

One person speaks at a time. If several are talking at the same time, the tape will get distorted and we might miss out on some of your comments.

Respect each other. (That's the most important thing)

You don't have to agree with the other participants; there *is no right or wrong answer*. If you have different points of view from the others, feel free to share them.

We encourage everyone to participate.

We will be using first names only today, and in our reports there will not be any name attached to specific comments. Everything you say will be completely *confidential*. We would like you to be as honest as possible. Nothing you say will affect your eligibility to participate in the meal program. If you have any question regarding this project, you may contact the principal investigator (Dr. Rebecca Gould, 785-532-2298) or for questions regarding the use of human subjects you may call the Office of Research and Sponsored Program (785-532-3224). The informed consent form explained the detail. After reading it, please sign one copy then return to the researchers, and you can give one copy for your record.

Our session will last about an hour and we will not take a formal break. If you need to leave for a restroom break, that's okay. But please do it quietly.

There are several topics to go through, so I'll try to keep the discussion going. If I rush you at anytime, it is just because I want to get your ideas on each of the topics.

Well, let's begin. Please place your name tag on the place that we can easily see.

CLOSING

Thank you very much for your participation for today's focus group. Results will be summarized and used for developing a survey that will be used to assess older Kansans participation intention for senior meal program. Your opinions will determine factors that affect seniors' beliefs about the program. The results of our study can be used to identify and implement strategies to enhance participation rate of senior program. The long-term goal is improve elderly quality of life. Thanks again.

Appendix E - Consent Form for Focus Group

Focus Group Informed Consent Form

PROJECT TITLE: Using the Theory of Planned Behavior to Assess Participation in Congregate Meal Program

APPROVAL DATE OF PROJECT: 07/12/2007 EXPIRATION DATE OF PROJECT: 08/31/2008

PRINCIPAL INVESTIGATOR: CO-INVESTIGATOR(S): Dr. Rebecca Gould, Kuei-I Lee

CONTACT AND PHONE FOR ANY PROBLEMS/QUESTIONS: Dr. Rebecca Gould (785) 532-2298
ragou@ksu.edu

IRB CHAIR CONTACT/PHONE INFORMATION: Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS, 66506, (785) 532-3224
Jerry Jaax, Associate Vice Provost for Research Compliance and University Veterinarian, 203 Fairchild Hall, Kansas State University, Manhattan, KS, 66506, (785) 532-3224

SPONSOR OF PROJECT: Peine Grant from the Department of Human Nutrition

PURPOSE OF THE RESEARCH: The purpose of this research is to assess beliefs of the community dwelling elderly about participation in congregate meal programs and to explore specific attribute for each construct of Theory of Planned Behavior.

PROCEDURES OR METHODS TO BE USED: Focus groups will be used to ask participants regarding their beliefs of participating in congregate meal program. Researchers will take note and audio tape conversation between the researcher and participants.

LENGTH OF STUDY: One year; each focus group will be approximately one hour

RISKS ANTICIPATED: No known risks

BENEFITS ANTICIPATED: 1. To find which factors affect behavioral intention, program managers can make adjustments to their sites and programs to enhance participation and ultimately improve the quality of life for the elderly.
2. To develop a reliable and valid questionnaire to administer to a larger sample of community dwelling elderly.

EXTENT OF CONFIDENTIALITY: Responses will remain confidential and anonymous.

TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant Name: _____

Participant Signature: _____ **Date:** _____

Witness to Signature: (project staff) _____ **Date:** _____