INVESTIGATING DIETS OF ASIAN YOUTH IN THE U.S. USING A THEORETICAL FRAMEWORK

A Dissertation

by

CASSANDRA SOMADEVI DIEP

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2012

Major Subject: Health Education

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Approved by:

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ABSTRACT

Investigating Diets of Asian Youth in the U.S. Using a Theoretical Framework.

(May 2012)

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Chair of Advisory Committee: Dr. E. Lisako J. McKyer

Childhood overweight and obesity is a significant public health concern, especially among children of different racial and socioeconomic backgrounds. This dissertation provides insight into one such population: Asian youth in the U.S. Three studies – two literature reviews and one quantitative study – compose this dissertation, which aims to understand dietary behaviors of Asian-American youths using a theoretical framework.

The first study is a systematic literature review of existing health education/promotion theories and models used to study eating/feeding practices for preschool-aged children. The main purpose of this study was to review and critique theories and constructs utilized in nutrition research on preschool-aged children, while also providing recommendations for strengthening theory utilization and diversifying nutrition research in the future. Forty articles were included, of which 43% had clear identification of theory/constructs and a strong theoretical framework. The most common finding was modeling's effect on children's dietary behaviors, followed by the relationship between parental restriction/control and children's dietary behaviors.

The second study was a systematic literature review of dietary behaviors of children of Asian background in the U.S. The aims of this review were three-fold: (a) to review literature regarding Asian-American youths' dietary behaviors, (b) to critically evaluate the methodological quality of such research, and (c) provide recommendations for future nutrition-related research on Asian-American youths. Fifteen articles were included. Major findings included: (a) frequent consumption of milk, fruit, meat, unenriched white rice, vegetables, and high-fat and high-sugar items among Asian-American children and (b) acculturation's effect on Asian-American youths' dietary behaviors.

The third study was an investigation of cognitive, behavioral, and environmental influences on dietary behaviors of Asian-American preschool-aged children on WIC using Social Cognitive Theory. Analyses included descriptive statistics and multiple linear regression on a sample of 68 Asian caregiver-child pairs in Texas. Results revealed consumption of 100% juices, fruits, vegetables, and white rice. In addition, adult fruit consumption frequency, adult potato consumption frequency, adult other vegetable consumption frequency, and outcome expectancies were statistically significant predictors of child's fruit and vegetable consumption.

The findings from this dissertation will help nutrition education and health professionals culturally tailor obesity prevention programs for Asian Americans.

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NOMENCLATURE

AAY	Asian-American Youths
AAYDB	American-American Youths' Dietary Behaviors
BMI	Body Mass Index
F&V	Fruit and Vegetable
SCT	Social Cognitive Theory
TEXFAN	Texas Food and Nutrition
WIC	Special Supplemental Nutrition Program for Women, Infants and Children

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1. INTRODUCTION

Obesity and its consequences are important concerns for health professionals and the public. In 1985, no U.S. state had prevalence of adulthood obesity above 20%, but in 2009, every state except for Colorado and the District of Columbia had rates exceeding that number (Centers for Disease Control and Prevention, 2011). Trends in childhood overweight and obesity are just as alarming as trends in adulthood obesity, making childhood obesity a growing public health concern in the United States. Child overweight is defined as a body mass index (BMI) at or above the 85th percentile but less than the 95th percentile for age and sex, while obesity is at or above the 95th percentile for age and sex (Krebs et al., 2007).

Obese children experience disparate health consequences in the short- and long-term (Daniels et al., 2005). Short-term, overweight children are teased by peers, leading to more loneliness, poorer self-perception, greater body dissatisfaction, and lower preference for active/social activities (Hayden-Wade et al., 2005). In addition, increased body weight is associated with decreased cognitive functioning (Li, Dai, Jackson, & Zhang, 2008) and depression (Goodman & Whitaker, 2002). Long-term, children who are obese as preschoolers are more likely to be obese as adolescents and adults (Serdula et al., 1993). Such obese children are more likely to experience adverse metabolic, orthopedic, cardiovascular, neurological, hepatic, pulmonary, and renal outcomes throughout their lifetime (Daniels et al., 2005).

This dissertation follows the style of *Appetite*.

Critical periods for abnormal weight gain occur throughout the life span (Daniels, 2006a; Daniels et al., 2005). One critical period is during preschool and school age because of BMI rebound (i.e., when BMI reaches its lowest point and then begins to increase), development of diet and activity behaviors, solidification of diet and activity behaviors, school vs. home environment, and use of certain medications. Especially during preschool years, "early childhood is a time of rapid growth, development, and learning" (Daniels et al., 2005, p. 2005). Children begin exploring the environment, establish dietary habits, develop food preferences, and start eating by themselves (Birch, 1979; Birch, 1987; Cashdan, 1994). It is important to establish healthy environments at home and parenting skills to help "young children learn and practice healthful behaviors" (Daniels et al., 2005, p. 2005).

Ethnic minority populations serve as challenges for obesity prevention. As Daniels et al. (2005) explained,

> Eating, activity, and perceptions of weight and health are strongly influenced by cultural norms and culturally influenced attitudes and values. The relevant variables can be considered from programmatic, child, familial, and environmental perspectives that are then each specified along multiple related dimensions such as ethnic identification and related cultural attitudes, beliefs, and values; family and household characteristics; and socioeconomic status variables. (p. 2006)

One population of interest is that of Asian Americans, who experience increased risks associated with obesity at lower BMI levels (World Health Organization expert consultation, 2004) and negative influences of acculturation on obesity prevalence (Satia-Abouta, Patterson, Neuhouser, & Elder, 2002; Yang, Chung, Kim, Bianchi, & Song, 2007). To date, there are limited studies on dietary practices among Asian-American youths (AAY) in the US.

In order to target childhood obesity, it is important to understand its complexity and multiple causes, including genetic, individual, parental, familial, community, and societal influences (Davison & Birch, 2001a). However, "just knowing a list of the determinants … or of potential mediators of behavior change does not necessarily help us design more effective nutrition education strategies" (Contento, 2007, p. 53) to combat the problem. Understanding relationships between determinants and dietary behavior using theory is important. Theories provide information on what and how variables influence a behavior, and they guide and add strength to research studies and programs (Contento, 2007; Contento, 2008; Goodson, 2010; Hochbaum, Sorenson, & Lorig, 1992).

Dietary behaviors of AAY, especially from a theoretical perspective, is an understudied area in the literature. This dissertation study aims to 1) explore – via a comprehensive literature review – existing health education/health promotion theories and models used in research on child feeding/eating behaviors, 2) explore and describe dietary behaviors of children of Asian background in the U.S., and 3) explore and clarify

– using a theoretical framework – eating behaviors among a sample of Asian children in the U.S.

This dissertation is organized in a journal article format with five sections. Sections 2 through 4 are independent manuscripts to be submitted for publication in peer-reviewed journals. The following is a brief description of the dissertation contents. Appendices and other supporting documents are included at the end.

- **Section 1**: Introduction. Overview of and rationale for the dissertation project
- **Section 2**: Journal article 1. A systematic literature review of existing health education/promotion theories and models used to study eating/feeding practices for children between two and five years of age
- **Section 3**: Journal article 2. A systematic literature review of dietary behaviors of children of Asian background in the U.S.
- **Section 4**: Journal article 3. Descriptive and inferential statistics on associations between dietary behaviors of Asian children in the U.S. and factors impacting these behaviors based on a theoretical framework
- **Section 5**: Summary and conclusions. Discussion of overall project findings, implications for health education and promotion, and recommendations for future research and practice

2. PREDICTORS OF PRESCHOOL CHILDREN'S DIETARY BEHAVIORS: A REVIEW OF THEORY UTILIZATION

Introduction

Childhood overweight and obesity is a complex problem with multiple causes. One influence on obesity is diet – a factor targeted in Healthy People 2020 (U.S. Department of Health and Human Services, n.d.). Factors influencing diets include home environment, time, access to healthy foods in grocery stores or restaurants, acculturation, attitudes, beliefs, and sociocultural norms (Demory-Luce, Morales, & Nicklas, 2005; Edberg, 2007; Findholt, Michael, Davis, & Brogoitti, 2010).

Numerous studies have explored influences on diet, some utilizing theory to understand relationships between determinants and dietary behavior (Cerin, Barnett, & Baranowski, 2009; Shaikh, Yaroch, Nebeling, Yeh, & Resnicow, 2008). Theories provide information on what and how variables influence a particular behavior, and they guide and add strength to research studies and programs (Contento, 2007; Contento, 2008; Goodson, 2010; Hochbaum et al., 1992). In relation to nutrition, Cerin and colleagues (2009), in their literature review, found self-efficacy/perceived control from Theory of Planned Behavior, outcome expectations/attitude from Social Cognitive Theory (SCT), and habit from Habit Strength Theory as positively related to dietary behavior change in youths. Along with these, Shaikh and others (2008) found knowledge from Health Belief Model and social support/encouragement/influence from Social Support Theory as associated with fruit and vegetable (F&V) intake by adults.

Literature reviews have compiled theoretical constructs influencing adults and school-aged children (Cerin et al., 2009; Shaikh et al., 2008), but to date, no literature review has been conducted on theories and constructs for understanding dietary behaviors of preschool-aged children (i.e., ages 2 to 5 years). Preschool years serve as a critical period in a child's overall growth. During this time, children establish dietary habits, develop food preferences, begin exploring the environment, and start eating by themselves (Birch, 1979; Birch, 1987; Cashdan, 1994). In addition, neophobia (or fear of novel foods) emerges and is at its greatest (Addessi, Galloway, Visalberghi, & Birch, 2005; Birch, 1998). With the introduction of new foods and self-feeding, parents and caregivers play a substantial role in shaping preschool children's dietary habits (Andrews, Silk, & Eneli, 2010; Klesges, Stein, Eck, Isbell, & Klesges, 1991; Koivisto, Fellenius, & Sjoden, 1994).

The main purpose of this study, therefore, is to review and critique theories and constructs utilized in nutrition research on preschool-aged children. The authors will examine methodological characteristics, theory utilization, and study findings of that body of knowledge. A secondary aim of this review is to provide recommendations for strengthening theory utilization and diversifying nutrition research in the future.

Methods

Retrieval Procedures

This review followed the procedures outlined by Garrard (2011) in the matrix method to perform a thorough literature review. Between June and August 2011, the

authors searched multiple databases for English-language, peer-reviewed journal articles on studies that included theories and constructs for nutrition research on preschool-aged children. Electronic databases searched included MEDLINE (Ovid), Embase (Ovid), CAB Abstracts (Ovid), and CINAHL Plus with Full Text (EBSCO) using variations of dietary behavior terms (e.g., feed, food, diet, or nutrition), theory terms (e.g., theory of planned behavior, transtheoretical, attitude, modeling, or barrier), and age-related terms (e.g., preschool child). The authors also examined references of included studies for additional publications.

Inclusion and Exclusion Criteria

For inclusion in this review, studies had to (a) appear in an English language, peer-reviewed journal; (b) occur in the United States; (c) target preschool-aged children (i.e., 2 to 5 years of age) and/or their caregivers; (d) focus primarily on dietary behaviors or feeding practices; and (e) be guided by a theory, model, or set of constructs. The authors excluded studies if they were not research articles (e.g., if they were reviews, commentaries, or program reviews); focused on physical activity, dental hygiene, or general health behaviors with dietary behaviors as secondary variables; investigated breastfeeding, bottle feeding, non-nutritive sucking, or introduction of solid foods; focused on psychometrics of an instrument as opposed to behavior; or reported theoretical constructs in the findings but did not use them to guide the study. Forty articles met these criteria and composed the final sample (see Figure 1 for selection process).

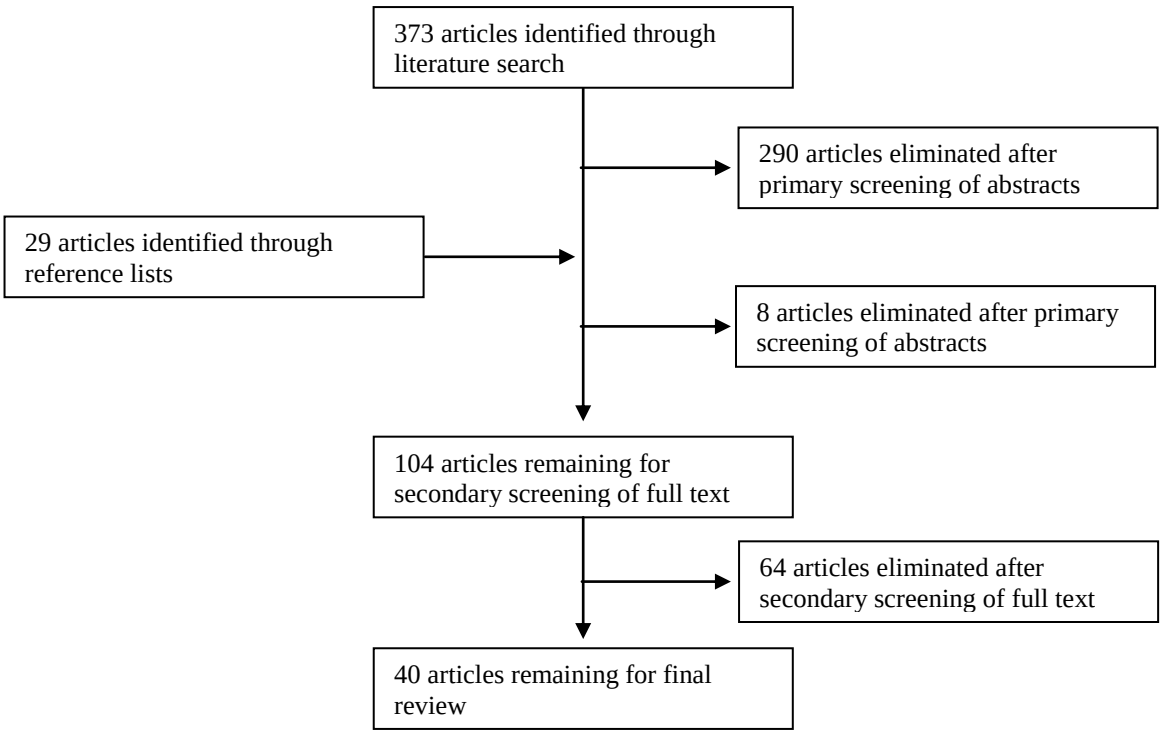

Figure 1. Literature search selection process for retrieving articles on theories and constructs used in nutrition research on preschool-aged children

Review Criteria

The authors established a coding scheme and theory assessment scale for the current review. For the coding scheme, components included sample characteristics, dependent variables, independent variables, theoretical framework, study design, analytic methods, and findings. The authors included only findings demonstrating a relationship between children's dietary behaviors and a theory element for quantitative studies. Findings for qualitative studies included themes resulting from interviews or focus groups.

To evaluate theory utilization, the authors used an instrument adapted from Delissaint and McKyer (2008). As seen in Table 1, studies that appeared to use theories

or constructs but did not specify how theory guided the study received a lower score than studies grounded in a theoretical framework. Maximum points possible were 3. A more detailed description of the instrument is provided by Delissaint and McKyer (2008).

Table 1. Criteria for assessing studies' theory utilization

Criteria	Description	Score
Theory utilization	Clear identification/operationalization of theory/constructs used	3
	Use of theory but inferred (not clearly identified)	2
	Some evidence of use of theory/constructs	1
	No evidence of theoretical basis driving research	0

Results

The authors screened 402 articles, of which 40 remained after applying inclusion and exclusion criteria (see Figure 1). A majority of articles were excluded because they did not target preschool-aged children (i.e., 2 to 5 years of age) or they did not focus primarily on dietary behaviors. For example, Black and Teti (1997) examined infants less than 2 years of age, and Osborn (1986) investigated jaundice.

All included articles were published between 1975 and 2011. Sixty-five percent (n = 26) of articles appeared in nutrition, food, or obesity-related journals; four articles appeared in public health or health behavior journals; five in medical, nursing, or biology research journals; four in psychology-related journals; and one in a social marketing journal. Of the 19 different journals in which articles appeared, the *Journal of Nutrition Education*/*Journal of Nutrition Education and Behavior* published 25% (n = 10) of the studies.

Results are presented below in three sections: studies' methodological characteristics, theory utilization, and study findings. A matrix with more details on studies' sample characteristics, dependent variables, independent variables, theoretical framework, study design, analytic methods, and findings is included in Appendix A.

Studies' Methodological Characteristics

a. Sample Characteristics

Samples ranged from 1 to 39,451 participants and included parents, children, teachers, or a combination of the three. A majority of studies (i.e., 58% or $n = 23$) sampled only parents, in which case parents completed questionnaires or participated in qualitative interviews to provide information on their own and on their children's dietary behaviors. Ten studies obtained information directly from children, either through child-appropriate instruments or observational studies. Six studies included both parents and children in their samples, and one study included teachers and children.

Children's ages ranged from 0 to 6 years. A majority of studies (i.e., 65% or $n = 26$) included children between the ages of 2 and 5 years. The remaining studies also included children outside this age range but within the 0- to 6-years range.

Samples from almost half of studies (i.e., 40% or $n = 17$) comprised low-income participants, usually from a federal assistance nutrition education program. The remaining studies did not include, did not target, or did not mention including low-income populations.

b. Study Design, Measures, and Data Analysis

Our sample comprised 32 quantitative, six qualitative, and two mixed method studies. Sixteen studies (40%) used cross-sectional quantitative questionnaires to collect data, and six studies used cross-sectional qualitative interviews or focus groups. Fourteen studies had a pretest/post-test, experimental, or quasi-experimental design. One study was a prospective observational study. The remaining studies used a combination of methods described above.

For quantitative studies or quantitative parts of mixed methods studies, 19 researchers utilized only self-reported measures of dietary behaviors (such as 24-hour dietary recalls, instrument scales, and food frequency questionnaires). Two studies used only objective/observed measures (such as plate waste). Thirteen studies used both self-reported and objective/observed measures.

In almost half of studies (i.e., 40% or n = 18), researchers analyzed their data with multiple regression, ANOVA, or ANCOVA as their highest level data analysis. Six studies used bivariate statistics (e.g., correlations or *t* tests), and eight used multivariate statistics (e.g., path analysis). The six qualitative studies employed thematic analysis or content analysis. The remaining studies were mixed methods studies.

Theory Utilization

One aim of this review was to evaluate theory utilization among nutrition research studies on preschool-aged children. Approximately 43% (n = 17) of studies received the highest score of 3, indicating a clear identification of theory/constructs and

a strong theoretical framework. Of the remaining studies, 15% (*n* = 6) inferred the use of theory without clear identification, 25% (*n* = 10) had some evidence of use of theory/constructs but failed to build a strong rationale for their use, and about 18% (*n* = 7) mentioned constructs but had no rationale for using those constructs or had no theoretical basis driving the research.

There were 56 instances of theory/construct use in studies included in this review, with 23 different theories and constructs (see Table 2).

Table 2. Types of theories/constructs in studies

Theory/Construct	# of times used	%
Parenting style/feeding style	12	21.4
Modeling/observational learning/Social Cognitive Theory	11	19.6
Attitude	6	10.7
Transtheoretical Model	4	7.1
Knowledge	3	5.4
Social Learning Theory	2	3.6
Social Marketing	2	3.6
Acculturation	1	1.8
Benefit	1	1.8
Threat	1	1.8
Health Belief Model	1	1.8
Multiple Intelligences Theory	1	1.8
Needs	1	1.8
Barriers	1	1.8
Obesity Proneness Model	1	1.8
Outcome expectations	1	1.8
Self-efficacy	1	1.8
Intentions	1	1.8
Reinforcement	1	1.8
Self-regulation	1	1.8
Self-determination theory	1	1.8
Theory of Dependent Care	1	1.8
Theory of Planned Behavior	1	1.8
Total	56	100.0%

Note: Theories were used more times than the number of articles because numerous articles used more than one theory.

A majority of articles (i.e., 70% or *n* = 28) was grounded in a single theory or construct. The other studies were polytheoretical, using either two theories/constructs (*n* = 10 articles) or four theories/constructs (*n* = 2 articles). The most commonly used theory or construct was parenting style/feeding style; 12 studies included parental control, restriction, use of food as reward, or another aspect of parenting style/feeding style. Eleven articles used modeling, observational learning, or SCT (focusing primarily on modeling for the last). Other common theories/constructs included attitude and the Transtheoretical Model.

Study Findings

The most common finding among studies was modeling's effect on children's dietary behaviors. Numerous studies found parent and teacher modeling to be positively associated with children's acceptance of novel, unfamiliar, or familiar foods (Addessi et al., 2005; Harper & Sanders, 1975; Hendy & Raudenbush, 2000); consumption of F&Vs (Nanney, Johnson, Elliott, & Haire-Joshu, 2007; Tibbs et al., 2001); low-fat eating patterns (Tibbs et al., 2001); and reduced vomiting (Nock, 2002). Mothers, according to one study, enjoyed being role models for their children and discussed the importance of being a role model in their role as mothers (White et al., 2011). Aside from parent and teacher modeling, peers served as another source of influence, although effects of peer modeling were less concrete and varied depending on age, sex, peer group, previous sharing experiences, and length of time (Birch 1980; Birch & Billman, 1986; Hendy, 2002).

Another common finding was the relationship between parental restriction/control and children's dietary behaviors. Restriction of children's eating was associated with less adequate short-term regulation of energy intake (Birch & Fisher, 2000), increased intake and negative self-evaluation about eating when allowed free access to restricted foods (Branen & Fletcher, 1994; Fisher & Birch, 2000), and negative psychological outcomes among overweight girls (Davison & Birch, 2001b). In addition, one study found greater increases in BMI and body fat levels with parental restriction (Hood et al., 2000), although others found fluctuating results based on maternal BMI (Powers, Chamberlin, van Schaick, Sherman, & Whitaker, 2006) and differences in levels of control based on child BMI (Seagren & Terry, 1991). Expanding beyond parental restriction and control, there were reported beneficial effects of authoritative feeding on F&V availability and consumption (Patrick, Nicklas, Hughes, & Morales, 2005).

