The dietary acculturation process in newly immigrated Chinese mothers with dependent children

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Abstract

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Upon arrival in a new host country, generally a more developed or modern one, immigrants have a better health profile than the counterpart native population, i.e., the "healthy immigrant effect." *After arrival,* the overall mortality rate and the prevalence of disease risk factors among immigrants increase with their duration of residence in a host country, such as the United States and Canada. Many aspects of adaptation occur with immigration, i.e., acculturation, including the aspect of dietary practice. *Dietary acculturation* is the process that occurs when members of a minority group adopt the eating patterns/food choices of the host country. Knowledge of such a process is crucial yet not well understood. The purpose of this dissertation study is to understand the dietary acculturation process among newly immigrated Chinese American mothers with dependent children. The aims are to (1) generate a new framework to conceptualize phases

involved in the dietary acculturation process, and (2) identify key mechanisms and factors associated with change in dietary intake and dietary behaviors.

The study was guided by the precede-proceed model and Satia-Abouta's model of dietary acculturation (2002). Naturalism served as the study's philosophical underpinning, and a generic qualitative approach was taken. Six focus group discussion sessions were conducted with newly immigrated Chinese mothers. Purposeful sampling was done through three different types of social organizations to include immigrants from both urban and suburban areas as well as from an ethnic enclave. The study sample consisted of 42 participants, with five to eight participants in each of the six focus groups. A semi-structured discussion guide for focus groups was used to facilitate the discussions. To make the research design suitable to the study purpose and aims, tools from multiple established qualitative methods, such as the grounded theory approach, thematic analysis, and content analysis, were used. The analytic procedures included decontextualizing, synthesizing, and re-contextualizing. An iterative, 5-stage multi-step analytic process was conducted. Measures were taken to ensure trustworthiness and rigor. Thick descriptions of the dietary acculturation process were reported in the results chapter. The findings reveal four phases in the dietary acculturation process: (1) Phase 0 immigration and change, (2) Phase 1 dietary encounters and dietary involvement, (3) Phase 2 appraisal, and (4) Phase 3 reaction and adaptation. The mechanisms and factors during the process include (a) structural change, personal change, and change related to other family members in Phase 0; (b) personal encounters and encounters through connections with others in Phase 1; (c) depreciation of the U.S. diet, depreciation of the Chinese diet, appraisal of options, and appreciation of the U.S. diet in Phase 2; and (d) resisting acculturation, primary acculturation, and secondary acculturation in Phase 3. A framework was presented that shows phases in the dietary acculturation process derived from the analysis of focus group discussions. The emerged themes

of adjusting, adapting, and habituating under primary acculturation in Phase 3 highlight the act of adaptation in the dietary acculturation process. The development of flavor acceptance, a concept that emerged under habituating, evidently is important to the pace of the dietary acculturation process. The study findings are discussed within their theoretical contexts, i.e., Satia-Abouta's model of dietary acculturation (2002) and Berry's model of acculturation (1997). Within the former, a conceptual framework of the dietary acculturation process is presented with sequenced phases showing mechanisms and detailed factor categories. Within the latter, three figures are presented related to two dimensions (i.e., heritage and host) and four strategies (i.e., integration/biculturalism, assimilation, separation, and marginalization). The dissertation concludes with study strengths and limitations as well as implications. The implications for future research are to (a) integrate identified factors and mechanisms to design testable interventions, (b) use similar research design or methodology with other immigrant populations, and (c) continue focusing on disadvantaged immigrants to prevent further health inequities. The implications for future nursing practice are to (a) assess contexts in which the identified factors and mechanisms occur, (b) provide culturally competent care with an understanding of ethnic dietary practices, and (c) knowledgeably initiate discussions of dietary practices with immigrant clients and provide needed education.

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CHAPTER 1: INTRODUCTION

This dissertation study, titled "The Dietary Acculturation Process in Newly Immigrated Chinese Mothers with Dependent Children," was designed to uncover the process of change in the dietary practices of newly immigrated Chinese mothers during the early adjustment period after moving from their native countries to the United States. Immigration involves a change in environment, which, from a socio-ecological perspective, necessitates lifestyle adjustments, including changes in dietary behavior known as dietary acculturation (Gee & Ford, 2011; Lum & Vanderaa, 2010; Siegel et al., 2012). Among immigrant families, mothers are primarily responsible for food acquisition and meal preparation. In addition, empirical evidence shows that children significantly influence mothers' dietary practices, especially dependent children; thus, this dissertation examined the *process of dietary acculturation* from the perspective of newly immigrated women with dependent children.

Statement of the Problem

Immigrating to Western countries often opens up new opportunities for immigrants and their families, both economically and socio-politically; nevertheless, immigration is associated with patterns of increasing health disparities (Gee & Ford, 2011; Lum & Vanderaa, 2010; Siegel et al., 2012). Adoption of Western dietary patterns, which are high in fat and low in fruits and vegetables, increases the risk of chronic diseases, such as cardiovascular diseases, cancers, and diabetes (Satia-Abouta et al., 2002). For Chinese immigrants in the United States, dietary acculturation typically involves shifting toward increased consumption of calories in the form of fats and proteins, particularly meat. Although dietary acculturation is often associated with unfavorable changes in immigrant health, the science of dietary acculturation has not developed sufficiently to address the health risks related to changes in dietary behavior in immigrants. Most immigrants are likely to experience common phases in dietary acculturation, with key

mechanisms and factors responsible for their progression within and across phases. Knowledge of the phases, mechanisms, and factors involved in the process of dietary acculturation will contribute to healthcare practices to improve health. Unfortunately, no existing study has investigated this process in details, likely due to the inherent difficulty of approaching a topic like dietary acculturation that is chronological in nature. The literature often acknowledges the importance of understanding the dietary acculturation process to advance the field of acculturation and immigrant health. However, little is known about these phases or the mechanisms and factors that bring about dietary change.

Statement of Purpose

Although scholars first recognized the importance of understanding the dietary acculturation process almost two decades ago, there have been few substantive gains in knowledge about this process. Since dietary acculturation is an ongoing, gradual process of change in dietary intake and dietary behaviors, it is complex and multifocal. The behavior changes that occur within dietary acculturation are difficult and time consuming to capture sufficiently, even with the use of traditional ethnographic methods (Satia-Abouta et al., 2002).

Though difficult to ascertain, understanding the dietary acculturation process gives insight into why unhealthful changes in dietary intake or dietary behaviors occur that lead to the increase of certain chronic diseases associated with immigrant populations. Such knowledge contributes to health care professionals' understanding of when to efficiently intervene and what health-promotion strategies to use, which have critical implications for public health. Building a new framework to capture the dietary acculturation process as well as the mechanisms and factors driving that process is essential to theory generation and operationalization in the field of dietary acculturation, a highly influential lifestyle factor in immigrant health.

To address gaps in the scientific literature regarding the dietary acculturation process, a series of focus group discussion sessions was conducted with newly immigrated Chinese mothers as part of this dissertation study. The specific aims of this dissertation study were to:

1. Generate a new framework to conceptualize phases involved in the dietary acculturation process.
2. Identify key mechanisms and factors associated with change in dietary intake and dietary behaviors.

Conceptual Framework

To guide the design of this dissertation study, a framework was developed to capture the major mechanisms thought to influence behaviors related to dietary acculturation (see Figure 1, p. 5) based on the precede-proceed model (Green & Kreuter, 2005, p. 137). The precede-proceed model is an ecological approach used to assess and identify key characteristics and elements of existing ecosystems (the "precede" phase) in order to plan, develop, implement, and evaluate subsequent educational and/or environmental interventions (the "proceed" phase) to make improvements in the ecosystem. As defined in the model, an ecosystem includes behavioral, environmental, and health components, which are constructed by predisposing determinants (attitudes, beliefs), enabling determinants (resource availability, accessibility), and reinforcing determinants (rewards, changing norms, preferences). Interventions derived with this model have been broad and include components of health education, media, advocacy, policy, regulation, resources, and organization. Such interventions themselves may become the predisposing, enabling, or reinforcing determinants of improvements in the ecosystem.

Diverging from the precede-proceed model, the framework illustrated in Figure 1 indicates that predisposing, enabling, and reinforcing determining factors are part of the environmental component of the ecosystem (hence, there can be "environmental interventions"),

and these factors are mechanisms influencing the behavioral component of the ecosystem. Behavioral change is conceptualized in the framework as modifications in dietary intake and dietary behaviors during the process of dietary acculturation. Mechanisms of behavioral change are linked to specific factors in the environment that create the force or drive toward change in behavior; this force *is* the mechanism of change. Factors can predispose, enable, or reinforce behaviors, facilitating the process of change. For example, a child can be a predisposing or reinforcing factor. When a child wants to eat pizza (a predisposing factor) and repeatedly eats well when pizza is served (a reinforcing factor), the force emanating from these factors, which is the mechanism of change, drives the mother's dietary behaviors (buying/preparing/eating pizza rather than a traditional meal). The process of acquiring a new dietary practice will likely evolve due to this mechanism, depending on the valence and direction of forces created by other factors in the ecosystem.

As such, the central concepts in this new framework are the environment, predisposing, enabling, and reinforcing factors, and behaviors of dietary acculturation as the target for change. Each concept is described below.

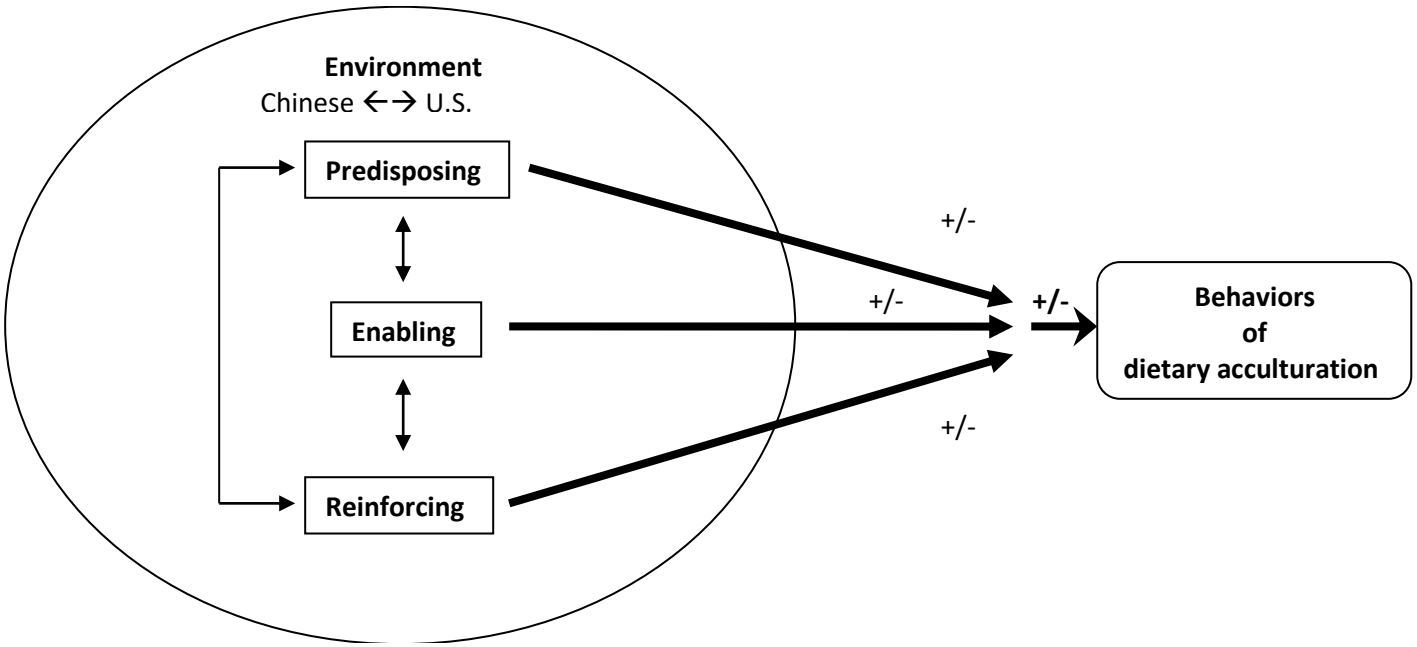
Environment

In conceptualizing the dietary acculturation process (Figure 1), environment refers to both the physical environment and the abstract environment, each of which includes predisposing, enabling, and reinforcing factors. The physical environment refers to natural environments (e.g., weather and soil for agriculture) as well as built environments (e.g., community structures, such as ethnic enclaves). The abstract environment refers to the social, cultural, economic, and political environments reflected in the media, beliefs and norms, food accessibility, and policies involving food industries and production. For Chinese immigrants, the

dietary acculturation environment uniquely involves two cultures: the heritage Chinese culture and the host U.S. culture.

Figure 1

Mechanisms Influencing Behaviors of Dietary Acculturation



The role of the environment in the process of dietary acculturation is usefully illuminated through the framework of behavior change theory. In behavior change theory, a targeted change in behavior for a desired health outcome involves intentionally and knowingly changing certain controllable factors in the environment. Due to the monumental changes in the food environment that result from migration, immigrants inevitably experience changes in diet and dietary behaviors. Unfortunately, details about how this naturally occurring change in environment influences dietary acculturation are not known.

Numerous changes in the environment occur after immigration. Many of these changes can influence the direction of dietary change, be it in a desirable or undesirable way. It is thus

essential to understand which changes in the environment are instrumental factors in altering immigrants' dietary practices for the worse. Even more beneficial is to know which factors are most likely to contribute to a desirable and healthful outcome while also developing interventions to avoid factors linked to undesirable outcomes. However, assessing environmental changes is challenging in the context of dietary acculturation because environmental changes vary for individuals in different circumstances. The process of dietary acculturation is likely to have varied trajectories for different individuals. Therefore, it is important to study dietary acculturation by looking at the process in depth at both the individual and the general level.

Predisposing Factors

Predisposing factors determine if and how an individual prepares to adapt to change of environment. These factors include knowledge, attitudes, beliefs, values, and confidence or self-efficacy. For example, knowledge and skill in cooking Chinese foods can predispose an individual to shop for and cook with Chinese ingredients. On the other hand, knowledge and skill in cooking U.S. foods can predispose an individual to prepare and consume more U.S. foods.

Enabling Factors

Enabling factors determine how an individual is able to adapt to change of environment. These factors include availability, accessibility, policies, and skills related to food. For example, the availability of certain Chinese foods in the new U.S. food environment enables Chinese immigrants to continue preparing and eating Chinese foods if they choose. Conversely, the availability of U.S. foods influences Chinese immigrants to acquire a new diet or dietary behaviors. Living in two food cultures poses a dilemma for Chinese immigrants. On one hand, the availability of rice allows them to continue cooking and eating rice dishes as main meals. On the other hand, the availability of hamburgers or other convenience foods enables immigrants to

change their dietary behavior. In the process of adapting to the new dietary environment, enabling factors determine if immigrants are able to maintain all or some of their heritage diet. These factors also contribute to acquiring the new host diet or parts of that diet.

Reinforcing Factors

Reinforcing factors serve to motivate individuals to continue the same diet or dietary behaviors, whether they be old or newly acquired diets and dietary behaviors. For example, Chinese grandparents' emphasis on eating Chinese dishes can reinforce mothers' behavior of continuing to cook Chinese dishes; at the same time, immigrant children's affinity for candy bars or chips can similarly reinforce mothers' purchasing behavior.

Behaviors of Dietary Acculturation

Changes in dietary behaviors, known as dietary acculturation, are those that occur due to the influence of a new dietary culture as part of the adjustments and adaptations of immigration. In this dissertation, dietary acculturation implies dietary change toward Western dietary culture among immigrants in the United States. Due to the complex nature of diet and dietary behaviors, dietary acculturation is a broad and multifaceted process. At its simplest, the process can be conceptualized as dual dimensional, with changes toward the host dietary culture along one dimension (more vs. less of the host diet) and changes away from the heritage dietary culture along the other dimension (more vs. less of the heritage diet). During this process, an immigrant may adopt a few U.S. foods or dietary behaviors, but not others; they may adopt a modified or fusion diet and blended dietary behaviors; they may abandon some heritage culture foods or dietary behaviors, but not others; or they may adopt a combination of the above behaviors to varying degrees. To circumscribe the complexities of studying dietary acculturation, this dissertation study focused predominantly on behaviors of dietary acculturation that shifted *toward* the U.S. dietary culture.

Conceptualization of Dietary Practice

In addition to the theoretical framework mentioned above, this dissertation draws on the dimensions of dietary behaviors conceptualized in the *diet individuation process*. The dimensions of dietary behaviors in the diet individuation process include the individual dietary concepts of selection or inclusion, exclusion, replacement, substitution, and modification of ethnic and new foods (Jerome, 1975; Kristal, 1990). These individual dietary concepts are facets of the "behaviors of dietary acculturation" depicted in Figure 1, and they explain some of the more common changes in dietary behaviors observed among immigrants (see Table 1 for examples). Moreover, inclusion, exclusion, replacement, substitution, and modification are dimensions of dietary behavior that predisposing, enabling, and reinforcing factors can influence an individual to exhibit. As there is considerable variation in the ways that individuals behave toward the same food item, dietary behaviors shape diet in the acculturation process in an individualized way.