Several studies reported findings on knowledge, attitudes, and perceptions. According to one study, parents with higher knowledge scores had children who consumed less fat and more fiber (Colavito, Guthrie, Hertzler, & Webb, 1996). Other studies reported negative effects; parents' attitudes (such as viewing children as picky eaters) and perceptions (such as concerns about children being overweight) were related to negative feeding and eating patterns (Horodynski, Stommel, Brophy-Herb, Xie, & Weatherspoon, 2010; Musher-Eizenman, Holub, Hauser, & Young, 2007). In contrast to these results, Hudson, Stotts, Pruett, and Cowan (2005) found knowledge and attitudes to not be correlated with children's dietary behaviors. Among qualitative studies, there

were numerous themes related to attitudes and perceptions, including benefits of offering new foods (Bellows, Cole, & Anderson, 2006), barriers to offering new foods, importance of parental responsibility (Brewis & Gartin, 2006; Omar, Coleman, & Hoerr, 2001), feeding goals and beliefs about good nutrition (Brewis & Gartin, 2006; Omar et al., 2001; Sherry et al., 2004), and not using food as reward (Hoerr, Utech, & Ruth, 2005).

Four studies used Transtheoretical Model constructs to explore F&V consumption (Bensley et al., 2006; Hildebrand & Betts, 2009; Hildebrand & Shriver, 2010; Shriver, Hildebrand, & Austin, 2010). Parents in later stages (i.e., preparation and action/maintenance stages) used cognitive and behavioral processes more often, were more confident in their ability to serve F&Vs, perceived less barriers to serving F&Vs, and served more F&Vs to their children than parents in lower stages (i.e., precontemplation/contemplation stages) (Hildebrand & Betts, 2009; Hildebrand & Shriver, 2010; Shriver et al., 2010). To complement these findings, Bensley et al. (2006) found wichealth.org to be effective in moving parents from earlier to later stages.

Less common findings from the reviewed studies included effects of social norms (Andrews et al., 2010), perceived behavioral control, perceived response-efficacy, acculturation (Elder, Broyles, Brennan, de Nuncio, & Nader, 2005), and use of special meals (Hendy, Williams, Riegel, & Paul, 2010) on children's dietary behaviors. In addition, several studies evaluated theory-based programs or interventions for changing dietary behaviors, for which some had positive effects (Cason, 2001; Harvey-Berino & Rourke, 2003; Johnson, Bellows, Beckstrom, & Anderson, 2007; Lawatsch, 1990;

Leonard, D'Augelli, & Smiciklas-Wright, 1984) and one had no effect (Horodynski, Hoerr, & Coleman, 2004).

Discussion

The main purpose of this paper was to review and critique theories and constructs utilized in nutrition research on preschool-aged children. The authors identified 40 articles, of which 17 had clear identification of theory/constructs and a strong theoretical framework. This finding is simultaneously encouraging and discouraging. Although it is encouraging to see theory-driven studies, several of these were written by the same authors (some using the same dataset and/or theoretical framework). More nutrition education researchers must be trained to use theory to inform their research and practice (Buchanan, 2004).

Over half the studies included in this review (a) inferred the use of theory without clear identification (15%), (b) had some evidence of theory/construct use but failed to build a strong rationale for its use (25%), or (c) mentioned constructs but had no rationale for using those constructs or had no theoretical basis driving the research (18%). Rather than simply including theories or constructs to make research theoretical, authors must elaborate on why they chose a particular theory or construct and how it (of all theories and constructs) is most suitable for their study.

There were 23 different theories and constructs in this review, with parenting style/feeding style, modeling/SCT, attitude, Transtheoretical Model, and knowledge as those most frequently used. These findings corroborate observations by Achterberg and

Miller (2004) that the knowledge-attitude-behavior model (due to simplicity), Transtheoretical Model (due to its storytelling ability), and SCT (due to productivity) are widely used in nutrition education research. In addition, of the 23 different theories and constructs in this review, three were used in half the instances of theory/construct use, and seven were used 70% of the time. More work must be done to further develop and explore theories in nutrition research (especially beyond the individual level), test a variety of theories, and establish which theories work best in given situations and populations (Achterberg & Miller, 2004).

The methodological characteristics of the reviewed studies had little variability. A majority used quantitative methods, sampled from parents only, analyzed cross-sectional data, reported only self-reported measures of dietary behaviors, and employed lower-level data analyses (such as *t* tests, linear regression, and ANOVA). The nutrition field must include studies with different methodological characteristics to diversify findings, provide different perspectives on behaviors of interest, and capture the complexity of dietary behaviors. For example, Thompson (2006) explains that "a critical imperative of social science research is that we ought to *insure the fit of our analytic model with our model of reality*" (p. 215), such as multivariate analyses for complex models of reality (Thompson, 2007). Aside from appropriate analyses, it is important to have age-appropriate data collection instruments (especially for young children), qualitative approaches to delve deeper into understanding dietary behaviors, and stronger training in research methods for nutrition researchers.

Despite the contribution this review makes, by organizing and critically examining this literature, it suffers from specific limitations. First, the search strategies used by the authors may have resulted in unintentional exclusion of articles, especially those not indexed in the databases or fitting the search terms used. For example, the authors were unable to search variations of every theory term and may have, thus, overlooked articles utilizing less common theories. Second, the authors of this review excluded studies conducted outside the U.S. in order to focus primarily on U.S.-based research. Future research on studies conducted outside the U.S. may reveal additional insights for nutrition research. Last, this review summarized findings from research articles and excluded reviews of theory-based programs. Such practice-related literature is valuable to nutrition education researchers and practitioners, and future research should include a systematic review of actual interventions and programs.

Implications for Research and Practice

Despite limitations, this review provides insight into theory use in current nutrition research on preschool-aged children. First, although the authors found numerous studies employing theory, more effort is needed to expand theory utilization in nutrition research. Currently, the same theories/constructs are being used, and the same authors are using them. It is important to train more researchers to use theory in their research, especially those theories addressing factors beyond the individual level. Second, findings illustrate the uniformity of methodological characteristics in nutrition research. In order to capture the complexity of reality, it is important to ensure that the

studies' methodologies are appropriate for research questions. Additional training in diverse research methods may be needed for nutrition researchers. Last, the findings from the reviewed studies illustrate the importance of modeling and parenting practices (particularly parental control/restriction) on preschool-aged children's dietary behaviors. Modeling has a positive impact, while parental control has a negative impact. These findings should be emphasized in future research and practice related to young children and/or their caregivers.

3. WHAT ARE ASIAN-AMERICAN YOUTHS CONSUMING? A SYSTEMATIC LITERATURE REVIEW

Introduction

Childhood obesity and its consequences are important concerns for health professionals and the public. Between 1971 and 2008, the percentage of obesity among U.S. children aged 2 to 19 years tripled from 5% to 17%. Specifically for children aged 2 to 5 years, prevalence of obesity doubled from 5% to 10% (Ogden & Carroll, 2010).

Ethnic minorities and immigrants, including those from Asian backgrounds, have disparate health outcomes when compared to non-Hispanic whites and other ethnic groups (Taylor et al., 2005; U.S. Department of Health and Human Services, 2005). First, increased risks associated with obesity occur at lower BMI levels in Asians because of the lower mean BMI observed in Asian populations and the tendency towards abdominal obesity (World Health Organization expert consultation, 2004). Second, although levels of obesity are lower among recent U.S. immigrants, with time, AAY born in the U.S. are just as prone to obesity as youths of non-U.S. immigrants (Bates, Acevedo-Garcia, Alegría, & Krieger, 2008; Harris, Perreira, & Lee, 2009; Popkin & Udry, 1998). Last, the California Department of Health Services (2006) revealed an alarming trend; there was more rapid increase in overweight prevalence for low-income Asian-American, Native Hawaiian/and other Pacific Islander youths than for any other ethnic group.

There are few studies on dietary practices among AAY, but current research illuminates alarming trends. Asians usually immigrate to the United States with similar diets as they possessed in Asia but then begin to incorporate westernized foods. One study revealed increased consumption of cookies, cakes, and sweet buns as breakfast items for children (Lau, Ma, & Ng, 1998), and another study found consumption of salty snacks, desserts, and sweetened beverages at snack time (Demory-Luce et al., 2005). Such acculturated diet and acculturation-related changes in dietary behaviors may be to blame for increased prevalence of obesity and obesity-related diseases (Satia-Abouta et al., 2002; Yang et al., 2007).

Many studies have explored overweight, obesity, and dietary practices among children, but there are limited studies on children of Asian background in the U.S. This study will be conducted to determine what information is currently available regarding eating behaviors among Asian youth in the U.S. The aims of this review are three-fold: (a) to review literature regarding Asian-American youths' dietary behaviors (AAYDB), (b) to critically evaluate the methodological quality of such research, and (c) provide recommendations for future nutrition-related research on AAY. For the purposes of this review, Asians are defined as people with origins in the Far East, Southeast Asia, or the Indian subcontinent (Office of Management and Budget, 1997), and Asian Americans are those Americans descending from these population groups.

Methods

Retrieval Procedures

This review followed the matrix method systematic review procedures outlined by Garrard (2011). In October and November 2011, the authors searched electronic databases of MEDLINE (EBSCO), CINAHL Plus with Full Text (EBSCO), and Embase (Ovid) for English-language, peer-reviewed journal articles related to AAYDB. Search terms included variations of dietary behavior terms (e.g., feed, food, diet, or nutrition) and Asian population terms (e.g., Asian, Chinese, or Vietnamese) with limits on child age and English language. The authors also perused references of included studies for more publications.

Inclusion and Exclusion Criteria

In order to be selected for review, studies had to (a) appear in an English language, peer-reviewed journal; (b) occur in the United States; (c) present findings for Asians in the U.S.; (d) primarily include preschool-aged or school-aged children (i.e., 2 to 11 years of age) and/or their caregivers; and (e) focus primarily on dietary behaviors or diets. The authors excluded studies that were not research articles (e.g., if they were reviews, commentaries, or program reviews); focused on food poisoning or food allergy; investigated physiological or nutritional aspects of nutrition (e.g., immunoglobulin, plasma, fatty acid levels, vitamins, or nutritional status); studied feeding practices/styles or parents' perceptions of feeding; or investigated breastfeeding, bottle feeding, non-

nutritive sucking, or introduction of solid foods. Fifteen articles met these criteria and were included in the final sample (see Figure 2 for selection process).

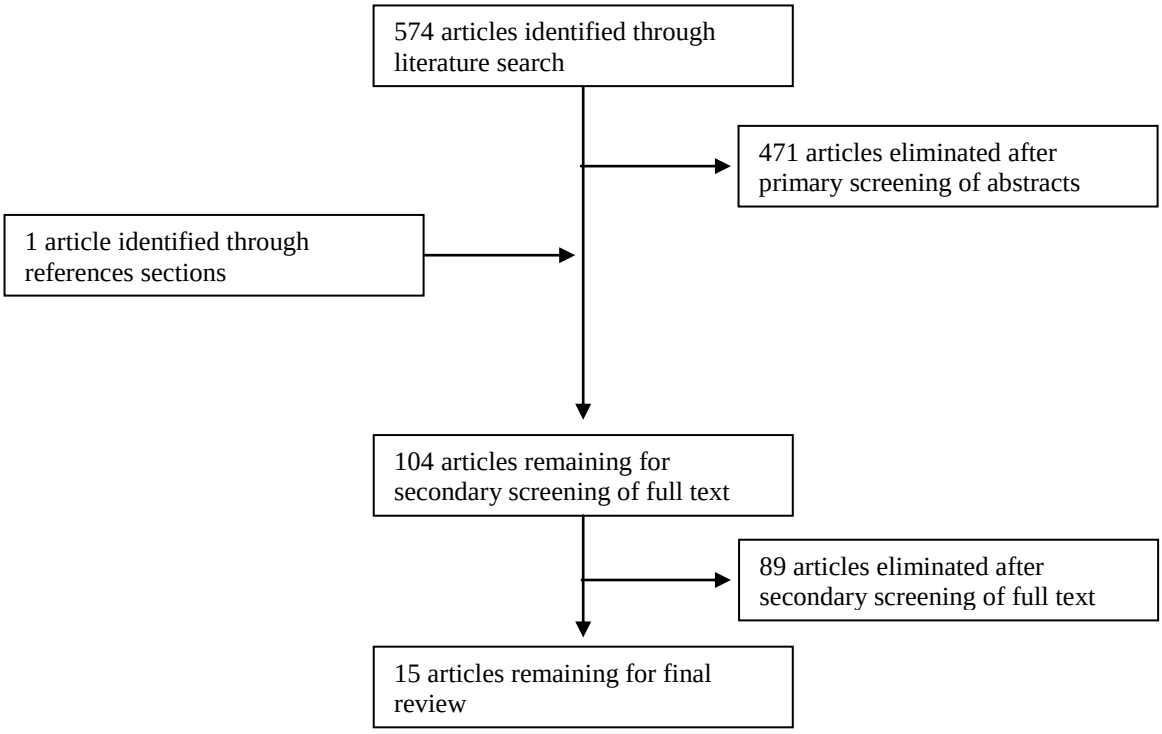

Figure 2. Literature search selection process for retrieving articles on Asian-American youths' dietary behaviors

Review Criteria

The authors created a coding scheme and methodological quality scale (MQS) for the current review. The coding scheme included sample characteristics, dependent variables, independent variables, theoretical framework, study design, analytic methods, and findings related to children's dietary behaviors. To evaluate methodological quality, the authors adapted the MQS from Michel (2012), Sosa (2009), and Zhang and Goodson

(2011). As seen in Table 3, the final MQS included ratings for theoretical framework, study design, ethnicity, participant description, measures, validity, reliability, data analysis, and effect size; maximum possible points were 17.

Table 3. Criteria for assessing studies' methodological quality

Methodological Criterion	Description	Score
Theoretical framework	Presented explicit theoretical framework	2
	Presented implicit theoretical framework	1
	Did not present a theoretical framework	0
Study design	Longitudinal	2
	Cross-sectional	1
Ethnicity	Reported by subgroup (e.g., Chinese American)	2
	Reported as Asian or Asian American	1
Participant description	Parent and child	2
	Child	1
	Parent	0
Measures	Reported both self-report and objective/observed measures of diet	3
	Reported only objective/observed measures of diet	2
	Reported only self-reported measures of diet	1
Validity	Validity coefficients reported	1
	Did not report any validity coefficients	0
Reliability	Reliability coefficients reported	1
	Did not report any reliability coefficients	0
Data analysis (Highest level)	Multivariate statistics (canonical correlation analysis, discriminant function analysis, path analysis, structural equation modeling, MANOVA, MANCOVA)	3
	Multiple regression, ANOVA, ANCOVA	2
	Bivariate statistics (Pearson *r*, *t* tests)	1
	Qualitative (content analysis)	1
	Univariate statistics (descriptive)	0
Effect size	Reported effect sizes (R^2, Cohen's *d*, eta^2, percent of variance accounted for)	1
	Did not report effect sizes	0

Results

Results are presented below in three sections: studies' characteristics, studies' methodological characteristics, and empirical findings. A matrix with more details is included in Appendix B.

Studies' Characteristics

As seen in Figure 2, the authors screened 574 articles; fifteen of which met inclusion and exclusion criteria. Over 40% of screened articles were excluded because they did not focus primarily on dietary behaviors and instead focused on diet-related diseases or physiological markers of diet. For example, Pham and Rudner (2000) discussed peanut allergies, and Abrams et al. (2005) investigated inulin-type fructans. An additional 30% of studies occurred outside the United States, such as in Korea (Choi et al., 2011) and England (Furnham & Patel, 1994). The final articles represented 10 different peer-reviewed journals from various disciplines, including nutrition (n = 8 articles), nursing or health care (n = 3 articles), public health or disease prevention (n = 2 articles), and minority health (n = 2 articles). All articles were published between 1986 and 2011, with a majority (i.e., 87%) published after 2000.

Studies' Methodological Characteristics

a. Sample Characteristics

Sample sizes ranged from 40 to 3,758 participants. Ten studies gathered data from both parents and children, two studies from children only, and three studies, only

from parents. Forty percent of studies (*n* = 6 articles) sampled children aged 8 to 10 years; remaining children ranged in age from 2 months to 18 years.

Eleven studies purposively sampled Asian Americans, including Chinese Americans (*n* = 8), Southeast Asians (*n* = 1), and Hmongs (*n* = 2). The remaining studies did not purposively sample Asian Americans but included them. Seven studies sampled Asians from California (mainly San Francisco); two studies from Houston, Texas; one from Lincoln, Nebraska; one from Pennsylvania; two from Minnesota, and two from numerous states.

b. Study Design, Measures, and Data Analysis

The sample comprised eight quantitative, three qualitative, two mixed methods, and two evaluation studies. The quantitative, qualitative, and mixed methods studies were cross-sectional, and the two evaluation studies were longitudinal (i.e., a pre-/post-test study and a randomized controlled study) assessing the effectiveness of interventions.

A majority of studies (*n* = 13) obtained measures of diets or dietary behaviors through self-reported measures exclusively (e.g., 24-hour diet recalls or food frequency questionnaires). The remaining two studies also used objective/observed measures of diet, such as blood tests or observations during meals, to complement self-reported measures. A majority of studies (*n* = 10) reported both validity and reliability coefficients of their data, three reported only validity or only reliability, and two reported no coefficients.

For data analyses, four studies utilized multiple regression, ANOVA, or mixed-effects models as their highest level data analysis. Four studies used multivariate statistics (e.g., multivariate linear regression or principal components analysis), three used bivariate statistics (e.g., correlations, Chi-square, and *t* tests), and one used univariate/descriptive statistics. The remaining three studies were qualitative and included coding and thematic analysis. About half of studies ($n = 7$) reported effect sizes (e.g., R^2 or percent of variance accounted for), and about half ($n = 8$) did not.

c. Theoretical Framework

About half of reviewed studies ($n = 7$) did not present a theoretical framework. Six studies presented an explicit theoretical framework, including Ecological Model of Childhood Obesity Prevention (Chen, Weiss, Heyman, Vittinghoff, & Lustig, 2008), SCT (Chen, Weiss, Heyman, & Lustig, 2010; Cluskey et al., 2008; Olson, Chung, Reckase, & Schoemer, 2009; Vue & Reicks, 2007), and Reciprocal Determinism Model with Circumplex Model of Marital and Family Systems (Lv & Brown, 2010). The remaining two studies included an implicit theoretical framework (i.e., inferred the use of theory without clear identification or had some evidence of theory/constructs but failed to build a strong rationale for them).

d. Methodological Quality Scale

Table 4 provides the distribution of MQS points among studies. No studies received the maximum 17 points, but four studies received 14 points (or 82%). The

lowest score received was 6 points (or 35%). Over half of studies (*n* = 9 studies) received 9 or more points for a score above 50%.

Table 4. Distribution of MQS characteristics across 15 reviewed studies

Methodological Criterion	Description	*n* studies	Percentage (%)
Theoretical framework	Explicit theoretical framework	6	40.0
	Implicit theoretical framework	2	13.3
	No theoretical framework	7	46.7
Study design	Longitudinal	2	13.3
	Cross-sectional	13	86.7
Ethnicity	Reported by subgroup (e.g., Chinese American)	10	66.7
	Reported as Asian or Asian American	5	33.3
Participant description	Parent and child	10	66.7
	Child	3	20.0
	Parent	2	13.3
Measures	Both self-report and objective/observed measures of diet	2	13.3
	Only objective/observed measures of diet	0	0.0
	Only self-reported measures of diet	13	86.7
Validity	Validity coefficients reported	11	73.3
	Did not report any validity coefficients	4	26.7
Reliability	Reliability coefficients reported	12	80.0
	Did not report any reliability coefficients	3	20.0
Data analysis	Multivariate statistics	4	26.7
(Highest level)	Multiple regression, ANOVA, ANCOVA	4	26.7
	Bivariate statistics	3	20.0
	Qualitative	3	20.0
	Univariate statistics	1	6.7
Effect size	Reported effect sizes	7	46.7
	Did not report effect sizes	8	53.3
Total points (out of 17)	≤ 8 points	6	40.0
	9-12 points	4	26.7
	≥ 13 points	5	33.3

Empirical Findings

a. What are AAY Consuming?

Betts and Weidenbenner (1986) found milk to be the most frequently consumed food item among Southeast Asian children. Following milk, the next most consumed were fruit (more specifically, orange juice), meat, unenriched white rice, and vegetables. Breakfast cereals, eggs, bread, cookies, cheese, and noodles were also frequently reported by participants. In addition, Chinese-American children in another study reported eating approximately seven high-fat and high-sugar items every day (Chen & Kennedy, 2005), and daily intake of soda and fruit-flavored drinks among Hmong girls was greater than intake of milk or soy milk (Vue & Reicks, 2007). The mean energy intake for Asian Americans was 1,494 kcal per day with 35% of total energy from fat (Cullen, Lara, & de Moor, 2002).

When comparing food consumption to other racial groups, Asian Americans consumed more fruit and juice than European Americans (Reynolds et al., 1999), consumed fewer vegetables than European Americans and African Americans (Reynolds et al., 1999), and ate out less often than non-Hispanic whites (Cluskey et al., 2008). In addition, AAY reported lower energy intakes and fewer low-fat practices than white children (Cullen et al., 2002).

b. Acculturation, Diet, and Health Status

Acculturation and AAYDB was a common theme among studies. Asian-American parents preferred Asian foods, while children preferred Western foods

(Cluskey et al., 2008; Lv & Brown, 2010). In addition, diets were characterized by both types of foods. Specifically among Chinese Americans, foods consumed at home for breakfast and snack were mainly American or shared by both cultures; foods for dinner were mainly Chinese (Demory-Luce et al., 2005; Lv & Brown, 2010). At child care centers, children consumed food and drinks classified as American or shared by both cultures (Demory-Luce et al., 2005). Chinese foods included mixed dishes, bread, vegetables, meat, and soup. American foods included desserts, sweetened beverages, bread, candy, salty snacks, cereals, and meat. Foods of both cultures included dairy, fruits, and fruit juice. In agreement with these results, a sample of Hmongs in California reported eating both Hmong and American foods (Kim, Harrison, & Kagawa-Singer, 2007).

Acculturation also had a relationship with children's weight and health status. Children of less-acculturated mothers were more likely to be overweight or have a higher BMI than children whose mothers were more acculturated (Chen, 2009; Chen & Kennedy, 2005; Chen, Weiss, Heyman, & Lustig, 2011; Chen & Wu, 2008). In addition, lower levels of parental acculturation were related to higher cholesterol in children (Chen & Wu, 2008).

c. Other Findings

Articles reported other findings on AAYDB. Among these were findings related to relationships between diet and health status. Chen et al. (2011) found F&V intake in Chinese-American children to be negatively associated with waist-to-hip ratio and

vegetable intake to be positively related to diastolic blood pressure (Chen & Wu, 2008). Chen and Wu (2008) also found overweight and non-overweight Chinese-American children to have similar rates of dietary intake.