As illustrated by the examples in Table 1, dietary change involves both *dietary intake* and *dietary behaviors*. In this dissertation, dietary intake is defined as intake of particular food items, including foods in their original forms from all food groups and foods processed for consumption. Dietary behaviors are defined as behaviors that contribute to dietary intake, including food shopping, preparing, cooking, patronizing restaurants, celebrating/gathering for meals, and so forth. These behaviors can be categorized into behaviors that maintain the dietary practices of the heritage country, those that are acquired from the host country, or those that are unique to the dietary practices of immigrants.

Table 1

Concepts and Examples of Dietary Behaviors

Concept	Example
Inclusion	Adding new U.S. foods to the core diet based on availability or due to U.S. cultural influence.
Exclusion	Excluding certain U.S. foods due to cultural beliefs, attitudes, or values, or excluding certain heritage foods due to lack of availability.
Replacement	Replacing specific heritage foods, such as rice porridge or tea, with U.S. foods, such as cereal, coffee, or soft drinks.
Substitution	Substituting more readily available U.S. foods for heritage foods, such as using dairy products rather than soy products in Chinese dishes.
Modification	Eating the same foods, but modifying the way they are eaten or prepared, such as eating raw carrots instead of stir-fried carrots or stir-frying romaine lettuce instead of eating it raw.

Dietary Acculturation in Families with Dependent Children

In the dietary acculturation literature, children's eating habits have been identified as a main concern for immigrants (Gray et al., 2005). Evidence suggests that dietary acculturation is strongly associated with the eating habits of immigrant children as young as preschool age (Demory-Luce et al., 2005; Seth et al., 2007). In grade-school age immigrant children, dietary acculturation is associated with unhealthy eating habits that increase the risk of obesity (Magnusson et al., 2005; Rosas et al., 2009). Home is where a child's eating behaviors and habits begin, and it is a relatively small environmental unit compared to other sociocultural environments that the child encounters over time. Meal preparation and eating is primarily a family event, and mothers, especially in Chinese society, typically have significant roles in every aspect of the family diet, including meal planning and food purchasing, preparing, and cooking as well as packing food for school lunches and activities outside the home (Satia et al., 2000).

Beginning with the decision of whether or not to breastfeed and their own dietary choices during pregnancy and breastfeeding, mothers influence the foods and nutrients their offspring absorb or consume. As infants enter toddlerhood, the period when children begin to decide whether or not to eat specific foods, mothers continue to have primary responsibility and influence over what foods should be and are provided for their children. Even when children reach adolescence, mothers often continue to plan and prepare meals and select snacks for the family.

Due to the influence of dependent children on mothers' dietary choices, only immigrant mothers of young children were included in this study. Additionally, the population studied was limited to Chinese mothers who had immigrated to the United States recently. This is because, though dietary acculturation is an ongoing process that extends through generations, changes in dietary intake and behaviors can be more readily observed in Chinese immigrants within five years of migration (Satia et al., 2001). Based on the above rationale and to explore the dietary acculturation process in a way that is consistent with the existing dietary acculturation literature on Chinese immigrants, this dissertation study focused on the population of newly immigrated Chinese mothers with dependent children.

Overview of the Study

The purpose of this dissertation study was to understand the dietary acculturation process and to provide a deep description of *what* the dietary acculturation process is in order to develop a new framework for conceptualizing that process. The study aimed to identify important factors influencing behavioral change in the dietary acculturation process, that is, *why* certain behavioral change occurs, and to identify the mechanisms driving the process, or *how* the process does or does not progress. Based on insights from the literature, the scope of the study was population specific, with a focus on Chinese mothers with dependent children *who* are powerful factors in

dietary acculturation *when* Chinese families are adapting during the early post-immigration period in the United States *where* they have migrated. The emphasis on the what, why, how, who, when and where underpin the literature review in Chapter 2.

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CHAPTER 2: LITERATURE REVIEW

Acculturation is a process in which immigrants acquire certain aspects (behaviors, beliefs, attitudes, traditions) of the host culture and retain some aspects of their heritage culture (Ayala et al., 2008; Popovic-Lipovac & Strasser, 2015; Satia-Abouta, Patterson, Neuhouser et al., 2002). Within the larger context of acculturation, *dietary acculturation* is defined as "the process by which immigrants adopt the dietary practices of the host country" (Satia-Abouta, Patterson, Neuhouser et al., p. 1107, 2002). Likewise, in this dissertation study *dietary acculturation* is defined as the *process* in which immigrants acquire the dietary practices (e.g., food selection, preparation, acceptance, or preferences) of the host country. Unfortunately, scientific literature on dietary acculturation is limited, particularly concerning Chinese immigrants, even though this population has been rapidly growing in recent years. Due to the limited number of studies on dietary acculturation per se, this chapter reviews the literature on immigration, acculturation, and health in addition to the limited literature on dietary acculturation and its influencing factors. The chapter concludes with a description of the importance of research to understand the dietary acculturation process, which is the goal of this dissertation study.

Background

Immigration and Health

Studies on immigrant health circa 1996 to 2007 describe a phenomenon referred to as the "healthy immigrant effect." This phenomenon was based on findings that, upon arrival in a new host country, generally a more developed or modern one, immigrants "have a better health profile (overall lower mortality rates, less mental illness, fewer chronic diseases, fewer disabilities, overnight hospitalization)" (Popovic-Lipovac & Strasser, 2015, p. 585) than the counterpart native population. However, the healthy immigrant effect is location-based and tends

to be temporary. In contrast, studies that focus on mortality *after* immigration instead of *upon* immigration indicate a positive association between overall mortality rate and duration of residence in a host country. In addition to mortality, the prevalence of disease risk factors (e.g., being overweight or obesity) increases with duration of residence in a host country such as the United States and Canada (Popovic-Lipovac & Strasser, 2015).

Popovic-Lipovac and Strasser (2015), in their review of relevant studies, found that migrants generally have a higher incidence of type 2 diabetes mellitus, hypertension, other chronic health conditions, and obesity, as well as more risk factors for such diseases. It is hypothesized that this increase in nutrition-related diseases and risk factors is due to changes in immigrant health-related behaviors, such as dietary practices (Ayala et al., 2008; Lara et al., 2005; Perez-Escamilla & Putnik, 2007; Popovic-Lipovac & Strasser, 2015; Satia-Abouta, Patterson, Neuhouser et al., 2002). Change in dietary practice is one aspect of the many changes or adaptations that occur with immigration, that is, acculturation. The following section details research on acculturation and health, with a particular focus on dietary practices.

Acculturation and Health

Acculturation is typically measured using acculturation scales, such as the Suinn-Lew Asian Self Identity Scale (cf., Chen et al., 2012) or the Acculturation Scale for Filipino Americans (cf., Serafica & Angosta, 2016), or using acculturation indexes, such as language, years lived in a host country, or age at migration. Health outcomes are measured using the prevalence or incidence of disease risk factors or diseases. Most literature in this area supports the hypothesis that acculturation is positively associated with health problems, such as obesity, chronic diseases, and cancers, in modern society (Alidu & Grunfeld, 2018; Lara et al., 2005; Perez-Escamilla & Putnik, 2011; Satia-Abouta, Patterson, Neuhouser et al., 2002). For instance,

Novotny et al. (2009) showed that acculturation was associated with BMI, and that a younger arrival age, indicative of greater acculturation, was associated with a higher BMI.

However, the direction of the association between acculturation and health is not consistent across studies. Although less common, some studies have shown evidence of a negative relationship between acculturation and health problems. For example, Eamranond et al. (2009) conducted a descriptive study of Hispanic adults (N= 1,492, ages 45-84) from six sites in the United States that examined associations between language and risk factors. They found that less-acculturated Hispanic adults (those who used the Spanish language at home and had spent less time in the United States) had poorer control of cardiovascular-related risk factors despite showing the "healthy immigrant effect" upon arrival in the United States.

Though distinctly limited, the evidence to date in most research suggests that greater acculturation is associated with adverse health outcomes (Alidu & Grunfeld, 2018; Lara et al., 2005; Perez-Escamilla & Putnik, 2007; Popovic-Lipovac & Strasser, 2015), but being less acculturated has also been found to be associated with adverse health outcomes (Lara et al., 2005; Perez-Escamilla & Putnik, 2007). To untangle associations between acculturation and health outcomes, there is a need for research to focus on *specific* aspects of acculturation—for example, acculturation in diet. Understanding the dietary aspect of the acculturation process can offer explanations for some inconsistent or puzzling study findings, such as those described above. The following section offers an in-depth example of study findings to elaborate this point.

Diet and Health. Evidence from systematic reviews and meta-analyses has demonstrated links between *diet* and health outcomes in the general world population (Dinu et al., 2018; Schwingshackl et al., 2018; Schwingshackl & Hoffmann, 2015). However, only a limited amount of evidence exists showing associations between *dietary behaviors* and health outcomes in the general world population (de Hoogh et al., 2021). Research establishing associations

between immigrant dietary behaviors and health outcomes is even more scarce for several reasons. Studies on dietary behavior and health outcomes are challenging to conduct, even when studying the general public. Dietary behaviors change over time, and sometimes considerable time is required for adverse health outcomes to develop due to dietary behaviors. Furthermore, the effect of adverse dietary behavior on health outcomes may be offset by other factors, such as genetics and level of physical activity.

Even though adverse dietary behavior can place immigrants at risk for health problems, it may not always lead to adverse health outcomes due to counterpoising protective factors. Perez-Escamilla and Putnik (2007), in a review of the role of acculturation in nutrition, lifestyle, and the incidence of type 2 diabetes among Latinos, showed that acculturation was associated with adverse dietary behavior, such as the intake of sweetened beverages while also being counterintuitively associated with a lower likelihood of type 2 diabetes and greater physical activity in Latinos. In other words, for Latinos, acculturation was associated with adverse dietary behaviors that can contribute to the likelihood of type 2 diabetes and with greater physical activity that can lower the likelihood of type 2 diabetes. To make these findings more puzzling, acculturation was found to be associated with a lower likelihood of type 2 diabetes overall. A major challenge in studying dietary acculturation through the broader concept of general acculturation is that general acculturation encompasses aspects other than dietary practices, e.g., physical activity, that may offset other influences on health outcomes. The complex and sometimes ambiguous research findings underscore the logic of studying the process of dietary acculturation directly in order to explore the unfolding of behavioral changes that can potentially affect long-term health outcomes.

Change of Diet: Acculturation and Dietary Practice. Researchers have sought to provide evidence on the association between acculturation and immigrant dietary practices. In

studies, dietary practice is sometimes translated into a dietary profile and measured using dietary scales or dietary indexes of specific foods (e.g., sweets and fats) and behaviors (e.g., eating at fast food restaurants). Evidence shows that immigrant dietary behaviors can change dramatically toward an adverse dietary profile, making such changes a major factor in the decline of health following migration (Ayala et al., 2008; Lara et al., 2005; Perez-Escamilla & Putnik, 2007; Satia-Abouta, Patterson, Neuhouser et al., 2002).

Almost all research in this area supports an association between acculturation and a lower intake of fruits and vegetables (Duffey et al., 2008; Perez-Escamilla & Putnik, 2007; Stimpson & Urrutia-Rojas, 2007). Some findings indicate that greater acculturation is associated with lower intake of other healthy foods (e.g., grains or legumes), as noted by Ayala et al. (2008), and higher intake of unhealthy foods (e.g., sweets, fats, or fast food) as concluded by a number of scholars (Ayala et al., 2008; Benavides-Vaello, 2005; Perez-Escamilla & Putnik, 2007).

Few studies provide evidence of links between acculturation and healthy dietary practices. And when such evidence is available, it is not enlightening or it is relatively insignificant. For example, in a survey study (N= 16,539) of acculturation and nutrition, Stimpson and Urrutia-Rojas (2007) found that greater acculturation (defined as speaking English, being U.S.-born or a long-time U.S. resident) was associated with higher levels of lycopene, a beneficial carotenoid (a group of healthy nutrients). In contrast, they also found that greater acculturation was associated with lower levels of other carotenoids. Thus, at this juncture, greater acculturation is generally associated with unhealthy dietary intake overall (Ayala et al., 2008; Benavides-Vaello, 2005; Lara et al., 2005; Perez-Escamilla & Putnik, 2007).

Phenomenon of Dietary Acculturation

The decline of health in immigrants after migration is a significant public health concern and has stimulated a number of scholarly investigations (Delavari et al., 2013; Guendelman et

al., 2011; Holmboe-Ottesen & Wandel, 2012; Sanou et al., 2014). However, few studies have explored the *direct* effects of *dietary acculturation* on immigrant health outcomes. Rather, studies have focused on the influence of general acculturation on immigrant health outcomes, including chronic illnesses that are preventable through lifestyle changes. There is considerable empirical evidence suggesting that adverse health effects are associated with lifestyle changes, including dietary behaviors, linked to immigration and acculturation.

As dietary acculturation is one of many aspects of acculturation, it is difficult to draw sound conclusions about the association between dietary acculturation and health outcomes from the many studies of acculturation unless, of course, specific dietary measurements were included. Nonetheless, there is sufficient empirical evidence to suggest that adverse effects are associated with changes that result from migration such as lifestyle changes, including changes to dietary behavior. Yet, other lifestyle factors, such as physical activity, can offset the influence of dietary behavior on health outcomes, making the association between dietary acculturation and health outcomes even more difficult to isolate and understand.

Associations Among Acculturation, Dietary Practice, and Health Outcomes

The literature examining factors that are posited to influence the process of dietary acculturation remains sparse. The literature is even more limited with respect to Chinese Americans, the focus population of this dissertation study. To obtain a broader perspective about the state of science in the field of dietary acculturation, this literature review was expanded to include a broader range of studies on Asian Americans and Hispanic Americans. To circumscribe this specific aspect of the literature review, systematic reviews of the literature by scholars and recent publications were used to lay the groundwork for the dissertation. Table 2.1 summarizes these reviews.

Table 2.1

Summary of Major Scientific Reviews of the Association Among Acculturation, Diet, or Health

Date, authors & overlapping studies	Major focus of review	Definition of dietary acculturation/ acculturation & key concepts	Associations among identified acculturation, dietary practices & health outcomes	Dietary factors
2002 Satia-Abouta, Patterson, Neuhouser, & Elder 18 total studies, conducted from 1979-2001	Associations between diet & acculturation for Asians & Hispanics in the U.S. & Canada	Dietary acculturation: The process that occurs when members of a minority group adopt the eating patterns/food choices of the host country. Key concepts: exposure to host culture, socio-economic & demographic factors, cultural factors, change in psychological factors and taste preference, changes in environmental factors leading to changes in food procurement & preparation	Level of acculturation is associated with diet in most studies. However, direction of effect between level of acculturation and dietary intake is inconsistent.	13 socio-economic & demographic factors, 3 cultural factors, change in 2 psychological factors and taste preference, change in 2 environmental factors leading to change in food procurement & preparation.
2005 Benavides-Vaello 11 total studies, conducted from 1998-2002	Cultural influences on dietary practices of Mexican Americans	Key concepts: culture, diet, food, dietary practices	Acculturation associated with fat consumption, calorie sources, food groups, & changes in diet.	Culture
2005 Lara, Gamboa, Kahramanian, Morales, & Bautista About 150 total studies, conducted from 1982-2004; 10 studies on diet	Acculturation & Latino health in the U.S.	Acculturation: The "changes that occur in the group and individuals that are being acculturated to a dominant culture" and "psychological and social changes that groups and individuals experience when they enter a new and different cultural context"; a "rather fluid process that implies	Acculturation may have a negative, positive, or no effect on the health of Latinos; acculturation has a negative effect on health behaviors overall, including diet.	NA

Date, authors & overlapping studies	Major focus of review	Definition of dietary acculturation/ acculturation & key concepts	Associations among identified acculturation, dietary practices & health outcomes	Dietary factors
		movement at different speeds across different dimensions (e.g., behaviors, attitudes, norms, and values) and planes…[and] that does not typically follow a deficit mode, but rather implies growth across a variety of continua." (p. 373) Key concepts: measures of acculturation (e.g., language), health behaviors (e.g., nutrition)		
2007 Perez-Escamilla & Putnik 16 total studies, conducted from 1985-2006	The role of acculturation in nutrition, lifestyle, & type 2 diabetes among Latinos	Acculturation: "The process by which immigrants adopt the attitudes, values, customs, beliefs, and behaviors of a new culture." Key concepts: acculturation indicators, measures, and confounders, lifestyles, health outcomes	Acculturation associated with obesity risk, suboptimal dietary choices, low intake of fruits & vegetables, higher consumption of fats & artificial drinks high in refined sugar. In contrast, acculturation associated with a lower likelihood of type 2 diabetes.	Socio-economic, demographic, knowledge, attitudinal, and psychological factors
2008 Ayala, Baquero, & Klinger 34 total studies, conducted from 1990-2007; overlapped with Satia-Abouta et al. review 3 studies overlapped with Benavides-Vaello review	Acculturation & diet among Latinos in the U.S.	Acculturation: A bi-dimensional process in which individuals may learn and/or adopt certain aspects of the dominant culture and in some cases retain most or some aspects of their culture of origin. Key concepts: measures of acculturation (acculturation score, years in the U.S., birthplace, generational status, and language use), macronutrient intake,	No relationship between acculturation and fat intake or percent energy from fat. Less-acculturated Latinos, compared to more acculturated, consumed more fruit, rice, and beans. Less-acculturated vs. more-acculturated Latinos consumed	Dietary acculturation process of children