One article presented findings on effects of parenting style on diets. Chen and Kennedy (2005) reported a significant relationship between a more democratic parenting style and higher BMI, higher sugar intake, and higher fat intake in Chinese-American children.

Two studies specifically explored calcium intake among Asian youth (Olson et al., 2009; Vue & Reicks, 2007). Olson et al. (2009) reported Asians as composing households with positive parental influences for availability of milk and dairy, but all parents in these households were equally likely to have children who consumed or did not consume calcium-enriched foods. Household influences related to calcium consumption included parent modeling, making food and beverages available at home, expectations for intake, and knowledge of calcium need (Vue & Reicks, 2007).

Two studies reported findings related to health education programs (Chen et al., 2008; Chen et al., 2010). Both found statistically significant improvements in study outcomes (e.g., food choices, nutrition and activity knowledge, BMI, blood pressure, fat intake, and F&V intake) for Chinese-American children.

Discussion

The first two purposes of this paper were to review literature regarding AAYDB and critically evaluate the methodological quality of such research. Regarding the first

objective, the authors found 15 articles. Regarding the second objective, methodological quality points ranged from 6 to 14 (out of 17), with a majority of studies (*n* = 9 studies) receiving 9 or more points.

Based on these findings, it is clear that more research is needed on dietary behaviors of Asian youth in the U.S. Asians – either alone or in combination with other races – constitute approximately 6% (or 17 million) of the total U.S. population and increased by 43% between 2000 and 2010 (Jones, 2011).

Not only are Asian Americans the fastest growing racial group in the U.S., they are a population with unique challenges. Asian Americans "are often living in between Eastern and Western culture … [so that] one generation – parents and grandparents – have a different attitude towards food than the younger generation" (Chen, 2011, p. 80). Within families, there are differences in food preferences between parents and children (Cluskey et al., 2008; Lv & Brown, 2010), creating challenges for parents "to know how to prepare American food, what is best for the kids, and what is available at their local markets" (Chen, 2011, p. 80) and creating disconnect between what parents eat and what children eat (Lv & Brown, 2010).

In addition, research has shown negative effects of acculturation on Asian Americans' diets and health (Satia-Abouta et al., 2002; Yang et al., 2007). Understanding reasons for acculturation is crucial. It is possible that acculturation partially overlaps with access and availability, but limited research has looked into why, how, and what about acculturation influences diet and health. As Vue, Wolff, and Goto (2011) expressed:

> Immigrants and refugees bring with them unique perspectives, skills, and traditions such as healthful eating habits with a balanced diet, which have the potential to make great contributions to the prevention of obesity in this country. To understand the assets of immigrants/refugees, as well as the challenges they face in their obesity prevention efforts, it is important to understand immigrants' and refugees' diverse perspectives on food habits, acculturation, and health. (p. 199)

One study (Chen & Kennedy, 2005) in this literature review revealed negative effects of democratic parenting – a result that seems counterintuitive to current research regarding parenting and diet (Clark, Goyder, Bissell, Blank, & Peters, 2007). In their article, Chen and Kennedy (2005) explained that there may have been limitations in the instrument they used, which measured authoritarian and democratic aspects of parenting styles and may not have captured important aspects of the parenting style exemplified by Asian parents: *chiao shun* (Chao, 1994). Future research on Asian parenting and dietary behaviors (if correctly measured and assessed) may reveal a positive relationship between *chiao shun* and children's health/weight status (Stewart et al., 1998) in the short- and long-term.

More research is also needed to strengthen current research on AAYDB. About half the studies included in this review were written by Chen and her colleagues on Chinese-American children aged 8 to 10 years in northern California. First, Chinese Americans do not represent all Asian Americans; "the term 'Asian' does not

acknowledge the vast diversity of such a heterogeneous population with their different religious and cultural practices" (Sekhon, 1996, p. 48). The diets and associated factors of a particular group may not reflect those of other Asian-American groups. Thus far, this review captures research on Chinese Americans, Hmong Americans, Vietnamese Americans, and Cambodian Americans, but more research is needed on and beyond these ethnic groups. Second, Asians live across the U.S., but current research is mainly limited to California, Texas, Nebraska, Pennsylvania, and Minnesota. Food practices may be influenced by geographical location, so more research is needed to explore Asian-American diets around the U.S. Last, more research is needed on different youth age groups. As Baranowski, Cullen, and Baranowski (1999) explained,

> The influences on eating patterns of children (who may be dependent on parents) are likely different from influences on eating patterns of adolescents (who often are attempting to break their dependence on parents), which in turn are likely different from influences on food choices of adults. Finer age breakdowns might be enlightening… (p. 19)

In order to target childhood obesity, health professionals must understand the diets of other age groups beyond late childhood years (as is currently represented in research on AAYDB). Particularly, it is during earlier ages that dietary habits and preferences of children are formed (Birch, 1979; Birch, 1987; Cashdan, 1994).

The studies in this review had relatively strong methodological quality, but some areas need diversification. Most of the reviewed studies utilized quantitative methods, analyzed cross-sectional data, reported only self-reported measures of diets, and did not present an explicit theoretical framework, which is consistent with current nutrition research (see Section 2). These methodological aspects need to be addressed in order to strengthen current research and expand findings. Strong methodological practices include purposively sampling specific ethnic groups, reporting validity and reliability coefficients, reporting effect sizes, and using an array of analytic methods.

Limitations and Recommendations

The authors must note some limitations of the current review. First, even though authors searched numerous databases and references sections and used several key terms in searches, it is possible that some articles relevant to this review were overlooked. Second, this review focused on studies conducted in the United States, exclusively. More reviews are needed to look at Asian diets in other countries, especially in other western countries, to explore how diets change upon immigration to other locations and acculturation into other cultures. Lastly, this review examined studies that included preschool-aged or elementary school-aged children (i.e., 2 to 11 years of age) and/or their caregivers. The authors chose this age group because of specific nutritional requirements and concerns for 2- to 11-year-olds (Nicklas & Hayes, 2008), but nutrition research of different age groups may reveal additional insights for nutrition research.

Implications for Research and Practice

Findings from the current review may inform health education and promotion programs and services for Asian Americans in the U.S. With a better understanding of Asian-American diets, increasing awareness among Asian Americans about issues related to diet (e.g., increased chronic disease, decreased academic performance) is crucial (Chen, 2011). To do so, researchers and practitioners must not only target children but target parents, grandparents, and families because of the importance of families in Asian cultures. Health professionals must be culturally competent and trained to work with families of different Asian backgrounds.

Findings also provide direction for future research on AAYDB. First, stronger methodology in areas of study design and measures are needed. Second, findings from this review revealed effects of acculturation on diet and health status, so more research in this area may help Asian Americans maintain healthy aspects of their current diets, while incorporating healthy aspects of western diets.

4. FACTORS THAT INFLUENCE FRUIT AND VEGETABLE CONSUMPTION AMONG ASIAN-AMERICAN YOUTH ON TEXAS WIC

Introduction

Childhood overweight and obesity is a growing public health concern. From 2007 to 2008, the prevalence of overweight and obesity among children and adolescents aged 2-19 years was 29%; it was 17% specifically for preschool-aged children (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Not only are rates high, trends are also alarming. From 1971 to 2008, prevalence of obesity among children and adolescents aged 2-19 years tripled from 5% to 17% and doubled from 5% to 10% for preschool-aged children (Ogden & Carroll, 2010). These rates have implications for numerous physical and emotional health conditions, including high blood pressure, diabetes, heart disease, and depression (Daniels, 2006b).

One factor related to overweight and obesity is nutrition. Because eating habits and preferences are learned early in life (Birch & Fisher, 1998; Nicklas & Hayes, 2008; Nicklas et al., 2001), preschool years are a critical period for establishing dietary behaviors. Children start exploring the environment, begin eating by themselves, and experience neophobia (or fear of new foods) (Addessi et al., 2005; Birch, 1979; Birch, 1987; Birch, 1998; Cashdan, 1994). These habits and preferences not only influence obesity risk during preschool years, but children who are obese during this time are more likely to be obese as adolescents and adults (Serdula et al., 1993).

Low-income children also serve as another important population for nutrition education and research. Obesity prevalence among this population increased from 12% in 1998 to 15% in 2008 (Centers for Disease Control and Prevention, 2009). Rates in Texas were higher; obesity prevalence was 16% in 2008. Low-income populations have poor access to supermarkets with healthy foods and have greater availability of fast-food restaurants with energy-dense foods (Larson, Story, & Nelson, 2009).

In addition to preschool age and income level, race is another factor to consider. Asian Americans have disparate health outcomes concerning overweight and obesity. With lower mean BMI and tendency towards abdominal obesity in Asian populations, risks associated with obesity occur at lower BMI levels in Asians than in other racial groups (World Health Organization expert consultation, 2004). In addition, levels of obesity are lower among new immigrants, but with time, Asian-American adolescents born in the U.S. are more likely to be obese than first generation residents and are just as prone to obesity as youth of non-immigrants (Bates et al., 2008; Harris et al., 2009; Popkin & Udry, 1998). Although there are limited studies on dietary behaviors among AAY (see Section 3), current research reveals frequent consumption of milk, fruit, meat, unenriched white rice, and vegetables (Betts & Weidenbenner, 1986); increased preference and consumption of Western foods (Cluskey et al., 2008; Demory-Luce et al., 2005; Lau et al., 1998; Lv & Brown, 2010); and frequent consumption of high-fat and high-sugar items (Chen & Kennedy, 2005).

As independent factors, preschool age, income level, and race each play an important role in nutrition, overweight, and obesity, but what are the effects when all

these factors intersect? The purpose of this study is to investigate the dietary behaviors of low-income Asian-American preschoolers. More specifically, participants in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) are of interest. Not only do WIC participants have incomes below 185% of the federal poverty level, they must also be at nutritional risk (e.g., anemia, underweight, poor diet, and history of poor pregnancy outcomes) (National WIC Association, 2011). In addition, WIC changed their food packages in October 2009 to include fresh F&Vs, whole grains, and lower fat milk.

Theoretical Framework

Theories and models can provide an effective framework for studying dietary and feeding behaviors of preschool-aged children (see Section 2). Examples used in prior studies include parenting style/feeding style, modeling, SCT, and attitude. For the purposes of this study, the authors will use SCT to guide analyses.

Albert Bandura's SCT "favors a model of causation involving triadic reciprocal determinism" (Bandura, 1989, p. 2) in which "behavior, cognition and other personal factors, and environmental influences all operate as interacting determinants that influence each other bidirectionally" (p. 2). SCT differs from one-sided determinism, which explains behaviors as controlled by either environmental determinants (e.g., situational influences and external stimuli) or by personal factors (e.g., perceptions and characteristics within a person) (Bandura, 1986; Bandura, 1989). The three determinants may not influence each other simultaneously and may not have influences of equal

strength but all play roles on each other. Figure 3 illustrates this concept of triadic reciprocality.

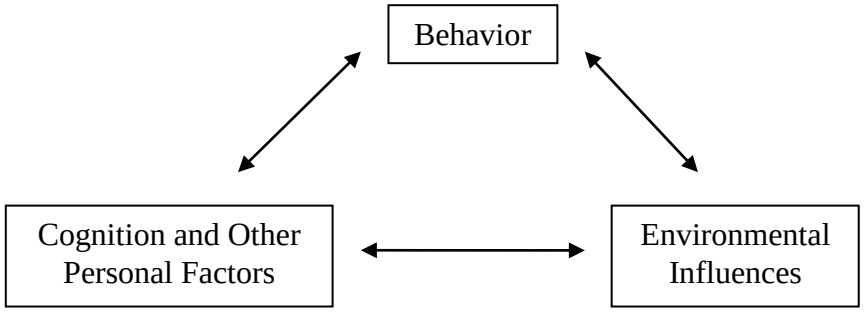

Figure 3. Social Cognitive Theory's reciprocal triad

Aside from reciprocal determinism, other important constructs to SCT include environment, situation, behavioral capability, expectations, expectancies, self-control, observational learning (or vicarious learning/modeling), reinforcements, self-efficacy, and emotional coping responses (Glanz, Rimer, & Lewis, 2002). Definitions of each construct are included in Appendix C.

SCT serves as an appropriate model for understanding child nutrition. Three prior studies on preschool nutrition have used SCT in the past (Hendy & Raudenbush, 2000; Hendy, 2002; Tibbs et al., 2001) but have focused on modeling. This study will incorporate other aspects of SCT, including environment, behavioral capability, observational learning, and reciprocal determinism. In addition, in regards to preschool nutrition, caregivers and children are both influential, but prior studies have focused solely on caregivers or children. This study will incorporate both actors as a dyad and

explore the child's and caregiver's cognitive, behavioral, and environmental influences on F&V consumption of Asian preschool-aged children in the U.S.

Methods

This study used secondary data from the Texas Food and Nutrition (TEXFAN) questionnaire developed by the Institute for Obesity Research and Program Evaluation at Texas A&M AgriLIFE Research and Texas WIC. The purpose of the original TEXFAN project was to investigate the impact of WIC food package changes on dietary and feeding habits of WIC participants (Vaughan, 2010). Data were collected from a purposive sample of 13,879 WIC participants in Texas. Participants completed self-administered TEXFAN questionnaires during their scheduled WIC nutrition education classes, and participants provided consent. More details about study design and methodology are described in Vaughan (2010). Texas A&M University and Texas Department of State Health Services Institutional Review Boards approved all study procedures.

Study Sample

A total of 13,879 WIC participants completed TEXFAN questionnaires: 6,884 in winter 2008 before food package changes and 6,995 in summer 2010 after food package changes. Participants included women who were pregnant or postpartum, had an infant less than one year of age, and/or had a child less than five years of age.

For the purpose of this study, the authors included only WIC participants who endorsed “Asian, non-Hispanic” or “Asian, Hispanic” as their race and who reported having a child between two and five years of age. The final sample size was 68 caregiver-child pairs, with 36 (52.9%) before food packages changes and 32 (47.1%) after.

Instrument and Measures

The TEXFAN questionnaire comprised 122 questions in four sections: family, adult, infant, and child. Further details about development, establishing validity, and testing of the TEXFAN questionnaire are described in Vaughan (2010). A complete copy of the questionnaire is provided in Appendix D.

The present study includes three types of questions from the adult and child sections: caregiver and child characteristics, food frequencies for both caregiver and child, and SCT variables (i.e., behavior, cognition, and environment). Caregiver characteristics included sex (male, female), age, education level (“1st-6th grade” through “Bachelor’s degree or higher”), employment status (no, yes-part time, yes-full time), non-border/border location, and urban/rural location; child characteristics included sex (male, female) and age. The authors used self-reported zip codes to determine urban/rural location using rural-urban commuting area codes (U.S. Department of Agriculture Economic Research Service, 2005) and to determine non-border/border location using ZIP Code tabulation areas (U.S. Census Bureau, n.d.).

To measure food frequencies, respondents answered how often they and their child consumed each of the following: 100% juices; artificially sweetened drinks; sugar sweetened drinks; fruit; vegetables (e.g., salad, carrots, or sweet potatoes); fried potatoes; potatoes; other vegetables (not including carrots, potatoes, or salad); whole-wheat tortillas; corn tortillas; whole-wheat or whole grain bread; brown rice; oatmeal; white bread; white flour tortillas; and white rice. These food frequency questions were scored using a 7-point ordinal scale from "never or less than once per week" to "4 or more times per day."

To assess SCT variables, respondents answered several questions, which the authors grouped into environment, cognition, and behavior variables. Environment variables included urban/rural location, non-border/border location, caregiver's acculturation level (measured by "What language is spoken most often at home?"), old/new food package (determined by time of survey completion), F&V availability (i.e., "I buy fresh fruits and vegetables" and "I prepare meals using fruits and vegetables"), and caregiver's F&V consumption frequencies. The acculturation level question, although originally coded with four response options, was recoded as either "English" or "other." Availability questions were coded on a 5-point scale from never to always. Cognition variables comprised the caregiver's outcome expectancies (i.e., "My child likes to eat fruits and vegetables"), outcome expectations (i.e., "My child will eat fruits or vegetables at snack time"), and behavioral capability (i.e., "I can feed my child fruits, instead of candies, cookies, crackers, or chips"). Responses were coded on a 5-point

scale from strongly disagree to strongly agree. Behavior variables included children's F&V frequencies. Figure 4 provides an illustration of the variables in relation to SCT.

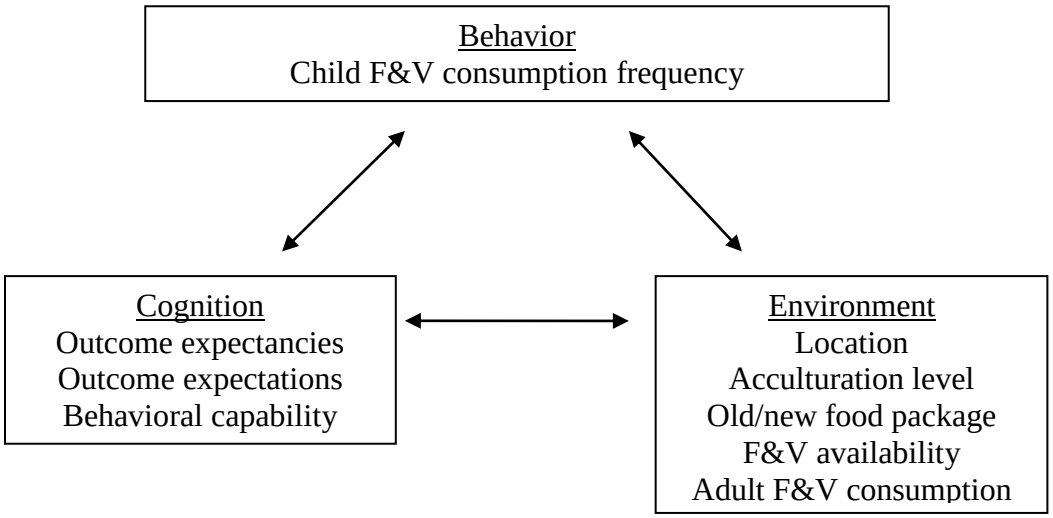

Figure 4. Using Social Cognitive Theory to explore children's F&V consumption

Analytic Methods

The present study utilized descriptive statistics, exploratory factor analysis, and multiple regression. The authors used descriptive statistics (e.g., frequencies) for all study variables to determine demographic characteristics of participants and explore child dietary behavior. Next, the authors conducted an exploratory factor analysis using child F&V food frequencies "to summarize relationships in the form of a more parsimonious set of factor scores" (Thompson, 2004, p. 5). The Cronbach's alpha coefficient for the four items (i.e., child fruit consumption frequency, child vegetable consumption frequency, child potato consumption frequency, and child other vegetable

consumption frequency) was .822, suggesting the items had high internal consistency. Submitting these child F&V food frequencies to factor analysis resulted in one distinct factor: child F&V. Last, the authors conducted multiple linear regression to investigate child F&V consumption using SCT constructs (i.e., urban/rural location, non-border/border location, acculturation level, old/new food package, availability, outcome expectancies, outcome expectations, behavioral capability, and parents' F&V food frequencies) as predictor variables and the newly-created factor as the outcome variable. Because there were no *a priori* hypotheses for determining order of entry of predictor variables, the authors used a direct method for the multiple linear regression analysis. All analyses were performed using IBM Statistical Package for Social Sciences (SPSS) Statistics 20.

Results

Sample Description

Table 5 provides a breakdown of descriptive characteristics for the 68 Asian (either Hispanic or non-Hispanic) caregiver-child pairs in our sample. The authors analyzed data from 68 Asian (either Hispanic or non-Hispanic) caregiver-child pairs. .

Table 5. Descriptive characteristics of study participants

Characteristics	*n*	Percent
Caregiver Characteristics		
Sex		
Male	3	4.8
Female	59	95.2
Age (years)		
17-24	13	20.6
25-29	17	27.0
30-34	18	28.6
35-46	15	23.8
Education Level		
<12th grade	21	30.9
High school graduate or GED	16	23.5
Some college	20	29.4
Associate's degree or higher	11	16.2
Employment Status		
No	44	65.7
Yes	23	34.3
Non-border/border Location		
Non-border	53	77.9
Border	4	5.9
Urban/rural Location		
Urban	50	73.5
Rural	7	10.3
Child Characteristics		
Sex		
Male	36	54.5
Female	30	45.5
Age (years)		
2	28	41.2
3	24	35.3
4	16	23.5

As seen in Table 5, caregivers' ages ranged from 17 to 46 years. A majority were female (95.2%), had no college education (54.4%), were not employed (65.7%), did not live in a Texas-Mexico border location (77.9%), and lived in an urban area (73.5%). Regarding children, most were boys (54.5%), and ages ranged from 2 to 4 years.

Child Dietary Behaviors

The greatest percentage of respondents (64.6%) reported their child consumed 100% juices at least once a day. Fruit, vegetables, and white rice were also endorsed by a majority of participants as being eaten at least once per day. The following foods were not consumed at least one time per day by a majority of children: other vegetables, white bread, whole wheat bread, potatoes, corn tortillas, sugar sweetened drinks, brown rice, oatmeal, fried potatoes, artificially sweetened drinks, white flour tortillas, and whole wheat tortillas. Table 6 illustrates food frequencies of selected food items.

Table 6. Reported consumption frequencies of selected food items by children

Food Item	Frequency	*n*	Percent
100% Juices	Never or <1 time per day	23	35.4
	1 time per day	14	21.5
	2 times per day	14	21.5
	≥3 times per day	14	21.5
Fruit	Never or <1 time per day	23	36.5
	1 time per day	16	25.4
	2 times per day	14	22.2
	≥3 times per day	10	15.9
Vegetables	Never or <1 time per day	27	43.5
	1 time per day	12	19.4
	2 times per day	15	24.2
	≥3 times per day	8	12.9
White Rice	Never or <1 time per day	29	46.8
	1 time per day	10	16.1
	2 times per day	17	27.4
	≥3 times per day	6	9.7

When comparing food frequencies before and after WIC food package changes, children's food consumption varied. As seen in Table 7, white rice had the greatest change with 66.7% of children consuming white rice at least one time per day before food package changes and 37.9% consuming it after food package changes. The least change was observed for whole wheat tortillas and whole wheat bread. A table with food frequencies overall, before food package changes, and after food package changes for all foods is located in Appendix E.