Date, authors & overlapping studies	Major focus of review	Definition of dietary acculturation/ acculturation & key concepts	Associations among identified acculturation, dietary practices & health outcomes	Dietary factors
8 studies overlapped with Lara et al. review 11 studies overlapped with Perez-Escamilla & Putnik review		micronutrient intake, dietary behaviors	less sugar and sugar-sweetened beverages.	
2015 Popovic-Lipovac & Strasser 179 total studies, no year restriction: 2 studies overlapped with Ayala et al. review	Changes in food habits among immigrant women and implications for health	Acculturation: The "process through which migrants and their children acquire the values, behavioral norms and attitudes of the host society (p. 582)." Key concepts: Changes in eating/ food habits, dietary choices, Satia-Abouta's model, taste	Dietary change associated with unfavorable risk factor profile, type 2 diabetes, hypertension, chronic conditions, and obesity.	Busier lifestyle, lack of social relations, higher level of stress, children's preferences, taste, food insecurity, language proficiency, length of residence in the host country, generation level, age, availability of traditional foods, ethnic identities, difference between heritage & host cultures, socio-economic status (SES)

Note. As the major focus of Lara et al. (2005)'s review is on acculturation and health, dietary factors were not specifically mentioned in their review. Benavides-Vaello (2005)'s review focused on culture as an influence on dietary practices but did not explore further dietary factors.

It is challenging to understand the connections among acculturation, change of dietary behavior, and immigrant health outcomes because few investigators have systematically addressed their interrelationships. In a review article of approximately 150 studies examining acculturation and Latino health, Lara et al. (2005) concluded that acculturation has a negative effect on dietary practices and is associated with worse health outcomes among Latinos, but the investigators did not conclude that these poor health outcomes were attributable to dietary changes post immigration. Novotny et al. (2009), in a cross-sectional group-randomized clinical trial study of 4,530 Asian-Pacific hotel workers, attempted to link three elements (U.S. acculturation, food intake, and obesity). They showed that acculturation was positively associated with BMI and that adverse dietary behavior (e.g., the intake of sweet drinks) was associated with higher BMI; however, they failed to demonstrate whether or not acculturation was associated with the adverse dietary behavior of consuming sweet drinks.

In her early work, Satia-Abouta and colleagues (Satia-Abouta, Patterson, Neuhouser et al., 2002) noticed associations between immigration and the incidence of disease and disease risk factors, which stimulated a focused line of research on the dietary practices of acculturation as the field expanded with more evidence on immigration and health. Satia-Abouta, Patterson, Neuhouser et al. pointed out that immigration can rapidly increase the risk of chronic disease in immigrants. As an example, they referenced the Ziegler et al. (1993) study, which reported that Asian-American female immigrants, who had lived in the Western United States for a decade or longer, had an 80% higher risk of breast cancer compared to more recent immigrants. They argued that such changes in the incidence of diseases such as breast cancer could largely be accounted for by changes in disease risk factors in immigrants. They also referenced studies published between 1993 and 2000 about non-insulin-dependent diabetes mellitus, abdominal

obesity, and body composition in Japanese-American and Mexican-American immigrants, arguing that changes in disease risk factors, such as abdominal obesity or body composition, could be due to the substantial shift both in lifestyle and environment resulting from immigration. Almost a decade after Satia-Abouta, Patterson, Neuhouser et al.'s elaboration on dietary acculturation, a line of research has been opened examining acculturation and diet. This research has enabled scientists to investigate dietary acculturation in more depth, advancing scientific knowledge in the field and highlighting the dietary practice aspect of acculturation.

The Direction of Effects Between Acculturation and Diet

In 2008, Ayala et al. published a comprehensive review of 34 studies on the relationship between acculturation and diet among adult Latinos in the United States. These studies ranged from those qualitatively examining small samples to large national studies using National Health and Nutrition Examination Survey data. The authors offered three conclusions. First, there was no relationship between acculturation and fat intake or percent of energy (calories) from fat. However, there was a difference in the *types* of fats consumed by less-acculturated and more-acculturated Latinos. Less-acculturated Latinos consumed more whole milk and used more fat in food preparation (e.g., meat fat to prepare foods); those who were more acculturated consumed more fast food, snacks, and added fats (e.g., butter or margarine). This detailed finding regarding the consumption of different types of fats is noteworthy (see section on "Acculturation and the Consumption of Dietary Fat"). Second, the review indicated that less-acculturated Latinos, compared to more-acculturated, consumed more fruit, rice, and beans. Third, less-acculturated compared to more-acculturated Latinos consumed less sugar and sugar-sweetened beverages.

Ayala et al. (2008) compared and discussed these findings with respect to other relevant articles available at the time, specifically those published by Satia-Abouta, Patterson, Neuhouser et al. (2002), Benavides-Vaello (2005), Lara et al. (2005), and Perez-Escamilla and Putnik (2007). Ayala and colleagues included nine of 18 studies involving Hispanic participants that had been reviewed earlier by Satia-Abouta, Patterson, Neuhouser et al. However, their conclusion differed from that of Satia-Abouta and colleagues in terms of consistency of association. Ayala et al. found some consistent associations between acculturation and diet, but Satia-Abouta, Patterson, Neuhouser et al. concluded "most of these studies found some statistically significant association of level of acculturation with diet. Unfortunately, there was no consistent direction of effect between level of acculturation and dietary intake" (p. 1109).

Satia-Abouta, Patterson, Neuhouser et al. (2002) reviewed studies examining associations between dietary practices and acculturation in Asians and Hispanics in the United States and Canada. Eighteen published studies were reviewed, nine of Hispanic immigrants and nine of Asian immigrants, including their own 2001 study. They concluded that most studies found some statistically significant associations between diet and acculturation, but the direction of the effects was inconsistent. Satia-Abouta, Patterson, Neuhouser et al. described findings from eight studies on the association between acculturation and dietary fat intake to exemplify inconsistencies of the effects. They pointed out that three studies reported a negative association, which was that less-acculturated immigrants were more likely to eat high-fat foods; three studies found a positive association between length of time in North America and fat intake; and two studies found no association. Results for fruit and vegetable intake were similarly inconsistent in their review.

It appears that part of the reason for the inconsistencies in the conclusions is that the authors failed to consider the specificity of the immigrant population, which is understandable given the time when the review was written. Of note, the three studies showing negative associations were of Hispanic immigrants (N = 132 Hispanic adults; N = 571 Hispanic women; and Hispanic [N = 471, 76%] as well as white adults). In contrast, the three studies revealing positive associations were of Asian immigrants (Chinese Americans, Japanese Americans, and Asians in general), and the two studies showing no associations were also of Asian immigrants, but of different heritage countries (Korea and Vietnam).

More information about the direction of effects could have been detected had the study designs or analyses been population specific. If the studies' interpretations had been population-specific, the data would have indicated either no association or a positive association between acculturation and dietary fat intake for Asian immigrants and a negative association between acculturation and dietary fat intake for less-acculturated Hispanic immigrants.

Findings can be more precise in studying the relationship between acculturation and diet by circumscribing the sample populations to specific ethnic groups. An inherent weakness in reviews done by earlier studies is the limited literature available at the time. The operational definition of acculturation level was inconsistent and a variety of scales or combinations of indexes were used for measurement with little standardization in methods. Moreover, some studies did not incorporate control factors, such as education, likely confounding the results.

Acculturation and the Consumption of Sugar and Fruits/Vegetables

Lara et al. (2005) concluded that more-acculturated Latinos are more likely to engage in undesirable dietary behaviors compared with their less-acculturated counterparts. Perez-Escamilla and Putnik (2007) explored this phenomenon further and exposed details of these

suboptimal dietary choices, such as lower intake of fruits and vegetables and higher consumption of fats and artificial drinks containing high levels of refined sugar. Ayala et al. (2008) supported the association between acculturation and unhealthy dietary practice with regard to lower intake of fruits and higher consumption of sugar-sweetened beverages among more-acculturated Latinos. However, they did not support the finding regarding the consumption of fats. They found no relationship between acculturation and fat intake or percent of energy from fat. Nonetheless, they did find that acculturation was associated with the type of fats consumed. Less-acculturated Latinos consumed more whole milk and used fat in food preparation; the more acculturated consumed more fast food, snacks, and added fats. This distinction regarding the type of fats consumed, made more than a decade ago, is valuable and deserves further discussion given that science has also been focusing more on the type of fats consumed rather than the amount of fat, in general, as it relates to health.

Acculturation and the Consumption of Fat

With regards to whole milk, most studies have not found the consumption of whole milk by adults to be associated with increased cardiometabolic or adiposity risk (O'Sullivan et al., 2020). For children, most evidence has similarly indicated that the consumption of whole milk is not associated with increased cardiometabolic risk (O'Sullivan et al., 2020); moreover, recommending reduced fat instead of whole fat milk for children may not be effective in preventing being overweight or obesity (O'Sullivan et al., 2020; Vanderhout, Aglipay et al., 2020; Vanderhout, Keown-Stoneman et al., 2021). Studies were consistent in reporting that whole milk is not associated with increased measures of weight gain or adiposity (O'Sullivan et al., 2020); on the contrary, observational research suggests that higher milk fat intake is associated with lower childhood adiposity (Vanderhout, Aglipay et al., 2020). Based on the

above research, it seems that there is not enough evidence to consider the consumption of more whole milk among less-acculturated Latinos as an unhealthy dietary behavior.

With regard to meat fat, this type of fat has been known to contain a higher proportion of saturated fatty acids (Schmid, 2011; Valsta et al., 2005). Also, evidence from observational studies and randomized clinical trials has demonstrated that substituting polyunsaturated fats for saturated fat reduces the risk of cardiovascular disease (Liu et al., 2017). Hence, the dietary practice of using meat fat in food preparation among less-acculturated Latinos is considered unhealthy. Still, the question remains whether consuming more fat from fast food, snacks, and added fats, as the more acculturated do, contributes to worse health outcomes than consuming more of the type of fat used in food preparation, as the less acculturated do, if the fat intake or percent of energy from fat is similar. As scientists continue to detail the health impacts of different dietary fats, specifying the type of fats consumed in studying dietary acculturation will also be important. When studying dietary acculturation, it is crucial to be specific about certain aspects, such as different types of dietary fats consumed and different ethnic groups. There is still a lot to be discovered about dietary ingredients and their health impacts as well as about how dietary culture is rooted in the unique culture of specific ethnic groups.

In considering the summative information from these systematic reviews, to advance the field of dietary acculturation, studies are needed to identify factors influencing dietary acculturation and to elucidate the process itself. Understanding the process of acquiring host dietary practices along with knowledge of influential dietary factors will provide understandings that are essential to the design and implementation of effective health promotion interventions.

In conclusion, based on the existing empirical evidence, dietary acculturation is frequently and inversely associated with healthful dietary behaviors among immigrant

populations. Whether or not unhealthful dietary behaviors produce adverse health outcomes in the long term depends on multiple factors, such as other lifestyle behaviors, income, education, and biological pre-determinants. The biological make-up and general socioeconomic status of immigrants may differ from the general population, which in turn increases the risk for specific illnesses linked to dietary behaviors. There may not be an efficient way to reach conclusions about the association of dietary acculturation and health. However, knowing why dietary acculturation may have negative health effects and how to intervene to redirect dietary behaviors during the acculturation process is essential for promoting health and improving health outcomes.

Factors Influencing Dietary Acculturation

Theoretical Model/Satia-Abouta's Model of Dietary Acculturation

As described earlier, Satia-Abouta and colleagues (Satia-Abouta, Patterson, Neuhouser et al., 2002) reviewed studies that examined associations between dietary practices and acculturation among Asians and Hispanics in the United States and Canada. Eighteen published studies were reviewed, nine of Hispanic immigrants and nine of Asian immigrants, including their own 2001 study. They concluded that most studies found some statistically significant associations between diet and acculturation level, but the direction of the effects were inconsistent.

The above literature review was part of Satia (1999)'s dissertation, "Diet, acculturation, and health in Chinese American women." Based on her research and related publications, the term "dietary acculturation" came to be commonly used to refer to the dietary practice aspect of acculturation. Satia-Abouta proposed a model of dietary acculturation in 2002 (Satia-Abouta, Patterson, Neuhouser et al.; see Appendix A). The model includes four categories of factors,

along with exposure to the host culture itself, that influence the direction of dietary acculturation. The four categories, as labeled by Satia-Abouta, are socioeconomic and demographic factors, cultural factors, psychosocial factors and taste preferences, and environmental factors, with changes occurring in the last two categories after exposure to the host culture. The model illustrates that after exposure to the host culture, socioeconomic and demographic factors (e.g., years in the United States) and cultural factors (e.g., cultural beliefs, attitudes, and values) can lead to changes in psychosocial factors and taste preferences (e.g., diet- and disease-related knowledge, attitudes, beliefs) as well as environmental factors that influence food procurement and preparation (e.g., availability, accessibility, and affordability of traditional foods). Ultimately, the process leads to the outcome of different patterns of dietary intake, such as *adoption of host country eating patterns,* through food choices and food preparation techniques.

At the same time, the changes in environmental factors and the changes in psychosocial factors and taste preferences are reciprocally influential. This is part of the complex and dynamic nature of multidimensional dietary acculturation: it involves a continuous and simultaneous influence of factors which are likewise changing over time. This fluid interconnectedness makes the intensity and direction of their sum effects challenging to predict. What is missing in the model is a detailed exemplification of how these factors might relate to each other sequentially as the process of dietary acculturation unfolds.

The complex process of dietary acculturation needs to be understood in order to curb any negative aspects of dietary acculturation (Satia-Abouta, Patterson, Neuhouser et al., 2002). As dietary acculturation is a process, it has phases and steps related to dietary change that involve a range of factors that influence such change. To develop successful health promotion

interventions, it will be necessary to identify the phases associated with unhealthful dietary changes (Satia-Abouta, Patterson, Neuhouser et al., 2002), that is, phases of changes that lead toward not maintaining healthy dietary practices of the heritage country or toward acquiring unhealthy dietary practices of the host country. This requires knowledge of factors that are associated with such unhealthful dietary changes (Satia-Abouta, Patterson, Neuhouser et al., 2002). To better understand this complex, multidimensional, and dynamic process, a detailed and sequential approach is required to examine how the factors impact choices and behaviors in the phases leading to dietary change.

Empirical Evidence on the Factors of Dietary Acculturation

Individual Level Dietary Acculturation. The literature on factors influencing dietary acculturation is sparse. The following sections identify the most critical factors based on the limited evidence available as of the writing of this dissertation. Some factors have been clarified and new concepts derived. For example, within education, nutrition knowledge has been identified as an important factor. The specification of other factors is less developed, which is one reason for inconsistencies in related study results. The processes of how factors interact with one another have not been examined.

With the exception of physical environment factors, most factors are at the individual level and are significantly influenced by societal and cultural norms, such as beliefs, attitudes, socio-economic status, and language. Most individual factors are linked to social environmental factors that are modifiable. Limited scholarly understanding of influencing factors was a compelling reason to explore and identify culturally specific factors of dietary acculturation in this dissertation study.

Cultural Beliefs and Attitudes. Beliefs and attitudes play a role in maintaining or abandoning the heritage diet and acquiring or rejecting the host diet during dietary acculturation. If an immigrant believes that the new Western diet is not less healthy than the heritage diet, they will be more likely to adopt the new diet. Such beliefs have been observed in Chinese immigrant women who are younger, more educated, and employed outside the home (Satia-Abouta, Patterson, Kristal et al., 2002). In traditional Chinese culture, a heavier physique was a symbol of wealth and a good life. Such beliefs may facilitate gravitation toward obesity-fostering dietary practices during dietary acculturation. Liou and Bauer (2007), in a qualitative interview study of obesity risk and prevention (N= 40; 24 female and 16 male young adults), found that this belief still exists among some Chinese Americans residing in the New York City metropolitan area.

Liou et al. (2014) administered a questionnaire to a convenience sample of 300 U.S.-born and foreign-born Chinese Americans, ranging from 18 to 40 years of age, and residing in the New York City metropolitan area, to study obesity risk-reduction behaviors and related psychosocial factors. The study found that less-acculturated Chinese Americans possessed a strong Chinese identity and beliefs in the benefits of healthy behaviors related to obesity-risk reduction. These findings related to cultural beliefs and dietary acculturation in Chinese immigrants may seem contradictory. Understanding the mechanisms and factors of dietary acculturation may offer insight as to an explanation. Immigrants come to a host country with beliefs and attitudes gradually formed in the heritage culture. Similarly, beliefs and attitudes of the new culture may be accepted gradually as immigrants adapt to the new culture. The dietary culture of the new host environment, healthful or unhealthful, is an influencing force in the process of dietary acculturation, and the influence can vary depending on level of acculturation.

Using a telephone interview with 106 Chinese Canadians originating from China, Hong Kong, and Taiwan, Kwok et al. (2009) examined the association between dietary habits and health beliefs (i.e., traditional Chinese health beliefs, such as balancing yin and yang foods). Participants were grouped into three based on the scores for their health beliefs. Participants reported regular intake of fruits and vegetables and fat-reducing behaviors. No significant differences were found among the three health beliefs groups in the average total fat-related behavior or the mean weekly intake of fruits and vegetables.