Table 7. Reported consumption frequencies of selected food items by children before and after WIC food package changes

		Percent	
Food Item	Frequency	Before	After
White Rice	Never or <1 time per day	33.3	62.1
	≥1 time per day	66.7	37.9
White Bread	Never or <1 time per day	60.6	80.0
	≥1 time per day	39.4	20.0
White Flour Tortillas	Never or <1 time per day	78.8	96.4
	≥1 time per day	21.2	3.6
100% Juices	Never or <1 time per day	28.6	43.3
	≥1 time per day	71.4	56.7
Brown Rice	Never or <1 time per day	75.8	90.0
	≥1 time per day	24.2	10.0
Potatoes	Never or <1 time per day	66.7	80.0
	≥1 time per day	33.3	20.0
Artificially Sweetened Drinks	Never or <1 time per day	79.4	90.0
	≥1 time per day	20.6	10.0

Child Fruit and Vegetable Consumption using SCT

The authors used multiple linear regression to determine which SCT constructs in the study could be used to predict child F&V consumption. According to tolerance statistics and variance inflation factors (VIFs) for each variable, multicollinearity was unlikely to be a problem. The lowest tolerance statistic was .402, and the highest VIF was 2.489. The SPSS output for these results is presented in Appendix F.

The SCT variables produced a model with an adjusted R^2 of .723 ($F(44) = 9.830$, $p < .001$) for predicting child F& V consumption. Four of 13 variables (i.e., adult fruit consumption frequency, adult potato consumption frequency, adult other vegetable consumption frequency, and outcome expectancies) were statistically significant predictors at $p < 0.05$. The strongest predictor was adult potato consumption frequency ($\beta = .460$), followed by adult other vegetable consumption frequency ($\beta = .384$), outcome expectancies ($\beta = .325$), and adult fruit consumption frequency ($\beta = .290$). Table 8 presents results from the multiple linear regression. Because all beta coefficients were positive, an increase in an aforementioned variable resulted in an expected increase in child F&V consumption frequency, while holding other predictor variables constant.

Table 8. Multiple linear regression results using SCT to predict child F&V consumption frequency

Outcome Variable	Beta Coefficient	t Value
Adult fruit consumption frequency	.290	2.522*
Adult vegetable consumption frequency	.132	1.058
Adult potato consumption frequency	.460	4.312*
Adult other vegetable consumption frequency	.384	3.404*
Urban/rural location	.073	.816
Non-border/border location	.088	1.011
Acculturation level	.069	.730
Old/new food package	-.001	-.016
Availability – buy fresh F&Vs	-.164	-1.338
Availability – prepare using F&Vs	.019	.210
Outcome expectancies – child likes F&Vs	.325	2.895*
Outcome expectations – child will eat F&Vs	-.170	-1.537
Behavioral capability – can feed child fruits	.060	.567

*$p \leq .05$

Discussion

The current study investigated cognitive, behavioral, and environmental influences on dietary behaviors of Asian preschool-aged children on WIC in the U.S. Overall, a majority of participants reported their children consumed 100% juices, fruits, vegetables, and white rice at least one time per day. These results are consistent with a study conducted by Betts & Weidenbenner (1986), which revealed frequent consumption of fruit (including juice), unenriched white rice, and vegetables as often consumed by a sample of Southeast Asian refugee children.

The current study also revealed that white rice had the highest change in consumption frequency between food package changes; there was a 28.8% decrease in percentage of children consuming white rice at least one time per day after food package changes. This may reflect changes in the WIC food packages to include less refined

grains, including white rice. However, because the TEXFAN sample obtained before the food package changes may comprise different people than the sample obtained after, it is uncertain whether these results reflect actual behavioral changes or sampling error.

Adult fruit consumption frequency, adult potato consumption frequency, adult other vegetable consumption frequency, and outcome expectancies were statistically significant predictors of child F&V consumption in the multiple linear regression. The first three variables (i.e., consumption frequencies) reflect environment – more specifically, modeling/observational learning – in SCT. These results are consistent with previous studies on modeling's effect on children's dietary behaviors (see Section 2). Specifically regarding F&V consumption, three studies found parent modeling to be positively associated with preschool-aged children's F&V consumption (Ettienne-Gittens et al., 2011; Nanney et al., 2007; Tibbs et al., 2001).

Another predictor of child F&V consumption frequency was caregiver's outcome expectancies (i.e., "My child likes to eat fruits and vegetables"), which are part of SCT's cognitive factors. This result seems intuitive; if caregivers perceive their child likes F&Vs, they are more likely to give their child F&Vs more often. However, there appears to be no study to date that corroborates this hypothesis.

Limitations and Recommendations

The authors must note several limitations. First, the present study used secondary data, and there are limitations when applying theory to such data (Goodson, 2010). More specifically, the authors used SCT to guide analyses, but the TEXFAN

instrument was not originally designed with SCT as an underlying theoretical framework. As a result, the research questions and constructs of the present study were "fit" into the TEXFAN variables and data. In addition, there were limited items and scales in the TEXFAN instrument on SCT constructs, and most of the constructs in this study were represented by single-item measures, rather than a scale. Single-item measures do not provide estimates of internal consistency reliability, and they may not represent and measure constructs (Wanous, Reichers, & Hudy, 1997). In the future, it is important to design an instrument specifically assessing influences on child F&V consumption using an SCT framework or other theoretical framework. Doing so may contribute to understanding whether particular theories serve as effective frameworks for child nutrition.

Related to the TEXFAN instrument, there were limited questions on social, cognitive, or personal influences on other dietary behaviors (e.g., milk consumption, sweetened drink consumption, etc.), so the authors were limited to exploring only F&V consumption using an SCT framework. Future efforts should expand on current findings by collecting data on all dietary behaviors.

Next, there were limitations due to sample size. Because of the small sample size and the large number of variables in the analyses, it is possible that our limited number of statistically significant predictors may be due to low statistical power. In addition, the authors could not run more sophisticated multivariate analyses that require larger sample sizes and higher power (Everitt, 1975). Future research should develop current findings using multivariate analyses on a larger sample.

Last, the data for the present study were from a survey of caregivers, so data were subject to reporter and selection bias of those who agreed to participate, should not be generalized to other populations, and were not directly from youths.

Implications

The present study builds on current research and knowledge regarding dietary behaviors of Asian youths in the U.S. To the best of the authors' knowledge, this is the first nutrition-related study on low-income Asian children in Texas (see Section 3). More research is needed to explore other Asian populations.

There are several health and nutrition implications of the study. First, findings indicate the importance of caregivers' dietary behaviors on children's dietary behaviors. From an SCT perspective, environment serves as an influential aspect of the reciprocal triad. Public health and nutrition education efforts should incorporate these findings by targeting both parents and children, not just youth alone. Improving parents' diets may lead to improved diets among children.

Second, findings revealed high consumption of 100% juices, fruits, vegetables, and white rice and low consumption of whole-grain products. Consumption of F&Vs is a positive result. Future efforts should be directed towards limiting juice consumption, which has high sugar content and may be associated with obesity if consumed excessively (Dennison, Rockwell, & Baker, 1997), and towards increasing whole grain consumption.

Conclusions

Childhood overweight and obesity are important public health issues. Studies reveal the importance of preschool-aged years for targeting childhood overweight, especially among low-income and Asian populations. The present study reveals relatively high F&V intake among Asian children in the U.S. and the importance of parental food consumption on children's food consumption. Future in-depth research should investigate other food behaviors, especially using a theoretical instrument.

5. SUMMARY AND CONCLUSIONS

The overall purpose of this dissertation study was to examine dietary behaviors of AAY, especially from a theoretical approach. More specifically, the aims were to 1) explore existing health education/health promotion theories and models used in research on child feeding/eating behaviors, 2) explore and describe dietary behaviors of children of Asian background in the U.S., and 3) explore and clarify – using a theoretical framework – eating behaviors among a sample of Asian children in the U.S.

Section 2 presents the first study: a systematic literature review of existing health education/promotion theories and models used to study eating/feeding practices for preschool-aged children. I found 40 articles, of which 43% had clear identification of theory/constructs and a strong theoretical framework. The most common finding was modeling's effect on children's dietary behaviors, followed by the relationship between parental restriction/control and children's dietary behaviors. Results from this literature review was both encouraging and discouraging; it is encouraging to find numerous nutrition-related studies employing theory but discouraging to find the same theories/constructs being used and the same authors using them. It is important to incorporate these results in future research and practice related to young children and/or their caregivers.

The second study presented in Section 3 was a systematic literature review of dietary behaviors of children of Asian background in the U.S. There was a relatively small sample of articles (n = 15). A majority of studies received 9 or more MQS points

out of 17, and approximately half of reviewed studies did not present a theoretical framework. This literature review revealed frequent consumption of milk, fruit, meat, unenriched white rice, vegetables, and high-fat and high-sugar items among Asian-American children. Acculturation's effect on AAYDB was a common theme among studies. Findings from this review may inform education and promotion programs and services for Asian Americans in the U.S.

The first two literature reviews led to the third and final study in Section 4: investigation of cognitive, behavioral, and environmental influences on dietary behaviors of Asian preschool-aged children in the U.S. I ran descriptive statistics and multiple linear regression on a sample of 68 Asian caregiver-child pairs on WIC. Results revealed consumption of 100% juices, fruits, vegetables, and white rice, as well as decrease in white rice consumption after food package changes. In addition, adult fruit consumption frequency, adult potato consumption frequency, adult other vegetable consumption frequency, and outcome expectancies were statistically significant predictors of child F&V consumption. Although the study had several limitations regarding instrument and sample size, the study is one of the first nutrition-related studies on low-income Asian children in Texas and has implications for nutrition education. Future in-depth research should investigate other food behaviors, especially using a theoretical instrument.

This dissertation, as a whole, builds upon current research and knowledge regarding dietary behaviors of Asian youth in the U.S. Each section offers insight into theoretical nutrition-related research on preschool-aged children, particularly on

AAYDB. In addition, this research further advances nutrition education and public health research.

It is important to recognize limitations of this dissertation. First, even though I searched numerous databases and references sections in the two literature reviews, it is possible that some articles relevant to the reviews were overlooked. Second, regarding the third study, there were limitations in instrument and analyses. I was limited to using SCT to explore F&V consumption because of what was available from the dataset. Future research efforts should address these limitations by designing an instrument with a theory in mind and purposively sampling AAY. In addition, qualitative research, especially with youths, may provide more in-depth insight into perceptions, barriers, and attitudes about food. Last, as a health educator with a limited nutrition background, I strayed from making conclusions outside the realm of health education and health behavior. Instead of focusing on whether children were eating healthy or following dietary guidelines, I concentrated on their behaviors in general and implications for health education.

The findings of this dissertation highlight the need for nutrition education research and programs for Asian Americans. Asian American children appear to have relatively high F&V consumption, but there is also low consumption of whole grains. Because parents' diets play a significant role in children's diets, efforts should focus on both parents and children. These findings will hopefully help nutrition education and health professionals culturally tailor obesity prevention programs for Asian Americans.