In Mexican-American women, Ramirez et al. (2018) identified the effects of beliefs in a mixed-methods study of the relationship between food and ethnic identity for individuals aged 18 to 29 years (N = 24) in rural California. The results show that Mexican food traditions were characterized as unhealthy and that many preferred U.S. foods, which were believed to be healthier. Specifically, Mexican American women perceived Mexican patterns of food preparation and consumption as unhealthy. Thus, the researchers concluded that the reason Mexicans adopt unhealthy diets as they acculturate to the United States is, at least in part, due to perceptions that U.S. diets are healthier than Mexican diets.

Socioeconomic Status—Education and Income. Socioeconomic status is commonly measured using such indicators as education, employment/occupational status, and income (Tseng & Fang, 2012). Tseng and Fang (2012) found that higher socioeconomic status, indicated by education and occupation, was associated with less dietary moderation among Chinese immigrant women in the United States. That is, for women, higher education and occupation were associated with more overeating associated with obesity. The investigators pointed out that in the literature on socioeconomic status and obesity, the risk of obesity tends to decrease with socioeconomic position in higher-income countries (e.g., the United States), and

to increase with socioeconomic position in lower-income countries (e.g., China). They concluded that a higher socioeconomic position is not associated with better diet upon migration to higher-income countries; rather, socioeconomic position is associated with less dietary moderation upon immigration, following the pattern of the country of origin.

As it relates to dietary acculturation, education includes knowledge through formal schooling and nutrition knowledge. A cross-sectional study found that higher education was significantly associated with higher energy density, intakes of energy, sugar, sugar-sweetened beverages, and lower dietary moderation among Chinese immigrant women (N= 423) in Philadelphia, PA, USA (Tseng & Fang, 2012). Also, older and less educated Chinese American and Chinese Canadian immigrants, in contrast to younger and more educated immigrants, tended to emphasize the importance of a low fat, high fruit and vegetable diet (Satia-Abouta, Patterson, Kristal et al., 2002). Age and/or generation may interact with education in dietary acculturation. Other factors, such as language, may complicate the effect of education on dietary acculturation. For instance, education may be associated with nutrition knowledge and thus healthier dietary practices, and yet it may also be associated with greater host language fluency and more media exposure and thus less healthy dietary practices.

While education was negatively associated with healthy dietary practices among Chinese immigrant women, the evidence was different among Latinas. Education was positively related to nutrition knowledge and intake of fruits and vegetables in a convenience sample of 201 Latinas with and without type 2 diabetes who were living in Connecticut; among them, 53% were less acculturated (Fitzgerald et al., 2008). Furthermore, nutrition knowledge was found to influence the women's consumption of certain foods, such as those containing less fat, less salt, more fiber, and more meat, but not other foods, such as grains, legumes, and dairy

(Fitzgerald et al., 2008). Education was associated positively with healthy dietary acculturation in Latinas but negatively in Chinese immigrant women. Education, however, is supposed to be positively associated with nutrition knowledge and healthy dietary acculturation. Again, such contradictory findings demonstrate the complexity and specificity of dietary acculturation. Nonetheless, nutrition education is important for the acquisition of healthy dietary practices as immigrants navigate abundant healthful and unhealthful foods in the United States, especially for those unable to interpret food labels in the host language.

A study using the third National Health and Nutrition Examination Survey (NHANES III) data found that having a low income was positively associated with energy, protein, and sodium intake in a sample of 2,985 U.S. Hispanic youths, aged 4-16 years (Mazure et al., 2003). Such a finding could be seen as positive in underdeveloped countries because it means that more people could be free from hunger. However, in highly developed industrialized societies, a low income usually means consuming energy-dense fast foods and salty snacks that contribute to health problems. Furthermore, having a low income is positively associated with food insufficiency/insecurity (Mazur et al., 2003), another factor influencing dietary acculturation. Food insecurity was negatively associated with fruit and vegetable intake at home (Dave et al., 2009). Although nutritious, fruit and vegetables do not provide enough energy to meet one's bodily needs in a cost-effective way. For families with a low socioeconomic status, the concern of relieving hunger takes precedence over considering the nutritional value of food. In modern society, fewer people die of hunger or have diseases related to under-nutrition, but the readily available supply of inexpensive, energy-dense food has created an increase of other diseases. However, the concern about such diseases is likely to be less important than hunger for families experiencing food insecurity.

Changes in socioeconomic status often come with immigration. For example, immigrants with a high level of education and good income or employment in the heritage country may have difficulty finding similar employment upon immigration. Thus, it is important for education and income to be examined separately in studies of dietary acculturation because low socioeconomic status may not indicate low education, and high education does not necessarily confer high socioeconomic status.

Language. Most studies about language and dietary acculturation have been conducted with Latino populations. Borrowing evidence based on such studies, how language functions as a factor of dietary acculturation is not well understood. Language spoken at home is a commonly accepted indicator of acculturation. Spanish as the primary language spoken at home indicates less acculturation; English indicates more acculturation. Since most studies indicate that the greater the acculturation, the unhealthier the diet, speaking English as the primary language at home indicates a poorer diet and speaking Spanish as the primary language at home indicates a more healthful diet. Some evidence has been found to support this notion. Analyzing data from the third National Health and Nutrition Examination Survey, Sundquist and Winkleby (2000) compared Mexican-born and U.S.-born English-speaking Spanish women and found that U.S.-born Spanish women had a larger waist circumference and a particularly high prevalence of abdominal obesity, increasing their risks for cardiovascular disease. Moreover, speaking Spanish as the primary language at home was found to be positively associated with children's fruit and vegetable intake at home (Dave et al., 2009; Mazur et al., 2003).

Spanish as the primary language spoken at home was negatively associated with the availability and accessibility of fruits and vegetables in low-income Hispanic families (Dave et al., 2009). This finding seems to contradict most findings related to dietary acculturation when

language is considered as an acculturation indicator. One explanation for the above finding is that language is associated with other factors influencing dietary acculturation, thus confounding the results of the studies. For example, English as the primary language spoken at home may indicate increased acculturation, contributing to an unhealthful diet, or it may indicate higher education, more nutrition knowledge, and a higher income, which are all associated with a healthful diet. The unpredictable direction of effects associated with a single indicator is inadequate in the study of dietary acculturation.

A study utilizing the California Health Interview Survey to examine dietary practices of 3,772 Asian Americans from six subgroups (Chinese N = 1,280), found that speaking only English at home, along with other sociodemographic factors, was associated with a higher likelihood of not meeting the recommended daily intake of five or more fruits and vegetables (Sarwar et al., 2015). This study suggested a negative association between acculturation and the consumption of fruits and vegetables in this population. More recently, Yi et al. (2021) identified three food shopping patterns in a cross-sectional survey study with Chinese Americans in the New York City metropolitan area (N = 239). The study found that Type 1 shoppers (those who shopped weekly at an ethnic grocery store and nowhere else) tended to speak English less well compared to Type 2 shoppers (those who shopped weekly at a non-ethnic grocery store, with occasional shopping at an ethnic store).

Physical Environment. Fast food and media exposure (Liou & Bauer, 2014; Unger et al., 2004) are powerful factors influencing dietary acculturation. Fast foods cost less than healthier foods and usually come in larger portions. Cost can thus heighten the appeal of fast food, particularly to busy, low-income, working-class people. Moreover, fast food restaurants are typically conveniently located and are often close to immigrant populations. Diet-related

health problems are more likely to occur if individuals have less nutrition knowledge or fewer resources to resist fast food. Media, especially commercial advertisements, are powerful means by which corporations promote convenient, highly-processed foods. As immigrants learn to understand English, they are more likely to be influenced by media. Dietary acculturation is an adaptive process, with positive and negative ramifications for immigrants' dietary practices, and it is dramatically influenced by the resources that immigrants have and the availability of influential factors in the environment.

Dietary Acculturation in the Family Unit. Family plays a primary and vital role in the dietary acculturation process of immigrant family members. The family unit's influence is felt within the family, among family members, and outside the family. The availability of healthful or unhealthful foods in the family dietary environment affects dietary practices. The dietary practices of individual family members impact other family members during meal time or food sharing. The family unit functions as a small socializing environment and network. Additionally, the family unit is influenced by society at large and the networking that individual family members have in society.

Dietary Environment in the Family: Food Availability and Sources of Nutrition Information. Satia-Abouta, Patterson, Kristal et al. (2002) examined diet-related psychosocial predictors and dietary practices of Chinese American and Chinese Canadian women (N = 244) with a cross-sectional survey. Respondents with in-family normative pressure to maintain Chinese dietary practices ate more fruits and vegetables, while knowledge of nutrition information from the government was associated with increased fruit and vegetable consumption after immigration.