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APPENDIX A

CODING OF RESEARCH STUDIES FOR MANUSCRIPT 1

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Addessi	2005	27 children aged 2-5 years	Latency to ingestion (measured in seconds); eating behaviors (defined as putting food in mouth or chewing food); amount of food eaten (measured using leftover food weight)	Social influences (defined as adult model not eating, adult model eating food of a different color, or adult model eating food of the same color)	Modeling	Cross-sectional experimental design with 3 experimental groups	Non-parametric ANOVA, non-parametric t-tests	Children accepted and ate more novel foods when adult model ate foods of same color than when adult model ate foods of different color or when adult model was not eating	2/3
Andrews	2010	201 mothers with children aged 2-5 years	Behavioral intention, tracking behavior, and parent attitude toward child TV viewing (measured with questionnaire using Likert-type items); child BMI percentile (calculated using height and weight measurements taken by nurses)	Attitude, subjective norm, perceived behavioral control, tracking behavior, parent eating behavior, parent TV viewing, and perceived response-efficacy (measured with questionnaire using Likert-type items); parent BMI (calculated from self-reported height and weight)	Theory of Planned Behavior	Cross-sectional quantitative survey	Path analysis, regressions	1) Attitudes, social norms, and perceived behavioral control predicted behavioral intention, which predicted behavior 2) Perceived response-efficacy predicted tracking behavior	3/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Bellows	2006	26 parents with children enrolled in Head Start for the needs assessment phase	Offering new foods to children	Attitudes, beliefs, and behaviors related to offering new foods to children; wants and preferences for information, materials, and messages; demographics (all measured using interview questions)	Social marketing provided the framework for application of Social Learning Theory	Semistructured telephone interviews for needs assessment phase	Identification of emergent themes	Themes included benefits of offering new foods (e.g., helps children consume different nutrients), barriers to offering new foods (e.g., waste of money and time), types of information preferred by parents (e.g., recipes, tips), preferred means of information dissemination (e.g., through Head Start, through the mall), and what would help remind parents to offer new foods (e.g., refrigerator magnets, reminders in Head Start newsletters)	3/3
Bensley	2006	39,541 WIC participants between the ages of 18 and 34	Parent-child feeding behaviors	Perception of site usefulness and user belief in ability to engage in behavior (measured using online survey at end of module and qualitative data in comment fields); movement along stages of change continuum (based on responses for online module staging questions)	Transtheoretical Model	Pretest/post-test design	Factor analysis, ANOVA, chi-square tests	1) Almost half of users beginning any module in precontemplation stage moved to action stage 2) Almost all individuals entering in preparation stage moved to action stage 3) Users who began in contemplation stage were most likely to advance greatest number of stages 4) Regarding specific modules, "Postpartum wellness" had highest mean number of stages progressed	3/3
Birch	1980	39 preschool children aged 2-5 years	Preferences for vegetables (measured using cartoon faces and food ranking); consumption data; food choice	Social influence (i.e., peer modeling situations)	Modeling	Pretest/posttest design	McNemar test	1) Majority of target children decreased preferences for their initially preferred vegetable, but there was no change for peer group 2) Effect of peer modeling was greater for younger children than for older children	2/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Birch	1986	57 children aged 3-5 years	Food preference (measured using cartoon faces and food ranking)	Snack-time sharing (using number of pieces of food shared; number of sharing incidents; and coding of sharing as spontaneous, elicited, or passive)	Modeling theory	Experimental	Multivariate ANOVA	1) Girls shared food more often with friends than with acquaintances, whereas boys did not differ between the two2) There were few incidents of spontaneous sharing and passive sharing; majority of sharing was elicited by recipient3) Nature of previous sharing experience was related to children's subsequent sharing behavior	3/3
Birch	2000	197 girls aged 5 years and their mothers	Daughters' intake in absence of mother (using a short-term energy-compensation procedure and the free-access procedure); mothers' report of daughters' 24-hour energy retake (using three 24-hour recalls); daughters' relative weight	Mothers' weight (measured as BMI); mothers' restrained eating (measured using Eating Inventory); mothers' perceptions of daughters' risk of overweight (measured using Child-Feeding Questionnaire); mothers' restriction of daughters' eating (measured using Child-Feeding Questionnaire and Restricted-Access Questionnaire)	Obesity-proneness model (Constanzo & Woody, 1985); parenting styles	Cross-sectional quantitative study	Structural equation modeling	Mothers' perceptions of daughters' overweight predicted mothers' reports of restricting daughters' eating, which in turn predicted less adequate short-term regulation of energy intake by daughters	3/3
Branen	1994	20 children aged 3 years and 20 children aged 4 years	Number of food portions taken by child; number of portions discarded by child (measured using plate waste)	Feeding method (either restrictive or self-selected)	Self-regulation, restrictive feeding	Longitudinal experimental design	ANOVA	1) Children increased their intake during self-selected feeding 2) Number of portions wasted was not different between self-selected and restrictive	1/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Brewis	2006	9 mothers of children aged 3-6 years for phase 1; 89 parents of children aged 3-6 years for phase 2	Child diets (based on reports and 24-hour recall from parents)	Parental cultural models of child eating and feeding (measured using interviews, free-listing exercise, true/false responses to cultural statements, matched-pairs lists); parenting strategies (measured using Parenting Dimensions Inventory and disciplinary strategy scale)	Parenting strategies	Qualitative interviews	Consensus analysis, paired comparison scaling	1) Statements exceeding 80% agreement included "young children need to drink milk everyday," "left to make their own food choices, kids will [not] get what they need nutritionally," "children should be made to try new foods," etc. 2) When matching food to relative healthiness, parents identified foods with highest nutrient density (such as dairy products) as healthiest and most calorie-dense foods (such as French fries) as least healthy 3) When free listing explanations of child obesity, etiologies related to parental responsibility and lack of control ranked highest 4) Greatest concern parents had about children's meals was getting them to eat enough healthy foods	2/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Cason	2001	6102 preschool-age children	Fruit and vegetable identification, healthy snack identification, willingness to taste foods (all measured using four-page pictorial knowledge and attitude instrument for children); eating habits and food attitudes of children (measured using food frequency questionnaire for parents)	Curriculum based on Multiple Intelligences Theory	Multiple intelligences theory	Pretest/post-test design	Paired samples t-tests	1) Children correctly identified more fruits, vegetables, and healthy snack choices and had increased willingness to taste foods at post-test2) Children increased fruit, vegetable, meat, dairy, and bread consumption at post-test, while also decreasing fat, oils, and sweets	3/3
Colavito	1996	478 households with children aged 2-5 years	Percent fat and fiber density (both calculated from 24-hour diet recalls)	Perceived benefits, perceived barriers, self-rated health status, awareness, and knowledge (measured by close-ended questions on the Diet Health Knowledge Survey)	Health Belief Model	Cross-sectional quantitative survey	Multiple regression	Parents with higher knowledge scores and their children consumed less fat and more fiber	3/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Davison	2001	197 non-Hispanic white 5-year-old girls and their parents	Self-concept (measured using Pictorial Scale of Perceived Competence and Social Acceptance for Young Children); body esteem (measured using Body Esteem Scale)	Weight status (measured by research assistant); parent child feeding practices (measured using Child Feeding Questionnaire)	Parenting style (more specifically, parental concern and control)	Cross-sectional quantitative study	Multiple regression analysis, correlations	1) Overweight girls, as compared to nonoverweight girls, reported lower body esteem and perceived cognitive ability 2) Parents of overweight girls reported higher parental concern about their daughter's weight, which had negative relationship with girls' perceived physical ability and girls' perceived cognitive ability 3) Higher maternal restriction was associated with lower perceived physical ability and cognitive ability among girls with higher weight status	1/3
Elder	2005	106 low- to middle-income Mexican-American mother and 4-year-old child pairs	Diet (measured using Food Intake Record); physical activity (measured with a 7-day physical activity recall); television viewing (using the SCAN TV survey); depression (using the Center for Epidemiologic Studies Depression Scale); alcohol and tobacco use (using the 1997 Youth Risk Behavior Survey)	Acculturation (measured using the Acculturation Rating Scale for Mexican-Americans-II)	Acculturation	Cross-sectional quantitative survey	Stepwise multiple linear regression	Anglo-acculturated children consumed less percent calories from saturated fat than lower acculturated children	2/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Fisher	2000	197 5-year-old girls and their parents	Girls' energy intake of snack foods (measured using weight intake data)	Parents' reports of restricting their daughters' access to snack foods (measured using instrument); girls' reports of parents' restriction (using questions); girls' reports of eating too much (using questions); girls' reports of negative feelings about eating (using vignettes and questions)	Parenting styles (i.e., parental control/parental restriction)	Cross-sectional quantitative study	Structural equation modeling	1) About half of girls reported eating too much or feeling bad about eating snack foods. Girls' negative evaluation was not directly related to how much they ate but was a reflection of their perceptions of not being allowed to have those foods2) Parents' restriction of snack foods was positively related to girls' consumption of those foods and girls' perceptions of being restricted	2/3
Harper	1975	80 children aged 14 to 20 months (i.e., toddlers) and 3.5 years for first experiment; 84 toddlers and 56 3.5-year-olds for second experiment	Children's acceptance of unfamiliar foods	Modeling (measured by either mother or stranger eating food)	Observational learning (i.e., modeling)	Experimental design	Chi square tests	1) More children accepted food when adults were eating than when just offered food 2) More girls, as compared to boys, accepted food when adults were eating 3) Food was accepted more frequently if presented by mother than by visitor	1/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Harvey-Berino	2003	43 mother-child pairs with child between the ages of 9 months and 3 years	Height and weight (measured in the home); diet (based on 3-day food records); physical activity (measured using accelerometers)	Outcome expectations (based on level of agreement with 10 outcome expectations); self-efficacy (based on level of belief in ability to overcome 10 barriers); intentions (based on reported probability in engaging in physical activity or controlling diets in the next four months); child feeding beliefs and practices (measured with Child Feeding Questionnaire)	Outcome expectations, self-efficacy, intentions, parental feeding style	Experimental design	Paired Student's t tests, ANOVA, Chi-Square analysis	1) Weight-to-height z scores for children decreased in treatment group and increased in control group 2) Energy intake differences of children were borderline significant; children in treatment group decreased energy intake and those in control group increased intake 3) Mothers in treatment group engaged in less restrictive child feeding practices over time, as compared to those in control group	1/3
Hendy	2000	58 preschool teachers in study 1; 34 preschool children in study 2; 23 preschool children in study 3; 26 preschool children in study 4; and 14 preschool children in study 5	Encouraging children's food acceptance (measured using teacher questionnaire for study 1 and number of food bites by children for studies 2-5)	Modeling, choice-offering, insist, tangible reward, and simple exposure (measured using teacher questionnaire) for study 1; modeling (defined as silent teacher modeling or simple exposure conditions for studies 2-3; enthusiastic teacher modeling or simple exposure for study 4; enthusiastic teacher modeling, enthusiastic peer modeling, or simple exposure for study 5)	Social Cognitive Theory (more specifically, modeling); Self-Determination Theory	Cross-sectional quantitative survey for study 1; quasi-experimental study for studies 2-5)	ANOVA and correlated t-tests for study 1; ANOVA for studies 2, 3, and 5; ANOVA and multiple regression for study 4	1) Modeling was rated as more effective than other teacher actions to encourage children's food acceptance 2) Enthusiastic teacher modeling was more effective than simple exposure to encourage food acceptance, although enthusiastic teacher modeling was no longer effective with presence of competing peer modeling	3/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Hendy	2002	38 preschool children aged 3-6 years	Selection of novel foods (based on number of food bites); food acceptance (measured using food preference ratings and number of food bites one month later)	Peer modeling (defined as no model, girl model, or boy model conditions); social competence (measured with teachers' Social Competency Inventory)	Social Cognitive Theory (more specifically, peer models)	Longitudinal quasi-experimental observational study	ANOVA	Girl models were more effective than boy models to increase food acceptance, although such effectiveness did not last one month later	3/3
Hendy	2010	236 children (either with autism spectrum disorders, other special needs, or no special needs), mean age = 58.3 months	Child's BMI % (based on measured weight and height)	Child and family demographic information; children's diet and feeding behavior (measured using Child Eating Behavior Questionnaire and parents' reports of accepted foods); parents' mealtime actions (measured using Parent Mealtime Action Scale)	Modeling	Cross-sectional quantitative survey	Multiple regression, mediation analysis	1) Parents' use of special meals was significant in explaining variance in children's BMI %; snack modeling was not 2) Special meals mediated positive correlation between children's fussiness and BMI % and between children's fussiness and diet variety	0/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Hildebrand	2009	238 low-income parents or primary caregivers of children aged 1-5 years	Processes of change, decisional balance, self-efficacy, fruit and vegetable servings (measured using fruit and vegetable frequency questionnaire)	Staging algorithm (based on self-reported intention to serve fruits and vegetables)	Transtheoretical Model	Cross-sectional quantitative survey	Descriptive analysis, Pearson's chi-square, paired samples t test, ANOVA, principal component function analysis	Parents and primary caregivers in preparation and action/maintenance stages: 1) Served more servings of fruits and vegetables to their children 2) Used cognitive processes (e.g., self-reevaluation, consciousness raising, and commitment) more often 3) Used behavioral processes (e.g., countering, stimulus control, and rewards) more often 4) Had a higher pros to cons ratio 5) Were more confident in their ability to serve fruits and vegetables than those in precontemplation/contemplation stage	3/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Hildebrand	2010	94 low-income African-American parents with children aged 2-5 years for phase 1; 22 for phase 2	Fruit and vegetable servings, decisional balance, self-efficacy, and use of processes of change (measured using fruit and vegetable survey)	Stage of change algorithm (based on self-reported intention to serve fruits and vegetables)	Transtheoretical Model	Cross-sectional quantitative surveys for phase 1; qualitative focus groups for phase 2	Chi-square and ANOVA for phase 1; content analysis of focus group transcripts for phase 2	1) Parents in precontemplation/ contemplation stages served less fruits and vegetables than those in action/maintenance stages 2) Perceived barriers to serving more fruits and vegetables decreased as stage of change increased 3) Use of behavioral processes increased for those in later stages 4) Common themes were related to decisional balance (recognition of health benefits, cost, convenience, shelf-life/waste, safety), self-efficacy (preparing fruits and vegetables at home, preparing tasty recipes), and behavioral processes of change (countering, helping relations, role modeling, rewards)	3/3
Hoerr	2005	29 limited-income Head Start parents with children aged 3-5 years	Parents' perceived feeding practices	Feeding and reciprocal interaction constructs (measured by discussion group questions)	Social Learning Theory	Qualitative study with discussion groups	Coding; Ethnograph software for tabulation and identification	Main constructs included offering new foods many times, offering variety of vegetables, child seated while eating, permitting child to decide how much to eat, establishing regular mealtimes, not using food as reward, and quality of mealtime interactions	3/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Hood	2000	92 children aged 3-5 years enrolled in the Framingham Children's Study	Children's BMI (measured yearly using height and weight); child's activity level (using Caltrac accelerometers); energy intake (based on food diaries)	Parent's eating behaviors (using Stunkard and Messick's Three Factor Eating Questionnaire); skinfolds (measured yearly by research assistant)	Parenting styles (more specifically, parental control)	Prospective observational study	Linear regression, ANCOVA, ANOVA	1) Children whose parents reported greater dietary restraint or disinhibition had greater increases in BMI and certain body fat levels 2) Effect on body fat was stronger for disinhibition than dietary restraint and when both parents had high restraint/disinhibition	1/3
Horodynski	2004	38 low-income families with toddlers aged 12-36 months in Early Head Start	Caregivers' knowledge, attitudes, and practices for feeding toddlers (using the Caregivers' Mealtime Knowledge, Attitudes, and Practices of Feeding Toddlers Questionnaire); caregiver and toddler dietary intake (measured using a 24-hour dietary recall)	NEAT program	Knowledge and attitudes	Quasi-experimental longitudinal study	t-tests, Pearson product moment correlations, ANOVA	1) There were no statistically significant differences in caregiver mealtime knowledge, attitudes, and practices/behaviors six months after lessons 2) Dietary intake of caregivers and toddlers were not optimal	1/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Horodynski	2010	199 African-American and 200 non-Hispanic White low-income mother-toddler dyads (toddlers aged 12-36 months)	Toddler's fruit and vegetable intake (measured using a food frequency questionnaire)	Child viewed as a picky eater (using the revised self-reported Toddler-Parent Mealtime Behavior Questionnaire); maternal and toddler characteristics, maternal feeding self-efficacy (measured using the Feeding Self-Efficacy Questionnaire)	Theory of dependent care	Cross-sectional quantitative survey	Linear regression, logistic regression	1) Mothers' perceptions of toddlers as "picky eaters" were associated with mothers' and toddlers' characteristics 2) African American mothers, those with less than high school degree, those with low feeding self-efficacy, and those with older toddlers were more likely to view toddlers as picky eaters 3) Toddlers were more likely to eat fruits and vegetables when mothers did not view them as picky eaters and if mothers also consumed fruits and vegetables	3/3
Hudson	2005	447 preschool children aged 2-5 years and their parents	Food intake of children (using Continuous Food Survey Intake by Individuals)	Demographics, parental attitudes and knowledge related to diet and health (all measured using Diet Health Knowledge Survey)	Attitudes and knowledge	Cross-sectional quantitative survey	Frequency, means, descriptive correlations, Chi-Square analysis	Parents' knowledge and attitudes were not correlated with children's fruit and vegetable intake or with BMI status of child	1/3
Johnson	2007	46 Head Start children	Food preferences (measured using cartoon faces when tasting foods, rank-ordering of foods, and classroom observations to track children's behavior related to trying new foods)	The Food Friends program based on social marketing	Social marketing	Quasi-experimental design with 3 assessments (pretest, post-intervention, and 10-day follow-up)	ANOVA, chi-square analysis, independent samples t-tests	1) There were increased preference for and willingness to try new/familiar foods (such as Daikon radish and broccoli) among children in experimental group 2) Number of food refusals declined for experimental group 3) Experimental group rated more foods in liked category as compared to control group	3/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Lawatsch	1990	103 preschool children aged 3-5 years	Knowledge (assessed using a multiple choice test); attitude (measured by an instrument using faces as answer choices); food behavior (based on observing children's snack selection)	Benefit appeal and threat appeal (presented as rewritten fairy tales)	Benefit, threat, attitude, knowledge	Experimental pretest/post-test design	ANOVA	1) Benefit appeal group had higher mean post knowledge score than threat appeal group, and both had higher scores for knowledge and attitude than control group2) Benefit appeal group had higher post food behavior scores than threat appeal group and control group for all snack choices	0/3
Leonard	1984	36 families with preschool child as experimental group; 11 families as comparison group	Parental and family behaviors related to weight control (measured using Family Eating and Activity Patterns Questionnaire); parental verbal responses to food situations (measured using parents' written responses to simulated food-related situations); parental mealtime verbalizations (based on audiotape recordings of family dinners)	Preschool Eating Patterns program	Reinforcement	Pretest/post-test design	ANOVA, t-tests	1) Respondents' scores on Family Eating and Activity Patterns Questionnaire improved between pretest and post-test 2) Parents' scores on verbal responses to food situations became more constructive 3) Families showed decrease in parental mealtime verbalizations in experimental group	0/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Musher-Eizenman	2007	Mothers of 128 children aged 4-6 years and fathers of 102 of these children	Restrictive feeding practices (taken from the Comprehensive Feeding Practices Questionnaire)	Concern about child overweight (from the Child Feeding Questionnaire); anti-fat attitudes (from Crandall's Anti-fat Attitudes Questionnaire); BMI (based on height and weight measured by a trained researcher or by parental report)	Attitude, parenting practice	Cross-sectional quantitative survey	Paired t tests, independent samples t tests, bivariate correlations, hierarchical regressional equations	1) Mothers were significantly higher than fathers on fear of fat 2) Fathers were higher than mothers on dislike, willpower, and restriction for weight 3) Mothers with low dislike of overweight people and high belief in willpower to control weight reported more restriction for health 4) Mothers' BMI, concern about child being overweight, and belief in willpower predicted restriction for weight reasons 5) For fathers, concern about child being overweight positively predicted restriction for health 6) Child BMI, concern about child being overweight, and fear of fat were significant predictors of restriction for weight reasons for fathers	1/3
Nanney	2007	1658 parents of preschool children aged 2-5 years enrolled in Parents as Teachers program	Child fruit and vegetable intake, child preference for fruit and vegetable items (all measured using Kids Food Frequency Questionnaire)	Parent fruit and vegetable intake (measured using Kids Food Frequency Questionnaire); home food environment, parental role modeling, frequency of eating fast food, self-reported height and weight (all using questions)	Modeling	Cross-sectional quantitative survey	Odds ratios, independent samples t tests, ANCOVA	Frequency of eating homegrown fruits and vegetables was related to increased availability of produce, increased variety of produce, preschooler's preference for them, and parental role modeling	0/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Nock	2002	Latino boy aged 4 years	Behavioral avoidance and anxiety (based on behavior test); food consumption and vomiting (based on parents' daily records); diagnostic assessment (based on K-SADS-PL)	Parent modeling, graduated exposure, contingency management (all through behavioral treatment program)	Modeling	Single-case experimental design	Visual inspection of treatment data (appropriate for single-case experimental design)	Treatment program caused:1) Increase in volume and range of food consumption2) Decrease in vomiting	0/3
Omar	2001	20 rural, low-income caregivers of toddlers	Healthy eating	Nutritional needs and barriers (using semistructured, open-ended questions)	Needs and barriers	Qualitative focus groups	Content analysis	Four themes emerged: 1) Barriers to providing healthy meals (e.g., scarcity of time, external challenges, health problems of the child) 2) Division of responsibility 3) Mealtime behavior 4) Nutrition education	0/3
Patrick	2005	231 African-American and Hispanic caregivers of Head Start preschooler	Frequency with which preschooler was served particular foods, frequency with which caregiver tried to get preschooler to consume particular foods, and frequency with which preschooler consumed particular foods (all measured by Caregiver Feeding Style Questionnaire)	Caregiver feeding styles (measured by Caregiver Feeding Style Questionnaire)	Feeding style/parenting style	Cross-sectional quantitative survey	Regression analyses, multiple regressions	1) Authoritative feeding was positively associated with availability of fruits and vegetables; positively associated with attempts to get child to consume dairy, fruit, and vegetables; and positively associated with consumption of dairy and vegetables in children 2) Authoritarian feeding was associated with lower availability and negatively associated with vegetable consumption	3/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Powers	2006	296 low-income African American mothers of preschool children on WIC	Children's BMI (based on height and weight from WIC records)	Parent feeding (based on questions from Child Feeding Questionnaire and Parental Feeding Style Questionnaire); child eating behaviors (measured using Children's Eating Behavior Questionnaire); mothers' BMI (based on self-reported height and weight)	Parenting style	Cross-sectional quantitative survey	Pearson-product moment correlation coefficients, multivariate linear regression, ANOVA, linear regression	1) Maternal pressure to eat was correlated with child BMI, but no other feeding characteristics were related to child BMI 2) Restriction and control were positively associated with child BMI among obese mothers, while restriction was negatively associated with child BMI for non-obese mothers	1/3
Seagren	1991	Female parents of 130 normal weight and 48 obese WIC children aged 3-4 years	Child's relative weight (using WIC records)	Parental control of child's food behavior (using questionnaire); attitudes, satisfaction with child's food behavior, and degree to which she felt her food behavior influenced her child (using Sims' concept of attitudes in questionnaire); demographic and descriptive characteristics	Attitudes, parenting style	Cross-sectional quantitative survey	t-tests, chi-square tests, Spearman's correlation coefficients	1) Female parents of obese children exercised less control over their children's food, were more dissatisfied with the types of foods their children ate, were more likely to agree that their children consumed too much food between meals, encouraged their children less often to eat all food on their plate, and allowed their children less often to eat as much as they would like 2) Parents of normal weight children were more likely to allow their children to have sweets only after eating a good meal more often than did parents of obese children	0/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Sherry	2004	101 mothers of children aged 2-5 years	Child feeding	Responsibility for feeding, pressure to eat, restriction of feeding, and use of food as reward/bribe (all measured using questions adapted from the Child Feeding Questionnaire); maternal concerns about child's weight and maternal perceptions of weight (based on schematic drawings)	Attitudes, parenting practices	Qualitative focus group sessions	Identifying themes	Major categories/themes included:1) Maternal feeding goals and beliefs about what constitutes good nutrition2) Key perceived determinants of foods available in home3) Household mealtime environment and what makes feeding young children easy or difficult4) Maternal strategies used to persuade their children to eat5) Maternal reactions to children's assessment of being full or hungry 6) Maternal concerns about children's weight and general beliefs about children's weight	1/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
Shriver	2010	113 Hispanic parents/guardians with a child aged 2-5 years	Fruit and vegetable servings, decisional balance, self-efficacy, and cognitive and behavioral processes of change (measured using Fruit and Vegetable Survey)	Staging algorithm (based on self-reported intention to serve fruits and vegetables to children)	Transtheoretical Model	Cross-sectional quantitative surveys for phase 1; qualitative focus groups for phase 2	ANOVA for phase 1; content analysis of focus group transcripts for phase 2	1) Intentions of parents in lower stages to serve more fruits and vegetables were hindered by negative aspects of making fruits and vegetables available (including cost and time) 2) Common themes related to decisional balance were recognition of general health benefits, lack of children's taste preferences for fruits and vegetables, and wasting food 3) Self-efficacy themes were low confidence for preparing and serving fruits and vegetables, as well as desire to learn how to prepare tasty recipes and how to encourage children to eat fruits and vegetables 4) Processes of change included consensus about importance of parental modeling, lack of countering with fruits and vegetables, and lack of awareness of fruits and vegetables when dining out	3/3
Tibbs	2001	456 African-American parents with children aged 0-3 years	Eating behaviors (measured using the Eating Patterns Questionnaire and Food Frequency Questionnaire)	Parental modeling of dietary behaviors (measured using the Parental Dietary Modeling scale)	Social Cognitive Theory (more specifically, parents as role models)	Cross-sectional quantitative survey	Stepwise multiple linear regression	1) Parental modeling was associated with increased performance of low-fat eating patterns 2) Parental modeling was associated with reduced fat intake 3) Parental modeling was associated with greater consumption of fruits and vegetables	3/3

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs/Program	Theoretical Framework	Study Design	Analytic Methods	Findings	Theory Assessment Score
White	2011	95 low-income mothers children aged 2-5 years	Fruit and vegetable consumption, child-feeding practices	Emotional rewards to help children develop healthful eating practices; mothers' attitudes and behaviors surrounding nutrition and mealtime; introduction of new food items; letting children serve themselves; "mom provides, child decides" concept (all using questions)	Role modeling	Qualitative structured focus groups	Identifying themes	Mothers realized and relished being role models for their children, had mixed feelings about preparing food and eating with children, and had negative reactions to allowing children to decide whether and how much to eat	2/3

APPENDIX B

CODING OF RESEARCH STUDIES FOR MANUSCRIPT 2

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Betts	1986	72 Southeast Asian (Vietnamese and Cambodian) refugee children aged 2 to 60 months in Lincoln, Nebraska	Dietary intake (using WIC 24-hour recall method); iron status (using blood samples); growth status (using measured height and weight)		Dietary intake, iron status, growth status	Cross-sectional quantitative	Descriptive statistics, frequencies	Milk was the most frequently consumed food item. Fruit (e.g., orange juice) was also often consumed. Meat (i.e., pork, beef, and chicken), followed by unenriched white rice, followed by vegetables (e.g., carrots and cabbage) were next most consumed. Breakfast cereals, eggs, bread, cookies, cheese, and noodles also appeared often.	Theoretical framework: 0 Study design: 1 Ethnicity: 2 Participants: 2 Measures: 1 Validity: 0 Reliability: 0 Data analysis: 0 Effect size: 0 Total: 6/17 (35%)
Chen	2005	68 Chinese-American children aged 8 to 10 years and their mothers in Northern California	Children's BMI (based on measured weight and height)	Family demographic information (using parent questionnaire); acculturation (using Suinn-Lew Asian Self-Identity Acculturation Scale); problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control (using Family Assessment Device); child-rearing attitudes (using Attitudes toward Child-Rearing Scale); children's physical activity (using Children Self-Administered Physical Activity Checklist); dietary behaviors (using Food Frequency Questionnaire); stress-coping strategies (using Schollagers' Coping Strategies Inventory)	Family functioning, parenting style, coping strategies, acculturation	Cross-sectional quantitative study	Chi square tests, Pearson correlation, two-way ANOVA, stepwise multiple regression	1) Children whose mothers were less acculturated were more likely to be overweight than children of mothers with high acculturation. 2) There was a significant correlation between communication within the family and child's BMI. 3) There was a significant relationship between a more democratic parenting style and higher BMI in children, higher sugar intake in children, higher fat intake in children, and poor family affective response. 4) There was no relationship between children's coping strategies and their BMIs. 5) Children reported eating about seven high-fat and high-sugar items every day. However, there were no links between dietary intake and BMIs.	Theoretical framework: 0 Study design: 1 Ethnicity: 2 Participants: 2 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 2 Effect size: 1 Total: 11/17 (65%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Chen	2008a	42 Chinese American children aged 8 to 10 years and their mothers in the San Francisco Bay area	Child's activity level (using the Family Eating and Activity Habits Questionnaire); parents' knowledge related to children's dietary and physical activity needs (using questionnaire); child BMI (using measured weight and height); children's usual food choices and dietary knowledge (using Health Behavior Questionnaire); children's physical activity knowledge (using child questionnaire)	Individually tailored education intervention through postal mail	Ecological Model of Childhood Obesity Prevention (Davison & Birch, 2001)	Longitudinal pre- and post-test study	*t*-tests and mixed-effect models	1) There were statistically significant improvements in most study outcomes (e.g., food choices, physical activity time, and nutrition and activity knowledge). 2) BMI declined for children in the overweight category. 3) There were no changes in parental knowledge about children's nutrition and physical activity needs.	Theoretical framework: 2 Study design: 2 Ethnicity: 2 Participants: 2 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 2 Effect size: 1 Total: 14/17 (82%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Chen	2008b	65 Chinese American children aged 8 to 10 years and their mothers in the San Francisco Bay area	Cardiovascular risk factors of children (measured using blood tests)	Family information (using Family Information questionnaire); acculturation (using Suinn-Lew Asian Self-Identity Acculturation Scale); anthropometric measures (using measured weight and height); physical fitness (using fitness tests and Children Self-Administered Physical Activity Checklist); dietary habits (using Kid's Food Frequency Questionnaire)	Acculturation	Cross-sectional quantitative study	*t*-tests, linear regressions, stepwise multivariate linear regression	1) Overweight and non-overweight children had similar rates of physical activity, dietary intake, and physiological measures.2) Lower levels of parental acculturation were related to higher BMI and higher cholesterol in children.3) Higher maternal BMI was related to higher child BMI, higher level of LDL, and higher cholesterol. High paternal BMI was related to higher cholesterol in children.4) Low level of physical activity and high paternal BMI were related to higher systolic blood pressure in children; high vegetable intake in children was related to higher diastolic blood pressure in children.5) Low physical activity was related to higher LDL in children.	Theoretical framework: 0 Study design: 1 Ethnicity: 2 Participants: 2 Measures: 3 Validity: 1 Reliability: 1 Data analysis: 3 Effect size: 1 Total: 14/17 (82%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Chen	2009	65 Chinese-American children aged 8 to 10 years and their mothers in the San Francisco Bay area	Mother's physical activity (using seven day physical activity recall); mother's dietary intake (using SWAN Food Frequency Questionnaire); children's anthropometric measures (using measured weight and height); children's physical activity (using Caltrac accelerometer); children's dietary intake (using Kid's Food Frequency Questionnaire)	Family information (using parent questionnaire); acculturation (using Suinn-Lew Asian Self-Identity Acculturation Scale)	Maternal acculturation, household income, maternal education, and health behaviors	Cross-sectional quantitative study	Univariate linear regressions; multivariate linear regression	1) High household income was related to low maternal BMI, high maternal intake of fat, and high maternal intake of sweets. 2) High household income and high maternal education were related to high physical activity in Chinese-American children. High household income was also related to low BMI in children. High maternal acculturation was related to low BMI and low sedentary activity in children. (The article did not report findings related to children's dietary intake).	Theoretical framework: 1 Study design: 1 Ethnicity: 2 Participants: 2 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 3 Effect size: 1 Total: 13/17 (76%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Chen	2010	67 Chinese-American children aged 8 to 10 years and their families in the San Francisco Bay area	Family information (using parent questionnaire); acculturation (using Suinn-Lew Asian self-identity acculturation scale); children's BMI and waist-to-hip ratio (using height, weight, waste, and hip measurements); blood pressure (using mercury sphygmomanometer); children's physical activity (using Caltrac); children's dietary intake (using self-reported three-day food diary); food choices (using Health Behavior Questionnaire); knowledge and self-efficacy (using Health Behavior Questionnaire)	Active Balance Childhood (ABC) program based on Social Cognitive Theory	Social Cognitive Theory	Longitudinal randomized controlled study	*t*-tests, mixed-effects model, power analysis	Significantly more children in the intervention group (as compared to the control group) decreased their BMI, decreased blood pressure, increased physical activity, decreased fat intake, and increased fruit and vegetable intake.	Theoretical framework: 2 Study design: 2 Ethnicity: 2 Participants: 2 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 2 Effect size: 1 Total: 14/17 (82%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Chen	2011	67 Chinese-American children aged 8 to 10 years and their mothers in the San Francisco Bay area	Children's anthropometric measures (using measured height and weight); waist to hip ratio (using waist and hip measurements); blood pressure (using mercury sphygmomanometer)	Family information (using parent questionnaire); acculturation (using Suinn-Lew Asian Self-Identity Acculturation Scale); children's dietary intake (using three-day food diary); children's food choices (using Health Behavior Questionnaire); physical activity (using Caltrac personal activity computer); self-efficacy and knowledge (using Health Behavior Questionnaire)	Obesity, high blood pressure, maternal acculturation, children's food choices, knowledge, self-efficacy	Cross-sectional quantitative survey	Pearson correlations, Chi-square tests, *t* tests, multiple linear regressions	1) Fruit and vegetable intake was negatively associated with waist to hip ratio. Higher blood pressure was also associated with higher waist to hip ratio, and lower levels of physical activity were related to high diastolic blood pressure. 2) Lower level of maternal acculturation and unhealthy food choices in children were predictors of high BMI in children. Lower level of maternal acculturation was also a predictor of higher waist to hip ratio. 3) Unhealthy food choice was a predictor of higher systolic blood pressure; older age and lower physical activity were predictors of high diastolic blood pressure.	Theoretical framework: 0 Study design: 1 Ethnicity: 2 Participants: 2 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 1 Effect size: 1 Total: 10/17 (59%)
Cluskey	2008	201 parents of children aged 10 to 13 years (of which 54 were Asian) from 12 states	At-home and away-from-home family eating patterns based on interview questions		Social Cognitive Theory	Cross-sectional qualitative interviews	Thematic content analysis	1) Asian parents mentioned leftovers, soy milk, yogurt, cheese, cereal with milk, and cereal bars as breakfast food. Both Asian children and parents reported tea as a frequent beverage. 2) Asian parents reported consuming foods associated with their Asian cultures. However, Asian parents sometimes indicated their children preferred American rather than cultural food. 3) Compared to non-Hispanic whites, Asians reported lower frequency of eating out and if so, primarily for socialization or celebration.	Theoretical framework: 2 Study design: 1 Ethnicity: 1 Participants: 0 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 1 Effect size: 0 Total: 8/17 (47%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Cullen	2002	520 fourth- to sixth-grade students in Houston, Texas (of which 51 were Asian-American)	Dietary fat intake and fat practices (using food records)	Demographic variables	Dietary fat intake, fat practices	Cross-sectional quantitative	Spearman correlation coefficients ; ANOVA	White children reported higher energy intakes and low-fat practices than other groups (including Asian-Americans). The mean energy intake was 1,494 kcal per day for Asians, with 35% of total energy from fat.	Theoretical framework: 0 Study design: 1 Ethnicity: 1 Participants: 1 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 2 Effect size: 0 Total: 8/17 (47%)
Demory-Luce	2005	53 Chinese-American children aged 3 to 5 years and their primary caregivers in Houston, Texas	Eating habits (using two 24-hour intakes comprising observation of children during meals and caregiver reports of diet)	Acculturation (using Suinn-Lew Asian Self-Identity Acculturation Scale); anthropometry (using measured height and weight)	Acculturation, weight status, and eating habits	Cross-sectional quantitative survey	Chi-square analysis	1) At child care centers, children consumed food and beverages classified as American or shared by both cultures. The food groups most commonly consumed were dairy, mixed dishes, fruits, fruit juice, and vegetables. 2) At homes, foods consumed by children were 43% Chinese, 26% American, and 31% both. Chinese foods included mixed dishes, bread, vegetables, meat, and soup. American foods included desserts, sweetened beverages, bread, candy, salty snacks, cereals, and meat. Foods of both cultures included dairy, fruits, and fruit juice. 3) Foods consumed at breakfast were majority American or shared by both cultures; for dinner, foods were mainly Chinese; and for snacks, foods were American or shared by both cultures.	Theoretical framework: 1 Study design: 1 Ethnicity: 2 Participants: 2 Measures: 3 Validity: 0 Reliability: 1 Data analysis: 1 Effect size: 0 Total: 11/17 (65%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Kim	2007	44 parents of children aged 5 to 14 years; 40 youths aged 11 to 14 years (all Hmong, low-income, and in California)	Knowledge, attitudes, opinions, and behavior (using focus group questions)	Health and healthy lifestyles, dietary practices (mainly fruit and vegetable consumption), and physical activity	Knowledge, attitudes, opinions, and behavior	Cross-sectional qualitative focus groups	Tape-recorded and transcribed focus groups; coded, organized, and analyzed content	1) Fruits and vegetables were valued for health and illness prevention. Participants viewed them as healthiest types of foods. Meats were necessary for good health but should be limited. Beneficial starches included rice, bread, and noodles. 2) Many adults expressed concern about eating too much meat, especially fatty meats, since moving to the U.S. Adults believed huge quantities of meat led to sicknesses. 3) Almost all participants reported eating both Hmong and American foods. 4) Adults viewed fresh foods as essential to health. 5) Youth viewed diet soda as healthier than regular soda. 6) Barriers to a healthy lifestyle included limited access to safe spaces, access to land to grow fresh produce, and time for home preparation of food.	Theoretical framework: 0 Study design: 1 Ethnicity: 2 Participants: 2 Measures: 1 Validity: 0 Reliability: 0 Data analysis: 1 Effect size: 0 Total: 7/17 (41%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Lv	2010	20 Chinese American couples with at least one child aged 5 years or older in Pennsylvania	Adoption of Western food	Personal characteristics, dietary behavior, family functioning, supportive behavior, and mechanics of food production in the home (using interview questions)	Baranowski's reciprocal determinism model; Communication dimensions of Circumplex Model of Marital and Family Systems	Cross-sectional qualitative interviews	Thematic analysis	1) There was a contrast between parents' preferences for Chinese foods and children's preferences for Western foods.2) Mothers, as compared to fathers, were more willing to change foods served at family meals. Parents reported that children were not willing to try new foods.3) Families consumed American food for breakfast and snacks, whereas they ate mainly Chinese food for lunch and dinner.4) Families required meat and vegetables to be served for dinners. Most families restricted fatty food, preserved meat, and junk/sweet food.5) Parents reported using food rules to control children's food choices.6) Fathers' power to determine what was served for dinner was a major determinant of adoption of Western foods.	Theoretical framework: 2 Study design: 1 Ethnicity: 2 Participants: 0 Measures: 1 Validity: 1 Reliability: 0 Data analysis: 1 Effect size: 0 Total: 8/17 (47%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Olson	2009	191 parents of children aged 10 to 13 years (of which 56 were Asian) in 12 states	Child's calcium intake from food (using interview questions and survey data)		Social Cognitive Theory	Cross-sectional mixed methods	Content analysis of qualitative interviews; cluster analysis	The neutral cluster had proportionately more Asians than Hispanics, and the positive cluster had more Hispanics than Asians. The neutral cluster consisted of parents in households with positive parental influences for availability of dairy and of milk. The rest of the influences were neutral. When considering all parents in the neutral cluster, they were equally likely to have children who consumed or did not consume calcium-fortified food items.	Theoretical framework: 2 Study design: 1 Ethnicity: 1 Participants: 0 Measures: 1 Validity: 0 Reliability: 1 Data analysis: 3 Effect size: 0 Total: 9/17 (53%)
Reynolds	1999	3758 youth aged 8 to 16 years (of which 147 were Asian-Americans aged 9 to 11 years in Minnesota)	Diet (using 24-hour diet recalls in Alabama, 7-day food records in Georgia, 24-hour diet recalls in Louisiana, and 24-hour diet recalls in Minnesota)	Demographics measures (obtained via self-report from children or parents and/or administrative records)	Fruit and vegetable consumption, gender, ethnicity	Cross-sectional quantitative	Regression analyses	In Minnesota, Asian-American/Pacific Islanders consumed more fruit and juice than European-Americans. However, they consumed fewer vegetables than European-Americans and African-Americans.	Theoretical framework: 0 Study design: 1 Ethnicity: 1 Participants: 1 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 1 Effect size: 0 Total: 7/17 (41%)

Lead Author	Pub. Year	Sample Characteristics	DVs	IVs	Theoretical Framework	Study Design	Analytic Methods	Asian Dietary-Related Findings	MQS
Vue	2007	102 Hmong girls aged 10 to 13 years and 20 of their parents in Minnesota	Intake of calcium-rich foods and beverages (using child questionnaire and parent interviews)	Individual and environmental factors	Social Cognitive Theory	Cross-sectional mixed methods	Spearman correlation analysis; principal components analysis; constant comparative method	1) Daily intake of soda and fruit-flavored drinks was greater than intake of milk or soy milk. 2) Individual subscales related to calcium consumption were health issues, beverage choices, independence, and food preferences. Environmental subscales were parental expectations, parental modeling, social expectations, calcium-rich food availability, alternative beverage availability, and family limitations. Parental/household influences were parent modeling, making food and beverages available at home, expectations for intake, and knowledge of calcium need.	Theoretical framework: 2 Study design: 1 Ethnicity: 2 Participants: 2 Measures: 1 Validity: 1 Reliability: 1 Data analysis: 3 Effect size: 1 Total: 14/17 (82%)

APPENDIX C

SOCIAL COGNITIVE THEORY CONSTRUCTS

Social Cognitive Theory Constructs	Definition
Environment	Factors external to a person
Situation	Perceptions of the environment
Behavioral capability	Having knowledge and skill to perform a behavior
Expectations	Anticipated outcomes of a behavior
Expectancies	Values placed on an outcome
Self-control	Self-regulation of behaviors
Observational learning	Acquired knowledge and skills from watching others' behaviors
Reinforcements	Responses to behaviors that impact likelihood of behavior to reoccur
Self-efficacy	Person's confidence in performing a particular behavior
Emotional coping responses	Person's strategies to deal with affective stimuli
Reciprocal determinism	Interaction between person, behavior, and environment

Source: Glanz et al., 2002

APPENDIX D

TEXFAN QUESTIONNAIRE

FOOD & NUTRITION QUESTIONNAIRE

WIC is offering some new foods. You are invited to take part in a questionnaire that will help us understand how you may be using these foods and what you think about them.

FOOD & NUTRITION QUESTIONNAIRE

TEXFAN

TEXAS WIC
Smart Choices • Healthy Families
Opciones sabias • Familias sanas

Please provide your WIC FID Number in the space below.

Filling in your FID number allows us to link your WIC administrative records to the questionnaire results. This will not affect your WIC benefits or services.

Please note: Your FID number is located on your shopping list below your PAN number.

- Make heavy marks that fill the circles completely.
- Erase cleanly any answers you wish to change.
- Make no stray marks.
- Use pencil only.

CORRECT: ●

INCORRECT: ✓✗●

SERIAL #

PLEASE DO NOT WRITE IN THIS AREA

"Design, Implementation, Feasibility and Impact of a Nutrition Education Intervention Centered on the Revised WIC Food Packages" Study
Peter Murano, Ph.D.
Special Supplemental Program for Women, Infants, and Children (WIC)

You are invited to take part in a research study called: "Design, Implementation, Feasibility and Impact of a Nutrition Education Intervention Centered on the Revised WIC Food Packages." Dr. Peter Murano and Dr. E. Lisako McKyer at Texas A&M University (TAMU) are leading this study. The TAMU *Institute for Obesity Research and Program Evaluation* and *Texas Department of State Health Services-WIC Program* are carrying out this research study.

What is the purpose of this study?

The purpose of this study is to understand what you, as a WIC client, eat, and feed your child(ren) and/or infant(s), and why. The WIC food package now has some new foods such as whole grains, fruits and vegetables, and low-fat milk, which have not been available before. The results from this study will help WIC understand how to offer new nutrition education lessons and information for WIC clients using the new WIC food package.

Why am I being asked to volunteer?

You are invited to volunteer for this study since you and/or your child or infant receive WIC Program benefits. You can choose whether to take part in this study. Deciding that you do not want to take part will not affect your or your child(ren)'s current or future relationship with the WIC Program or Texas A&M University.

What am I being asked to do?

If you agree to take part in the study, you receive a survey in which you will respond to some questions. These questions will ask you about the types of foods and drinks that you and your children eat and drink. Some questions will also ask your opinions about some foods and drinks.

The survey will take about thirty (30) minutes of your time. We may ask you to fill out the survey while you wait for your WIC appointment, or during your scheduled WIC class. This study will include about six thousand (6,000) Texas WIC clients.

What are the benefits of the study?

There are no direct benefits to you for taking part in this study. A possible benefit may be that you are more aware of what kinds of foods may be offered to you in your food package by the WIC Program. You may receive credit for a WIC nutrition education class if you take the survey during class session time.

Are there any risks to participating?

There are minor risks of taking part in this study. Some questions that ask about the types of food that you eat and drink may make you feel uncomfortable.

This study is confidential. The research staff involved in this project will have access to the data that you volunteer to provide for this study. All research staff involved in this project have been trained to keep research data confidential. The forms and data from the study will be locked up at 1500 Research Parkway, Rm. 220M, Centeq Building A., TAMU. Information that identifies you will not be included in any report that might be published. Please do not discuss anything about the study with anyone who did not take part.

Will I be compensated for participation?

There is no financial reward for taking part in the study since you will take the survey at the time of your normal WIC appointment or class. You may be removed from the study at any time, if you cannot agree with the study rules described in this form.

The Institutional Review Board - Human Subjects Research, Texas A&M University and the Institutional Review Board of the Texas Department of State Health Services have reviewed this research study.

- Contact Dr. Peter Murano (psmurano@tamu.edu) at (979) 458–0946 or Asha Girimaji (asha.g@tamu.edu) at (979) 458–0946, with any questions about this study.
- For research-related problems or questions about subjects' rights, you can ask the Institutional Review Board through Ms. Angelia M. Raines, Director of Research Compliance, Office of the Vice President for Research at (979) 458–4067, araines@vprmail.tamu.edu.
- If you need assistance or feel discomfort about questions asked on the survey, you may ask staff at your local Women, Infants, and Children (WIC) Program for further help.

Please be sure you understand this information and ask any questions that you may have. You will receive a copy of this form, if you ask for it. By signing this form, you agree to take part in this study.

Signature of Participant: _____ Date: _____

Signature of Researcher: _____ Date: June 14, 2010

REMINDER!
Your answers to these questions will help Texas WIC improve programs and services to better meet our participants' needs. Please remember that your answers to these questions will NEVER be used to determine your WIC eligibility.

The questionnaire is divided into FOUR sections (Family, Adult, Infant, and Child). Complete the Family, Adult and the last two sections, if they apply.

FAMILY

Everyone fills out this section!

1. How many infants/children in YOUR household currently receive WIC benefits?

○ None Infants & Children ①②③④⑤⑥⑦⑧⑨⑩ ⑪ 11 or more

2. Other than WIC, who helps YOUR FAMILY get food?
(Choose all that apply - you can choose more than one)

○ SNAP (Food Stamps) ○ Religious Organization, ○ Family ○ Other *(please specify)*
○ Food Bank Church, Synagogue or Mosque ○ None

Please choose the best answer for each of the following statements:	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
3. I like the food choices offered by WIC.	○	○	○	○	○
4. I like the food amount offered by WIC.	○	○	○	○	○

5. How often in the past month did YOUR FAMILY eat tofu, if ever?

○ Never or Less Than 1 Per Month
○ 1 Per Month
○ 2-3 Per Month
○ 1 Per Week
○ 2 Per Week
○ 3-4 Per Week
○ 5-6 Per Week
○ 2 or More Per Day

6. What type of beans do you *usually* buy for YOU and/or YOUR FAMILY?
(Choose one only)

○ Canned
○ Dried
○ **I do not** buy beans

YOU HAVE FINISHED THIS SECTION ABOUT YOUR FAMILY. THANK YOU!

THE NEXT SECTION IS ABOUT YOU.
Please continue to the next section.

SERIAL #

PLEASE DO NOT WRITE IN THIS AREA

ADULT

Everyone fills out this section!

7. Did YOU receive WIC foods in the past 30 days? ○ Yes ○ No

How often do YOU do each of the following?	NEVER OR LESS THAN ONCE PER WEEK	1 TO 3 TIMES PER WEEK	4 TO 6 TIMES PER WEEK	1 TIME PER DAY	2 TIMES PER DAY	3 TIMES PER DAY	4 OR MORE TIMES PER DAY
8. Drink 100% juices such as orange, apple, or tomato.	○	○	○	○	○	○	○
9. Drink artificially sweetened drinks such as diet cola, diet soda, or Crystal Light®.	○	○	○	○	○	○	○
10. Drink soy milk.	○	○	○	○	○	○	○
11. Drink sugar sweetened drinks such as Kool-Aid®, soda, cola, sports drinks, or sugar sweetened tea.	○	○	○	○	○	○	○
12. Eat fruit, NOT including juice.	○	○	○	○	○	○	○
13. Eat vegetables such as salad, carrots, or sweet potatoes, NOT including potatoes, French fries, or potato chips.	○	○	○	○	○	○	○
14. Eat French fries, fried potatoes, or potato chips.	○	○	○	○	○	○	○
15. Eat potatoes, NOT including French fries, fried potatoes, or potato chips.	○	○	○	○	○	○	○
16. Eat other vegetables, NOT including carrots, potatoes, or salad.	○	○	○	○	○	○	○

THE NEXT QUESTIONS ARE ABOUT WHOLE GRAIN PRODUCTS. How many times do YOU:	NEVER OR LESS THAN ONCE PER WEEK	1 TO 3 TIMES PER WEEK	4 TO 6 TIMES PER WEEK	1 TIME PER DAY	2 TIMES PER DAY	3 TIMES PER DAY	4 OR MORE TIMES PER DAY
17. Eat whole-wheat tortillas.	○	○	○	○	○	○	○
18. Eat corn tortillas.	○	○	○	○	○	○	○
19. Eat whole-wheat or whole grain bread.	○	○	○	○	○	○	○
20. Eat brown rice.	○	○	○	○	○	○	○
21. Eat oatmeal.	○	○	○	○	○	○	○

THE NEXT QUESTIONS ARE ABOUT REFINED GRAIN PRODUCTS. How many times do YOU:	NEVER OR LESS THAN ONCE PER WEEK	1 TO 3 TIMES PER WEEK	4 TO 6 TIMES PER WEEK	1 TIME PER DAY	2 TIMES PER DAY	3 TIMES PER DAY	4 OR MORE TIMES PER DAY
22. Eat white bread.	○	○	○	○	○	○	○
23. Eat white flour tortillas.	○	○	○	○	○	○	○
24. Eat white rice.	○	○	○	○	○	○	○

25. During the past year, which fruits did YOU usually eat?
(Choose all that apply - you can choose more than one)

- ○ **I DO NOT** eat fruit.
- ○ Apples
- ○ Apricots (fresh)
- ○ Apricots (dried)
- ○ Bananas
- ○ Berries (blueberries, blackberries, raspberries)
- ○ Cherries
- ○ Dates
- ○ Figs
- ○ Grapefruit
- ○ Grapes
- ○ Kiwis
- ○ Lemon or lime
- ○ Mangos
- ○ Melons (cantaloupe, honeydew)
- ○ Nectarines
- ○ Oranges
- ○ Papayas
- ○ Peaches
- ○ Pears
- ○ Pineapple
- ○ Plums
- ○ Prunes
- ○ Raisins
- ○ Rhubarb
- ○ Strawberries
- ○ Tangerines
- ○ Watermelon
- ○ Other *(please specify)* _____

26. During the past year, which vegetables did YOU usually eat?
(Choose all that apply - you can choose more than one)

- ○ **I DO NOT** eat vegetables.
- ○ Asparagus
- ○ Avocados
- ○ Beets
- ○ Broccoli
- ○ Brussels Sprouts
- ○ Cabbage
- ○ Carrots
- ○ Cauliflower
- ○ Chayote
- ○ Corn
- ○ Cucumbers
- ○ Eggplant
- ○ Greens (collard, mustard, turnip)
- ○ Green Beans
- ○ Green Peas
- ○ Lettuce (all varieties)
- ○ Mushrooms
- ○ Okra
- ○ Onions
- ○ Peppers (Bell, green, yellow, orange or red)
- ○ Potatoes
- ○ Spinach
- ○ Summer Squash (yellow, zucchini)
- ○ Sweet Potatoes
- ○ Tomatoes
- ○ Tomatillos
- ○ Winter Squash (acorn, pumpkin)
- ○ Other *(please specify)* _____

27. How many cups of milk do YOU drink in a day? ***(Choose one only)*** **1 Cup = 8 oz**

- ○ **I DO NOT** drink milk.
- ○ Less than 1 Cup
- ○ 1 Cup
- ○ 2 Cups
- ○ 3 Cups
- ○ 4 or more Cups

28. What kind of milk do YOU drink most often? ***(Choose one only)***

- ○ **I DO NOT** drink milk.
- ○ White cow's milk
- ○ Chocolate or flavored cow's milk
- ○ Goat's milk
- ○ Soy milk–any flavor
- ○ Rice milk
- ○ Lactaid or lactose free milk

29. What kind of cow's milk do YOU usually drink? ***(Choose one only)***

- ○ **I DO NOT** drink cow's milk.
- ○ Whole milk
- ○ 2% milk
- ○ 1% milk
- ○ 1/2% milk
- ○ Skim milk (fat free)
- ○ **I DO NOT KNOW**

Please choose the answer that best indicates YOUR response.	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
30. I buy fresh fruits and vegetables.	○	○	○	○	○
31. I prepare meals using fruits and vegetables.	○	○	○	○	○

PLEASE DO NOT WRITE IN THIS AREA

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(Choose one only)	FRESH	CANNED	FROZEN	DRIED
32. When I buy vegetables I usually buy:	○	○	○	○
33. When I buy fruit I usually buy:	○	○	○	○

Please choose the answer that best indicates YOUR response:	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
34. I know how to pick out fresh fruits and vegetables.	○	○	○	○	○
35. I know how to use product labels to choose 100% whole grain bread.	○	○	○	○	○
36. I am sure I can select 100% whole-wheat or whole-grain breads.	○	○	○	○	○
37. I am willing to drink 2% milk.	○	○	○	○	○
38. I am willing to drink 1% milk.	○	○	○	○	○
39. I am willing to drink skim milk.	○	○	○	○	○

EXAMPLE

What is YOUR age?

This person is 37 years old.

40. What is YOUR age?

41. What is YOUR Zip code?

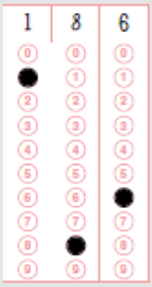
42. What is YOUR sex?

○ Male ○ Female

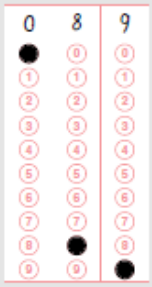
43. What is YOUR height?

HEIGHT		
FEET		0 1 2 3 4 5 6 7
INCHES		0 1 2 3 4 5 6 7 8 9 10 11

EXAMPLE

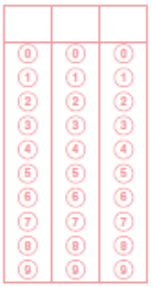


This person weighs 186 pounds.



This person weighs 89 pounds. (First column is marked as zero.)

44. What is YOUR weight in pounds?



45. What language is spoken MOST OFTEN at home? *(Choose one only)*

○ English ○ Spanish and English ○ Spanish ○ Other *(please specify)* _____

46. What is YOUR race?
(Choose all that apply - you can choose more than one)

○ White, non-Hispanic
○ White, Hispanic
○ Black, non-Hispanic
○ Black, Hispanic
○ Native American, non-Hispanic
○ Native American, Hispanic
○ Pacific Islander, non-Hispanic
○ Pacific Islander, Hispanic
○ Asian, non-Hispanic
○ Asian, Hispanic
○ Do NOT want to answer
○ Other *(please specify)* _____

47. What is the highest level of education YOU have completed?

○ 1st – 6th grade ○ 7th – 9th grade ○ 10th – 12th grade ○ High School graduate ○ GED ○ Some College ○ Associate's degree or Technical College degree ○ Bachelor's degree or higher

48. Are YOU employed? ○ No ○ Yes – Part Time ○ Yes – Full Time

49. Are YOU currently pregnant? ○ Yes ○ No ○ Does not apply (I am a male) ○ I do not know

50. Have YOU had a baby within the last six months? ○ Yes ○ No ○ Does not apply (I am a male)

51. Are YOU currently breastfeeding? ○ Yes ○ No ○ Does not apply (I am a male)

YOU HAVE FINISHED THIS SECTION ABOUT YOURSELF. THANK YOU!

THE NEXT SECTION IS ABOUT YOUR INFANT.

INFANT

Fill out this section if you have an INFANT under 12 months, if NOT skip to page 8.

52. Do you have an INFANT (less than 12 months) in YOUR household who receives WIC foods or formula? ○ Yes ○ No

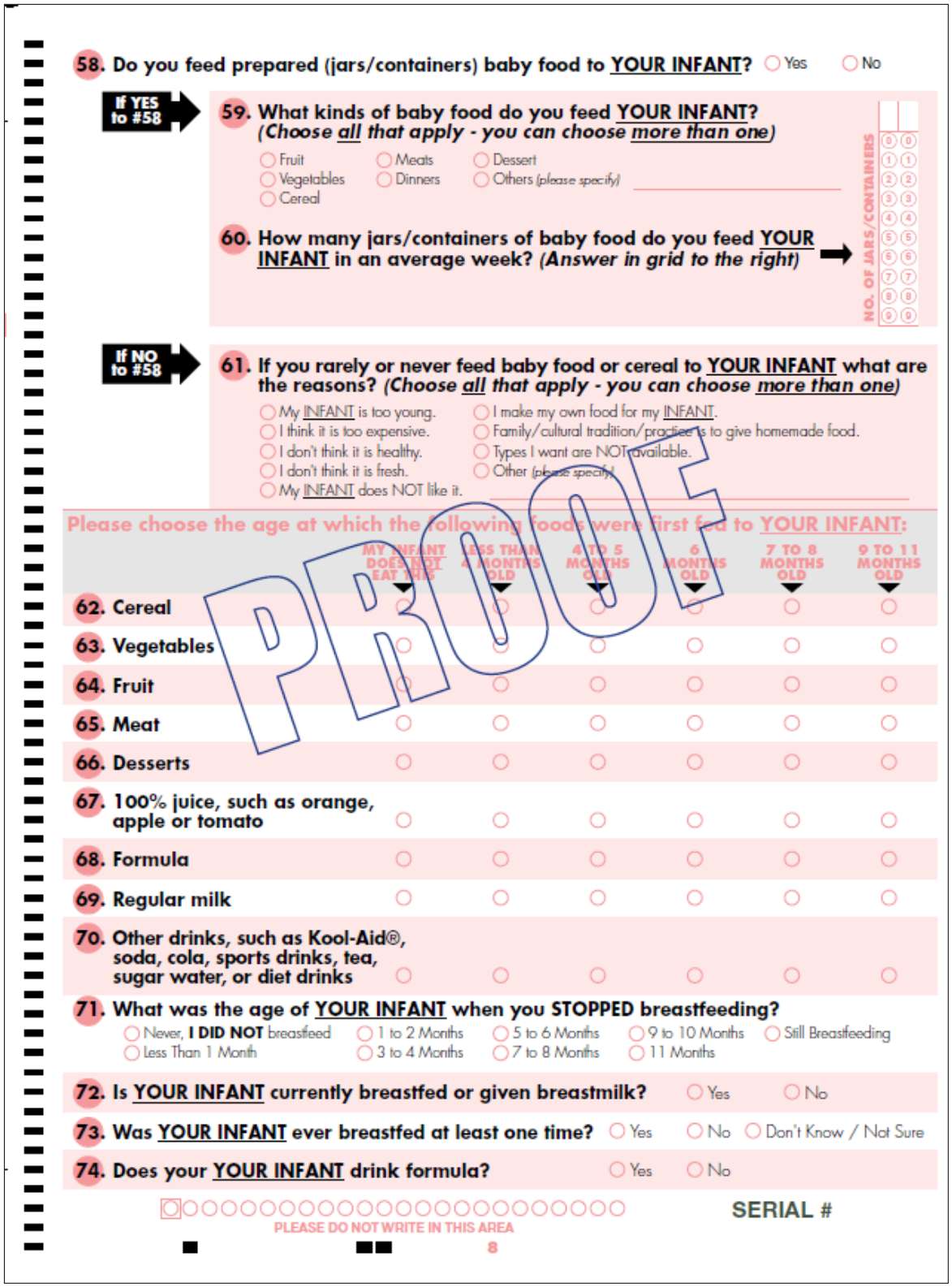
53. If YES, did YOUR INFANT receive WIC foods in the past 30 days? ○ Yes ○ No

54. Are you the PRIMARY CAREGIVER for this INFANT? ○ Yes ○ No

55. Is this INFANT a: ○ Boy ○ Girl

56. How old is YOUR INFANT?
○ Less Than 1 Month Old
○ 1 to 2 Months Old
○ 3 to 4 Months Old
○ 5 Months Old
○ 6 Months Old
○ 7 to 8 Months Old
○ 9 to 10 Months Old
○ 11 Months Old

57. Do you feed your INFANT anything other than breastmilk, formula or water? ○ Yes ○ No



58. Do you feed prepared (jars/containers) baby food to YOUR INFANT? ○ Yes ○ No

If YES to #58

59. What kinds of baby food do you feed YOUR INFANT? *(Choose all that apply - you can choose more than one)*

○ Fruit ○ Meats ○ Dessert
○ Vegetables ○ Dinners ○ Others *(please specify)* _____
○ Cereal

60. How many jars/containers of baby food do you feed YOUR INFANT in an average week? *(Answer in grid to the right)* →

NO. OF JARS/CONTAINERS

If NO to #58

61. If you rarely or never feed baby food or cereal to YOUR INFANT what are the reasons? *(Choose all that apply - you can choose more than one)*

○ My INFANT is too young.
○ I think it is too expensive.
○ I don't think it is healthy.
○ I don't think it is fresh.
○ My INFANT does NOT like it.
○ I make my own food for my INFANT.
○ Family/cultural tradition/practices is to give homemade food.
○ Types I want are NOT available.
○ Other *(please specify)* _____

Please choose the age at which the following foods were first fed to YOUR INFANT:

	MY INFANT DOES NOT EAT THIS	LESS THAN 4 MONTHS OLD	4 TO 5 MONTHS OLD	6 MONTHS OLD	7 TO 8 MONTHS OLD	9 TO 11 MONTHS OLD
62. Cereal	○	○	○	○	○	○
63. Vegetables	○	○	○	○	○	○
64. Fruit	○	○	○	○	○	○
65. Meat	○	○	○	○	○	○
66. Desserts	○	○	○	○	○	○
67. 100% juice, such as orange, apple or tomato	○	○	○	○	○	○
68. Formula	○	○	○	○	○	○
69. Regular milk	○	○	○	○	○	○
70. Other drinks, such as Kool-Aid®, soda, cola, sports drinks, tea, sugar water, or diet drinks	○	○	○	○	○	○

71. What was the age of YOUR INFANT when you STOPPED breastfeeding?

○ Never, I DID NOT breastfeed ○ 1 to 2 Months ○ 5 to 6 Months ○ 9 to 10 Months ○ Still Breastfeeding
○ Less Than 1 Month ○ 3 to 4 Months ○ 7 to 8 Months ○ 11 Months

72. Is YOUR INFANT currently breastfed or given breastmilk? ○ Yes ○ No

73. Was YOUR INFANT ever breastfed at least one time? ○ Yes ○ No ○ Don't Know / Not Sure

74. Does your YOUR INFANT drink formula? ○ Yes ○ No

SERIAL #

PLEASE DO NOT WRITE IN THIS AREA

8

75. How many ounces of formula does YOUR INFANT drink per feeding?

○ My INFANT does NOT drink formula. OUNCES PER FEEDING ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

76. How often does YOUR INFANT drink formula?

- ○ Never or Less Than Once Per Week
- ○ 1 to 2 Times Per Week
- ○ 3 to 4 Times Per Week
- ○ 5 to 6 Times Per Week
- ○ 1 Time Per Day
- ○ 2 to 3 Times Per Day
- ○ 4 to 5 Times Per Day
- ○ 6 to 7 Times Per Day
- ○ 8 to 9 Times Per Day
- ○ 10 to 11 Times Per Day
- ○ 12 to 13 Times Per Day
- ○ 14 or More Times Per Day

77. When you run out of WIC formula, what do YOU *usually* do? *(Choose one only)*

- ○ Formula DOES NOT usually run out.
- ○ I buy or am given additional formula.
- ○ I add extra milk to the formula.
- ○ I add cereal to the formula.
- ○ I add extra water to the formula.
- ○ I try to give more breastmilk.
- ○ I breastfeed my infant.
- ○ My INFANT DOES NOT drink formula.

How often does YOUR INFANT do the following:	NEVER OR LESS THAN ONCE PER WEEK	1 TO 3 TIMES PER WEEK	4 TO 6 TIMES PER WEEK	1 TIME PER DAY	2 TIMES PER DAY	3 TIMES PER DAY	4 OR MORE TIMES PER DAY
78. Drink milk other than breastmilk or formula.	○	○	○	○	○	○	○
79. Drink soy milk.	○	○	○	○	○	○	○
80. Drink 100% juice, such as apple, orange or tomato.	○	○	○	○	○	○	○
81. Drink other drinks, such as Kool-Aid®, sugar water, soda, cola, sports drinks, or sweet tea.	○	○	○	○	○	○	○
82. Drink water.	○	○	○	○	○	○	○
83. Eat fruits.	○	○	○	○	○	○	○
84. Eat vegetables.	○	○	○	○	○	○	○
85. Eat meat.	○	○	○	○	○	○	○
86. Eat bread, rice, or pasta.	○	○	○	○	○	○	○
87. Eat potatoes. NOT including sweet potatoes.	○	○	○	○	○	○	○
88. Eat cereal.	○	○	○	○	○	○	○
89. Eat desserts.	○	○	○	○	○	○	○

YOU HAVE FINISHED THIS SECTION ABOUT YOUR INFANT. THANK YOU!

THE NEXT SECTION IS ABOUT YOUR CHILD.

CHILD

If you have a CHILD between the ages one and under five years, please complete the next section; Otherwise, you have FINISHED the questionnaire!

90. Do you have a CHILD over 1 year or older who receives WIC foods? ○ Yes ○ No

91. If YES, did YOUR CHILD receive WIC foods in the past 30 days? ○ Yes ○ No

92. Are you the PRIMARY CAREGIVER for this CHILD? ○ Yes ○ No

93. Is this CHILD a: ○ Boy ○ Girl

94. What is this CHILD'S age? YEAR ① ② ③ ④ MONTHS ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

95. How many cups of milk does YOUR CHILD usually drink in a day?
(Choose one only) **1 Cup = 8 oz**

○ **MY CHILD DOES NOT** drink milk. ○ Less than 1 Cup ○ 1 Cup ○ 2 Cups ○ 3 Cups ○ 4 or more Cups

96. What kind of milk does YOUR CHILD drink most often? *(Choose one only)*

○ **MY CHILD DOES NOT** drink milk. ○ Chocolate or flavored cow's milk ○ Soy milk–any flavor ○ Rice milk
○ Cow's milk ○ Lactaid or lactose free milk ○ Goat's milk

97. What kind of cow's milk does YOUR CHILD usually drink?

○ **MY CHILD DOES NOT** drink cow's milk ○ 2% milk ○ 1/2% milk ○ **I DO NOT KNOW**
○ Whole milk ○ 1% milk ○ Skim milk (fat free)

98. During the past year, which fruits did YOUR CHILD usually eat?
(Choose all that apply - you can choose more than one)

○ My **CHILD DOES NOT** eat fruit.
○ Apples
○ Apricots (fresh)
○ Apricots (dried)
○ Bananas
○ Berries (blueberries, blackberries, raspberries)
○ Cherries
○ Dates
○ Figs
○ Grapefruit
○ Grapes
○ Kiwis
○ Lemons or limes
○ Mangos
○ Melons (cantaloupe, honeydew)
○ Nectarines
○ Oranges
○ Papaya
○ Peaches
○ Pears
○ Pineapple
○ Plums
○ Prunes
○ Raisins
○ Rhubarb
○ Strawberries
○ Tangerines
○ Watermelon
○ Other *(please specify)* _____

99. During the past year, which vegetables did YOUR CHILD usually eat?
(Choose all that apply - you can choose more than one)

○ My **CHILD DOES NOT** eat vegetables.
○ Asparagus
○ Avocados
○ Beets
○ Broccoli
○ Brussels Sprouts
○ Cabbage
○ Carrots
○ Cauliflower
○ Chayote
○ Corn
○ Cucumbers
○ Eggplant
○ Greens (collard, mustard, turnip)
○ Green Beans
○ Green Peas
○ Lettuce (all varieties)
○ Mushrooms
○ Okra
○ Onions
○ Peppers (Bell, green, yellow, orange or red)
○ Potatoes
○ Spinach
○ Summer Squash (yellow, zucchini)
○ Sweet Potatoes
○ Tomatoes
○ Tomatillos
○ Winter Squash (acorn, pumpkin)
○ Other *(please specify)* _____

SERIAL #

PLEASE DO NOT WRITE IN THIS AREA

How often does YOUR CHILD do the following?	NEVER OR LESS THAN ONCE PER WEEK	1 TO 3 TIMES PER WEEK	4 TO 6 TIMES PER WEEK	1 TIME PER DAY	2 TIMES PER DAY	3 TIMES PER DAY	4 OR MORE TIMES PER DAY
100. Drink 100% juices such as orange, apple, or tomato.	○	○	○	○	○	○	○
101. Drink soy milk.	○	○	○	○	○	○	○
102. Drink artificially sweetened drinks such as diet cola, diet soda or Crystal Light®.	○	○	○	○	○	○	○
103. Drink sugar sweetened drinks such as Kool-Aid®, soda, cola, sports drinks, or sugar sweetened tea.	○	○	○	○	○	○	○
104. Eat fruit, NOT including juice.	○	○	○	○	○	○	○
105. Eat vegetables such as salad, carrots, or sweet potatoes, NOT including potatoes, French fries, or potato chips.	○	○	○	○	○	○	○
106. Eat French fries, fried potatoes, or potato chips.	○	○	○	○	○	○	○
107. Eat potatoes, NOT including French fries, fried potatoes, or potato chips.	○	○	○	○	○	○	○
108. Eat other vegetables, NOT including carrots, potatoes, or salad.	○	○	○	○	○	○	○

THE NEXT QUESTIONS ARE ABOUT WHOLE GRAIN PRODUCTS. How many times does YOUR CHILD:	NEVER OR LESS THAN ONCE PER WEEK	1 TO 3 TIMES PER WEEK	4 TO 6 TIMES PER WEEK	1 TIME PER DAY	2 TIMES PER DAY	3 TIMES PER DAY	4 OR MORE TIMES PER DAY
109. Eat whole-wheat tortillas.	○	○	○	○	○	○	○
110. Eat corn tortillas.	○	○	○	○	○	○	○
111. Eat whole-wheat or whole grain bread.	○	○	○	○	○	○	○
112. Eat brown rice	○	○	○	○	○	○	○
113. Eat oatmeal.	○	○	○	○	○	○	○

THE NEXT QUESTIONS ARE ABOUT REFINED GRAIN PRODUCTS. How many times does YOUR CHILD:	NEVER OR LESS THAN ONCE PER WEEK	1 TO 3 TIMES PER WEEK	4 TO 6 TIMES PER WEEK	1 TIME PER DAY	2 TIMES PER DAY	3 TIMES PER DAY	4 OR MORE TIMES PER DAY
114. Eat white bread.	○	○	○	○	○	○	○
115. Eat white flour tortillas.	○	○	○	○	○	○	○
116. Eat white rice.	○	○	○	○	○	○	○

Please fill in the circle which best indicates YOUR response to the items below:	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
117. MY CHILD likes to eat fruits and vegetables.	○	○	○	○	○
118. MY CHILD will eat fruits or vegetables at snack time.	○	○	○	○	○
119. I can feed MY CHILD fruits, instead of candies, cookies, crackers or chips.	○	○	○	○	○
120. I am willing to give MY CHILD two years or older 2% milk.	○	○	○	○	○
121. I am willing to give MY CHILD two years or older 1% milk.	○	○	○	○	○
122. I am willing to give MY CHILD two years or older skim milk.	○	○	○	○	○

THANK YOU! You have finished the Food and Nutrition Questionnaire!

For office use only:

● English
○ Spanish

PLEASE DO NOT WRITE IN THIS AREA

SERIAL #

APPENDIX E

FOOD FREQUENCIES FOR TEXFAN CHILDREN: OVERALL, BEFORE WIC FOOD PACKAGE CHANGES, AND AFTER WIC FOOD PACKAGE CHANGES

Food Item	Frequency	Percent		
		Overall	Before	After
Artificially Sweetened Drinks	Never or <1 time per day	84.4	79.4	90.0
	1 time per day	14.1	20.6	6.7
	2 times per day	0.0	0.0	0.0
	≥3 times per day	1.6	0.0	3.3
Sugar Sweetened Drinks	Never or <1 time per day	75.0	70.6	80.0
	1 time per day	18.8	23.5	13.3
	2 times per day	6.3	5.9	6.7
	≥3 times per day	0.0	0.0	0.0
100% Juices	Never or <1 time per day	35.4	28.6	43.3
	1 time per day	21.5	17.1	26.7
	2 times per day	21.5	28.6	13.3
	≥3 times per day	21.5	25.7	16.7
Fruit	Never or <1 time per day	36.5	32.4	41.4
	1 time per day	25.4	32.4	17.2
	2 times per day	22.2	14.7	31.0
	≥3 times per day	15.9	20.6	10.3
Vegetables	Never or <1 time per day	43.5	39.4	48.3
	1 time per day	19.4	18.2	20.7
	2 times per day	24.2	30.3	17.2
	≥3 times per day	12.9	12.1	13.8
Fried Potatoes	Never or <1 time per day	84.1	81.2	87.1
	1 time per day	9.5	12.5	6.5
	2 times per day	4.8	6.2	3.2
	≥3 times per day	1.6	0.0	3.2
Potatoes	Never or <1 time per day	73.0	66.7	80.0
	1 time per day	22.2	27.3	16.7
	2 times per day	3.2	3.0	3.3
	≥3 times per day	1.6	3.0	0.0
Other Vegetables	Never or <1 time per day	57.8	52.9	63.3
	1 time per day	20.3	26.5	13.3
	2 times per day	15.6	14.7	16.7
	≥3 times per day	6.3	5.9	6.7

Food Item	Frequency	Percent		
		Overall	Before	After
Oatmeal	Never or <1 time per day	83.9	81.8	86.2
	1 time per day	16.1	18.2	13.8
	2 times per day	0.0	0.0	0.0
	≥3 times per day	0.0	0.0	0.0
Brown Rice	Never or <1 time per day	82.5	75.8	90.0
	1 time per day	9.5	12.1	6.7
	2 times per day	3.2	6.1	0.0
	≥3 times per day	4.8	6.1	3.3
White Rice	Never or <1 time per day	46.8	33.3	62.1
	1 time per day	16.1	24.2	6.9
	2 times per day	27.4	33.3	20.7
	≥3 times per day	9.7	9.1	10.3
Whole Wheat Tortillas	Never or <1 time per day	88.9	87.9	90.0
	1 time per day	7.9	9.1	6.7
	2 times per day	0.0	0.0	0.0
	≥3 times per day	3.2	3.0	3.3
Corn Tortillas	Never or <1 time per day	78.1	73.5	83.3
	1 time per day	14.1	20.6	6.7
	2 times per day	4.7	5.9	3.3
	≥3 times per day	3.1	0.0	6.7
White Flour Tortillas	Never or <1 time per day	86.9	78.8	96.4
	1 time per day	8.2	15.2	0.0
	2 times per day	3.3	6.1	0.0
	≥3 times per day	1.6	0.0	3.6
Whole Wheat Bread	Never or <1 time per day	71.0	69.7	72.4
	1 time per day	21.0	27.3	13.8
	2 times per day	1.6	3.0	0.0
	≥3 times per day	6.5	0.0	13.8
White Bread	Never or <1 time per day	69.8	60.6	80.0
	1 time per day	23.8	30.3	16.7
	2 times per day	4.8	6.1	3.3
	≥3 times per day	1.6	3.0	0.0

APPENDIX F

SPSS OUTPUT FOR MANUSCRIPT 3

```
**To check Cronbach's alpha on child F&V frequencies
(fruit consumption, vegetable consumption, potato consumption, and other vegetable consumption)**.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	60	88.2
	Excluded[a]	8	11.8
	Total	68	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,822	4

```
**To perform factor analysis on child F&V frequencies**.
```

Factor Analysis

Correlation Matrix[a]

		C104 Eat fruit	C105 Vegetables	C107 Potatoes	C108 Other vegetables
Correlation	C104 Eat fruit	1.000	.778	.393	.452
	C105 Vegetables	.778	1.000	.474	.651
	C107 Potatoes	.393	.474	1.000	.447
	C108 Other vegetables	.452	.651	.447	1.000

a. Determinant = .165

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.692
Bartlett's Test of Sphericity	Approx. Chi-Square	102.256
	df	6
	Sig.	.000

Communalities

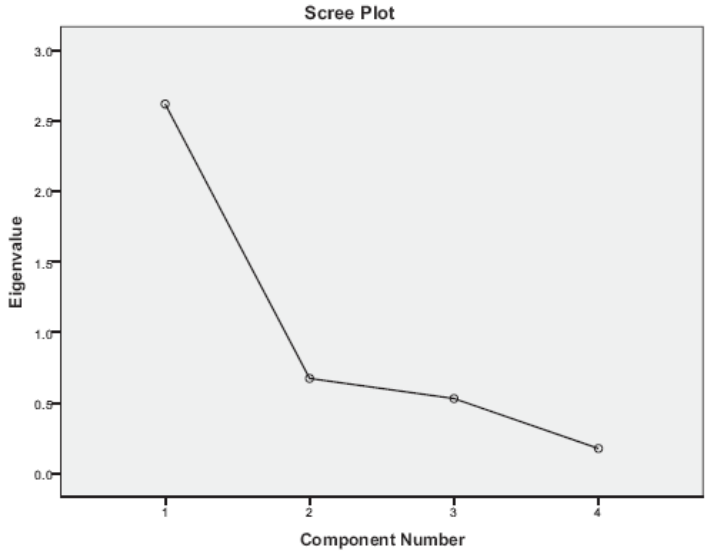
	Initial	Extraction
C104 Eat fruit	1.000	.685
C105 Vegetables	1.000	.840
C107 Potatoes	1.000	.472
C108 Other vegetables	1.000	.623

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.619	65.480	65.480	2.619	65.480	65.480
2	.673	16.834	82.314			
3	.531	13.267	95.581			
4	.177	4.419	100.000			

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component
	1
C104 Eat fruit	.828
C105 Vegetables	.916
C107 Potatoes	.687
C108 Other vegetables	.789

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Reproduced Correlations

		C104 Eat fruit	C105 Vegetables	C107 Potatoes
Reproduced Correlation	C104 Eat fruit	.685[a]	.758	.568
	C105 Vegetables	.758	.840[a]	.629
	C107 Potatoes	.568	.629	.472[a]
	C108 Other vegetables	.653	.723	.542
Residual[b]	C104 Eat fruit		.020	-.176
	C105 Vegetables	.020		-.155
	C107 Potatoes	-.176	-.155	
	C108 Other vegetables	-.201	-.072	-.095

Reproduced Correlations

		C108 Other vegetables
Reproduced Correlation	C104 Eat fruit	.653
	C105 Vegetables	.723
	C107 Potatoes	.542
	C108 Other vegetables	.623[a]
Residual[b]	C104 Eat fruit	-.201
	C105 Vegetables	-.072
	C107 Potatoes	-.095
	C108 Other vegetables	

Extraction Method: Principal Component Analysis.

a. Reproduced communalities

b. Residuals are computed between observed and reproduced correlations. There are 5 (83.0%) nonredundant residuals with absolute values greater than 0.05.

```
**To run univariate multiple linear regression with new factor as dependent variable and
SCT constructs as independent variables**.
```

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
FAC1_2 ChildF&VFactor	.0648808	1.04355768	45
A12 Eat Fruit	2.93	1.437	45
A13 Eat Vegetables	2.71	1.660	45
A15 Eat Potatoes	1.47	1.307	45
A16 Other Vegetables	2.38	1.497	45
A30 Buy fruits and vegetables	3.49	.661	45
A31 Prepare meals with fruits and vege	3.20	.919	45
urban urban vs rural	.16	.367	45
border border vs nonborder	.07	.252	45
V117FV Likes fruits and vegetables	4.22	.795	45
V118FVS Eat fruits and vegetables for snack	4.09	.821	45
V119ABLE Feed child fruits	4.27	.688	45
Wave survey time series	1.47	.505	45
A45New NewLanguage	1.4667	.50452	45

Correlations

		FAC1_2 ChildF&VFactor	A12 Eat Fruit	A13 Eat Vegetables
Pearson Correlation	FAC1_2 ChildF&VFactor	1.000	.571	.623
	A12 Eat Fruit	.571	1.000	.344
	A13 Eat Vegetables	.623	.344	1.000
	A15 Eat Potatoes	.645	.441	.357
	A16 Other Vegetables	.534	.149	.630
	A30 Buy fruits and vegetables	.481	.585	.504
	A31 Prepare meals with fruits and vege	.167	.200	.083
	urban urban vs rural	.050	-.023	-.037
	border border vs nonborder	.163	.201	-.062
	V117FV Likes fruits and vegetables	.451	.272	.308
	V118FVS Eat fruits and vegetables for snack	.253	.294	.203
	V119ABLE Feed child fruits	.287	.179	.129
	Wave survey time series	-.143	.013	.029
	A45New NewLanguage	-.116	.044	.002
Sig. (1-tailed)	FAC1_2 ChildF&VFactor	.	.000	.000
	A12 Eat Fruit	.000	.	.010
	A13 Eat Vegetables	.000	.010	.
	A15 Eat Potatoes	.000	.001	.008
	A16 Other Vegetables	.000	.164	.000
	A30 Buy fruits and vegetables	.000	.000	.000
	A31 Prepare meals with fruits and vege	.137	.094	.293
	urban urban vs rural	.371	.440	.406
	border border vs nonborder	.142	.093	.344
	V117FV Likes fruits and vegetables	.001	.035	.020
	V118FVS Eat fruits and vegetables for snack	.046	.025	.091
	V119ABLE Feed child fruits	.028	.119	.200
	Wave survey time series	.174	.467	.425
	A45New NewLanguage	.225	.387	.495

Correlations

		A15 Eat Potatoes	A16 Other Vegetables	A30 Buy fruits and vegetables
Pearson Correlation	FAC1_2 ChildF&VFactor	.645	.534	.481
	A12 Eat Fruit	.441	.149	.585
	A13 Eat Vegetables	.357	.630	.504
	A15 Eat Potatoes	1.000	.163	.308
	A16 Other Vegetables	.163	1.000	.383
	A30 Buy fruits and vegetables	.308	.383	1.000
	A31 Prepare meals with fruits and vege	.204	.026	.396
	urban urban vs rural	-.013	-.192	-.040
	border border vs nonborder	-.028	.052	.209
	V117FV Likes fruits and vegetables	.139	.100	.351
	V118FVS Eat fruits and vegetables for snack	.193	.120	.211
	V119ABLE Feed child fruits	.086	.165	.257
	Wave survey time series	-.234	.062	-.086
	A45New NewLanguage	-.303	-.028	.050
Sig. (1-tailed)	FAC1_2 ChildF&VFactor	.000	.000	.000
	A12 Eat Fruit	.001	.164	.000
	A13 Eat Vegetables	.008	.000	.000
	A15 Eat Potatoes	.	.142	.020
	A16 Other Vegetables	.142	.	.005
	A30 Buy fruits and vegetables	.020	.005	.
	A31 Prepare meals with fruits and vege	.089	.432	.004
	urban urban vs rural	.467	.103	.398
	border border vs nonborder	.429	.367	.084
	V117FV Likes fruits and vegetables	.182	.257	.009
	V118FVS Eat fruits and vegetables for snack	.101	.216	.082
	V119ABLE Feed child fruits	.287	.140	.044
	Wave survey time series	.061	.342	.287
	A45New NewLanguage	.021	.427	.372

Correlations

		A31 Prepare meals with fruits and vege	urban urban vs rural	border border vs nonborder
Pearson Correlation	FAC1_2 ChildF&VFactor	.167	.050	.163
	A12 Eat Fruit	.200	-.023	.201
	A13 Eat Vegetables	.083	-.037	-.062
	A15 Eat Potatoes	.204	-.013	-.028
	A16 Other Vegetables	.026	-.192	.052
	A30 Buy fruits and vegetables	.396	-.040	.209
	A31 Prepare meals with fruits and vege	1.000	.040	.137
	urban urban vs rural	.040	1.000	.131
	border border vs nonborder	.137	.131	1.000
	V117FV Likes fruits and vegetables	.093	.269	.151
	V118FVS Eat fruits and vegetables for snack	.126	.255	.080
	V119ABLE Feed child fruits	.165	.283	.157
	Wave survey time series	-.010	-.033	-.071
	A45New NewLanguage	.088	-.156	-.071
Sig. (1-tailed)	FAC1_2 ChildF&VFactor	.137	.371	.142
	A12 Eat Fruit	.094	.440	.093
	A13 Eat Vegetables	.293	.406	.344
	A15 Eat Potatoes	.089	.467	.429
	A16 Other Vegetables	.432	.103	.367
	A30 Buy fruits and vegetables	.004	.398	.084
	A31 Prepare meals with fruits and vege	.	.396	.184
	urban urban vs rural	.396	.	.195
	border border vs nonborder	.184	.195	.
	V117FV Likes fruits and vegetables	.271	.037	.161
	V118FVS Eat fruits and vegetables for snack	.204	.045	.300
	V119ABLE Feed child fruits	.139	.030	.151
	Wave survey time series	.475	.415	.321
	A45New NewLanguage	.282	.154	.321

Correlations

		V117FV Likes fruits and vegetables	V118FVS Eat fruits and vegetables for snack	V119ABLE Feed child fruits
Pearson Correlation	FAC1_2 ChildF&VFactor	.451	.253	.287
	A12 Eat Fruit	.272	.294	.179
	A13 Eat Vegetables	.308	.203	.129
	A15 Eat Potatoes	.139	.193	.086
	A16 Other Vegetables	.100	.120	.165
	A30 Buy fruits and vegetables	.351	.211	.257
	A31 Prepare meals with fruits and vege	.093	.126	.165
	urban urban vs rural	.269	.255	.283
	border border vs nonborder	.151	.080	.157
	V117FV Likes fruits and vegetables	1.000	.527	.513
	V118FVS Eat fruits and vegetables for snack	.527	1.000	.561
	V119ABLE Feed child fruits	.513	.561	1.000
	Wave survey time series	-.265	-.048	-.105
	A45New NewLanguage	-.208	-.322	-.170
Sig. (1-tailed)	FAC1_2 ChildF&VFactor	.001	.046	.028
	A12 Eat Fruit	.035	.025	.119
	A13 Eat Vegetables	.020	.091	.200
	A15 Eat Potatoes	.182	.101	.287
	A16 Other Vegetables	.257	.216	.140
	A30 Buy fruits and vegetables	.009	.082	.044
	A31 Prepare meals with fruits and vege	.271	.204	.139
	urban urban vs rural	.037	.045	.030
	border border vs nonborder	.161	.300	.151
	V117FV Likes fruits and vegetables	.	.000	.000
	V118FVS Eat fruits and vegetables for snack	.000	.	.000
	V119ABLE Feed child fruits	.000	.000	.
	Wave survey time series	.040	.378	.247
	A45New NewLanguage	.085	.016	.132

Correlations

		Wave survey time series	A45New NewLanguage
Pearson Correlation	FAC1_2 ChildF&VFactor	-.143	-.116
	A12 Eat Fruit	.013	.044
	A13 Eat Vegetables	.029	.002
	A15 Eat Potatoes	-.234	-.303
	A16 Other Vegetables	.062	-.028
	A30 Buy fruits and vegetables	-.086	.050
	A31 Prepare meals with fruits and vege	-.010	.088
	urban urban vs rural	-.033	-.156
	border border vs nonborder	-.071	-.071
	V117FV Likes fruits and vegetables	-.265	-.208
	V118FVS Eat fruits and vegetables for snack	-.048	-.322
	V119ABLE Feed child fruits	-.105	-.170
	Wave survey time series	1.000	.196
	A45New NewLanguage	.196	1.000
Sig. (1-tailed)	FAC1_2 ChildF&VFactor	.174	.225
	A12 Eat Fruit	.467	.387
	A13 Eat Vegetables	.425	.495
	A15 Eat Potatoes	.061	.021
	A16 Other Vegetables	.342	.427
	A30 Buy fruits and vegetables	.287	.372
	A31 Prepare meals with fruits and vege	.475	.282
	urban urban vs rural	.415	.154
	border border vs nonborder	.321	.321
	V117FV Likes fruits and vegetables	.040	.085
	V118FVS Eat fruits and vegetables for snack	.378	.016
	V119ABLE Feed child fruits	.247	.132
	Wave survey time series	.	.098
	A45New NewLanguage	.098	.

Correlations

		FAC1_2 ChildF&VFactor	A12 Eat Fruit	A13 Eat Vegetables
N	FAC1_2 ChildF&VFactor	45	45	45
	A12 Eat Fruit	45	45	45
	A13 Eat Vegetables	45	45	45
	A15 Eat Potatoes	45	45	45
	A16 Other Vegetables	45	45	45
	A30 Buy fruits and vegetables	45	45	45
	A31 Prepare meals with fruits and vege	45	45	45
	urban urban vs rural	45	45	45
	border border vs nonborder	45	45	45
	V117FV Likes fruits and vegetables	45	45	45
	V118FVS Eat fruits and vegetables for snack	45	45	45
	V119ABLE Feed child fruits	45	45	45
	Wave survey time series	45	45	45
	A45New NewLanguage	45	45	45

Correlations

		A15 Eat Potatoes	A16 Other Vegetables	A30 Buy fruits and vegetables
N	FAC1_2 ChildF&VFactor	45	45	45
	A12 Eat Fruit	45	45	45
	A13 Eat Vegetables	45	45	45
	A15 Eat Potatoes	45	45	45
	A16 Other Vegetables	45	45	45
	A30 Buy fruits and vegetables	45	45	45
	A31 Prepare meals with fruits and vege	45	45	45
	urban urban vs rural	45	45	45
	border border vs nonborder	45	45	45
	V117FV Likes fruits and vegetables	45	45	45
	V118FVS Eat fruits and vegetables for snack	45	45	45
	V119ABLE Feed child fruits	45	45	45
	Wave survey time series	45	45	45
	A45New NewLanguage	45	45	45

Correlations

		A31 Prepare meals with fruits and vege	urban urban vs rural	border border vs nonborder
N	FAC1_2 ChildF&VFactor	45	45	45
	A12 Eat Fruit	45	45	45
	A13 Eat Vegetables	45	45	45
	A15 Eat Potatoes	45	45	45
	A16 Other Vegetables	45	45	45
	A30 Buy fruits and vegetables	45	45	45
	A31 Prepare meals with fruits and vege	45	45	45
	urban urban vs rural	45	45	45
	border border vs nonborder	45	45	45
	V117FV Likes fruits and vegetables	45	45	45
	V118FVS Eat fruits and vegetables for snack	45	45	45
	V119ABLE Feed child fruits	45	45	45
	Wave survey time series	45	45	45
	A45New NewLanguage	45	45	45

Correlations

		V117FV Likes fruits and vegetables	V118FVS Eat fruits and vegetables for snack	V119ABLE Feed child fruits
N	FAC1_2 ChildF&VFactor	45	45	45
	A12 Eat Fruit	45	45	45
	A13 Eat Vegetables	45	45	45
	A15 Eat Potatoes	45	45	45
	A16 Other Vegetables	45	45	45
	A30 Buy fruits and vegetables	45	45	45
	A31 Prepare meals with fruits and vege	45	45	45
	urban urban vs rural	45	45	45
	border border vs nonborder	45	45	45
	V117FV Likes fruits and vegetables	45	45	45
	V118FVS Eat fruits and vegetables for snack	45	45	45
	V119ABLE Feed child fruits	45	45	45
	Wave survey time series	45	45	45
	A45New NewLanguage	45	45	45

Correlations

		Wave survey time series	A45New NewLanguage
N	FAC1_2 ChildF&VFactor	45	45
	A12 Eat Fruit	45	45
	A13 Eat Vegetables	45	45
	A15 Eat Potatoes	45	45
	A16 Other Vegetables	45	45
	A30 Buy fruits and vegetables	45	45
	A31 Prepare meals with fruits and vege	45	45
	urban urban vs rural	45	45
	border border vs nonborder	45	45
	V117FV Likes fruits and vegetables	45	45
	V118FVS Eat fruits and vegetables for snack	45	45
	V119ABLE Feed child fruits	45	45
	Wave survey time series	45	45
	A45New NewLanguage	45	45

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	A45New NewLanguage, A13 Eat Vegetables, border border vs nonborder, A31 Prepare meals with fruits and vege, urban urban vs rural, Wave survey time series, V119ABLE Feed child fruits, A12 Eat Fruit, V117FV Likes fruits and vegetables, A15 Eat Potatoes, V118FVS Eat fruits and vegetables for snack, A16 Other Vegetables, A30 Buy fruits and vegetables[b]	.	Enter

a. Dependent Variable: FAC1_2 ChildF&VFactor

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.897[a]	.805	.723	.54933780	.805	9.830	13

Model Summary

Model	Change Statistics	
	df2	Sig. F Change
1	31	.000

a. Predictors: (Constant), A45New NewLanguage, A13 Eat Vegetables, border border vs nonborder, A31 Prepare meals with fruits and vege, urban urban vs rural, Wave survey time series, V119ABLE Feed child fruits, A12 Eat Fruit, V117FV Likes fruits and vegetables, A15 Eat Potatoes, V118FVS Eat fruits and vegetables for snack, A16 Other Vegetables, A30 Buy fruits and vegetables

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.562	13	2.966	9.830	.000[b]
	Residual	9.355	31	.302		
	Total	47.917	44			

a. Dependent Variable: FAC1_2 ChildF&VFactor

b. Predictors: (Constant), A45New NewLanguage, A13 Eat Vegetables, border border vs nonborder, A31 Prepare meals with fruits and vege, urban urban vs rural, Wave survey time series, V119ABLE Feed child fruits, A12 Eat Fruit, V117FV Likes fruits and vegetables, A15 Eat Potatoes, V118FVS Eat fruits and vegetables for snack, A16 Other Vegetables, A30 Buy fruits and vegetables

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.688	.880		-3.056	.005
	A12 Eat Fruit	.210	.083	.290	2.522	.017
	A13 Eat Vegetables	.083	.079	.132	1.058	.298
	A15 Eat Potatoes	.368	.085	.460	4.312	.000
	A16 Other Vegetables	.268	.079	.384	3.404	.002
	A30 Buy fruits and vegetables	-.259	.194	-.164	-1.338	.191
	A31 Prepare meals with fruits and vege	.022	.104	.019	.210	.835
	urban urban vs rural	.207	.254	.073	.816	.420
	border border vs nonborder	.364	.360	.088	1.011	.320
	V117FV Likes fruits and vegetables	.426	.147	.325	2.895	.007
	V118FVS Eat fruits and vegetables for snack	-.216	.140	-.170	-1.537	.134
	V119ABLE Feed child fruits	.091	.161	.060	.567	.575
	Wave survey time series	-.003	.184	-.001	-.016	.987
	A45New NewLanguage	.143	.196	.069	.730	.471

Coefficients[a]

Model		Correlations			Collinearity Statistics	
		Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)					
	A12 Eat Fruit	.571	.413	.200	.478	2.093
	A13 Eat Vegetables	.623	.187	.084	.402	2.489
	A15 Eat Potatoes	.645	.612	.342	.552	1.810
	A16 Other Vegetables	.534	.522	.270	.494	2.023
	A30 Buy fruits and vegetables	.481	-.234	-.106	.417	2.397
	A31 Prepare meals with fruits and vege	.167	.038	.017	.754	1.327
	urban urban vs rural	.050	.145	.065	.794	1.259
	border border vs nonborder	.163	.179	.080	.833	1.200
	V117FV Likes fruits and vegetables	.451	.461	.230	.501	1.997
	V118FVS Eat fruits and vegetables for snack	.253	-.266	-.122	.518	1.932
	V119ABLE Feed child fruits	.287	.101	.045	.562	1.779
	Wave survey time series	-.143	-.003	-.001	.793	1.261
	A45New NewLanguage	-.116	.130	.058	.698	1.433

a. Dependent Variable: FAC1_2 ChildF&VFactor

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	A12 Eat Fruit	A13 Eat Vegetables
1	1	10.929	1.000	.00	.00	.00
	2	1.014	3.283	.00	.00	.00
	3	.792	3.715	.00	.00	.00
	4	.475	4.798	.00	.01	.01
	5	.302	6.012	.00	.01	.10
	6	.128	9.258	.00	.37	.11
	7	.095	10.754	.00	.01	.00
	8	.088	11.150	.00	.17	.13
	9	.075	12.045	.00	.12	.45
	10	.055	14.129	.00	.02	.00
	11	.018	24.353	.03	.01	.03
	12	.012	30.158	.01	.04	.03
	13	.011	31.599	.01	.04	.05
	14	.007	40.310	.95	.18	.08

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions				
		A15 Eat Potatoes	A16 Other Vegetables	A30 Buy fruits and vegetables	A31 Prepare meals with fruits and vege	urban urban vs rural
1	1	.00	.00	.00	.00	.00
	2	.00	.00	.00	.00	.22
	3	.00	.00	.00	.00	.50
	4	.32	.00	.00	.00	.02
	5	.10	.21	.00	.01	.06
	6	.11	.09	.00	.02	.01
	7	.20	.01	.00	.00	.04
	8	.04	.06	.00	.05	.00
	9	.00	.51	.00	.00	.10
	10	.12	.00	.00	.72	.00
	11	.00	.00	.31	.08	.01
	12	.01	.08	.29	.10	.00
	13	.00	.02	.09	.01	.02
	14	.10	.00	.29	.02	.01

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions				
		border border vs nonborder	V117FV Likes fruits and vegetables	V118FVS Eat fruits and vegetables for snack	V119ABLE Feed child fruits	Wave survey time series
1	1	.00	.00	.00	.00	.00
	2	.47	.00	.00	.00	.00
	3	.35	.00	.00	.00	.00
	4	.00	.00	.00	.00	.02
	5	.00	.00	.00	.00	.00
	6	.01	.00	.00	.00	.00
	7	.03	.02	.01	.01	.50
	8	.03	.00	.01	.00	.12
	9	.05	.01	.01	.00	.11
	10	.03	.01	.01	.01	.01
	11	.01	.05	.43	.00	.01
	12	.00	.79	.13	.05	.06
	13	.00	.02	.35	.88	.00
	14	.00	.09	.04	.04	.18

Collinearity Diagnostics[a]

Model	Dimension	Variance ...
		A45New NewLanguage
1	1	.00
	2	.00
	3	.00
	4	.02
	5	.00
	6	.03
	7	.03
	8	.31
	9	.12
	10	.17
	11	.14
	12	.01
	13	.01
	14	.15

a. Dependent Variable: FAC1_2 ChildF&VFactor

VITA

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