More acculturated immigrant families tend to have greater English media exposure, thus more significant exposure to the U.S. dietary culture. The type of media exposure is as important as the amount of media exposure, specifically whether or not the nutrition information or advertisements are accurate or misleading. In Kwok et al. (2009)'s telephone interview study of 106 Chinese Canadians who were originally from China, Hong Kong, and Taiwan, participants reported regular intake of fruits and vegetables and fat-reducing behaviors. As far as through where they obtained nutrition information from, Chinese media, which include television, radio, newspapers, and magazines, was reported in 88% of the participants, family and friends in 68% of them, and English media in 40% of them. With regard to media and dietary acculturation, it appears that no studies have been done to compare values vs. nutritional information in the media.

Many factors influence the availability of healthful food for families, and unhealthy dietary practices are associated with the availability of more unhealthful food and less healthful food. Dave and colleagues (2010), summarizing Boutelle et al. (2007) and Neumark-Sztainer et al. (2003), noted that the availability of fruits and vegetables is associated with family food security, socioeconomic status, family meal patterns, and social support for healthy eating. They observed that having more than three fast food meals per week at home was negatively associated with the availability of fruits and vegetables and positively associated with the availability of energy-dense foods and salty snacks. Availability and accessibility were the most important correlates of fruit and vegetable intake among Hispanic families (Dave et al., 2010).

Influence of Family Norms and Social Networks. Just as every society has a unique dietary culture, families have dietary norms that influence family members' eating behaviors and practices. As parents take responsibility for the family, they are most influential in the

formation of family dietary norms. From their beliefs and attitudes toward certain foods and their rules about foods to their daily dietary practices and role modeling, parents set the family dietary norms, influencing the family's dietary patterns. Dave et al. (2010) found that Hispanic parents' perceptions of fast food, their practices promoting fruit and vegetable intake, and their role modeling all have significant and independent associations with the availability and accessibility of fruits and vegetables at home. Parents' beliefs and attitudes toward foods are expressed in their dietary-related parenting behaviors, such as the strategies they use to shape children's dietary behaviors. In promoting fruit and vegetable intake, for example, parents encourage children to eat these foods, or they may set a rule that fruits and vegetables must be eaten before dessert or a salty snack. As Latino immigrant children acculturate to host country dietary patterns, immigrant mothers often set limits on children's dietary behaviors (Larios et al., 2009). Detailing the dietary acculturation process of mothers' dietary behaviors and practices is likely to be a rich source for understanding dietary acculturation from the perspective of family.

Mothers often prepare foods for the family, especially in traditional Asian cultures, so mothers have a significant influence on family dietary patterns and children's dietary habits. When mothers' dietary patterns change, family patterns change, and children's eating habits are thus influenced. Park et al. (2003) did a survey research study comparing the eating behaviors of Korean American families with mothers at different acculturation stages (N = 225) with those of families in Korea (N = 216). The study found that immigrant mothers' acculturation level affected their families' preference for ethnic dishes. The mother is particularly important in the development of healthy dietary habits for both male and female adolescents. Diaz et al. (2009), who examine 265 Latino high school adolescents in California using secondary analysis, found

the mothers' influence was stronger for female adolescents. Bauer et al. (2008), who studied a diverse sample of 806 adolescents in Minnesota schools in a population-based longitudinal cohort study, showed that mothers' expressed concern and encouragement for eating healthy food were directly associated with lower fast food intake among male adolescents of a diverse population sample.

As the traditional head of the household, fathers also have a decisive influence on the family dietary patterns. A father's specific influence lies in his nutritional knowledge, personal food preferences, and role within the home. In a qualitative interview study with 20 first-generation Chinese American couples, Lv and Brown (2010) explored the role of dairy products in the family food system. Parental use of food rules and power to influence food patterns affected family flexibility about dairy use. The father's power had a greater influence than those of his wife or children on the use of dairy-based dinner dishes. A father's influence is most pronounced during dinner meals, where the father's food preferences are typically salient. Himmelgreen et al. (2007) reported that parents' control over children's eating patterns was one of six primary themes in post-immigration lifestyle changes.

Compared to parents, siblings are not as significant a factor in immigrant families' dietary practices. However, siblings were a significant and independent predictor of healthy dietary habits among less-acculturated male adolescents in the study conducted by Diaz et al. (2009). In terms of children's influence on the family diet, children's preference for fruits and vegetables influenced the availability and accessibility of such foods at home (Dave et al., 2010). Studying mothers' dietary acculturation processes will enrich knowledge of the mutuality of family influences in dietary acculturation.

Social and Cultural Influences on the Family Unit. While the family unit creates a

social environment that influences family diet and behaviors, the family unit is simultaneously influenced by society at large through family members' exposure to broader social environments. Children are exceptionally efficient at bringing the influence of society into the family unit. Children as young as preschool age spend a considerable amount of time in external environments, such as daycare centers, schools, and the surrounding community, and thus they are exposed to dietary norms other than those at home both through society and the popular media. Of particular interest, in a focus group/interview study of 236 Asian Americans (N = 15 key informants, 116 low-income parents, 105 youths, aged 11–14 years), immigrant children's adoption of U.S. eating habits was a barrier to a healthy traditional lifestyle (Harrison et al., 2005). Studying the dietary acculturation process will help researchers understand *how* children influence the family's dietary acculturation process.

In addition to the family and immediate social environments, children's social networks also influence their dietary practices. Across time, children become more peer oriented, and social network influences become more robust than the family influence. For example, friends were found to be more influential than mothers or siblings on healthy dietary habits for highly-acculturated adolescent Latina immigrants (Diaz et al., 2009). A cross-sectional online survey study measured social media engagement with food/beverage brands of U.S. adolescents (aged 13-17, N = 1,564, oversampled for non-Hispanic Black and more- and less-acculturated Hispanics) (Fleming-Milici & Harris, 2020). Non-Hispanic Black and less-acculturated Hispanic adolescents were more likely than non-Hispanic White adolescents to engage with brands. The investigators concluded that engagement with unhealthy food brands on social media is common among adolescents. They found that 54% of participants reported engaging with fast food brand, 50% with sugary drinks, 46% with candy, and 45% with snacks.

Using screens other than a TV more than two hours per day was associated with following five or more brands. Watching TV more than two hours per day was associated with any brand engagement.

The social influences on children, be they positive or negative, are, in turn, likely to impact family diet and practices through family meals and children's food preference. Because parents often care about children's growth and preferences, mothers tend to prepare foods their children prefer. Though social influence is significant, family still plays a central role in establishing life-long dietary habits for children well into adolescence and beyond. Immigrant parents must have timely access to accurate nutrition information and model healthy dietary behaviors for adapting to the new dietary culture in order to instill positive dietary habits into their children. Understanding the dietary acculturation process from the immigrant parents' perspective will increase the effectiveness of helping parents gain essential information and adapt to the new cultural diet in healthful ways.

Application of Theoretical Model to Empirical Evidence of Dietary Acculturation in Women

Women greatly influence the nutrition and health behavior of all members of the family (Popovic-Lipovac & Strasser, 2015; Satia, J.A., 2003). Popovic-Lipovac and Strasser (2015), referencing Kocturk (2004) who studied Iranian immigrant women, pointed out that the influence of women tends to be due to their reproductive role and their role of purchasing and preparing meals. One can assume such roles are common among immigrant women, including immigrant Chinese women. However, immigrant women were less healthy than immigrant men upon arrival, and their health worsened at a faster rate, according to Popovic-Lipovac and Strasser (2015), referencing Read et al. (2012)'s findings on Mexican and Middle Eastern immigrants in the United States. The above findings indicate an urgent need to focus on

immigrant women when studying dietary acculturation.

According to Popovic-Lipovac and Strasser (2015)'s review, immigrant women incorporate high fat and high sugar snacks, sweetened drinks, and fast foods into their dietary behaviors. Many women have faster weight gain as a health outcome following immigration. These outcomes are associated with cultural, economic, and social barriers resulting from new lifestyle practices. Popovic-Lipovac and Strasser scrutinized the barriers immigrant women face in maintaining a healthy dietary practice as well as the factors causing dietary change in immigrant women. They summarized two contributing factors from Satia-Abouta's model and nine barriers. The two contributing factors they pointed out were (1) the two categories of factors *before* and (2) the two categories of factors *after* exposure to the host culture. The nine barriers they identified are integrated with Satia-Abouta's model in Table 2.2. The purpose of this table is to enrich the theoretical model with the empirical evidence synthesized by Popovic-Lipovac and Strasser and to test the fit of the model, proposed more than a decade prior to the summary of this empirical evidence.

Table 2.2

Barriers to Healthy Dietary Acculturation Exemplified by Elements of the Satia-Abouta Model of Dietary Acculturation

Barriers to healthy dietary acculturation[1]	Precursors/ cofactors	Factors	Outcome of unhealthy dietary practices
High prices of healthy foods Increases purchasing of less expensive, less healthy foods (e.g., high fat & sugar snacks, sweetened beverages)	Income as socioeconomic factor	Affordability of healthy & unhealthy foods in host country[2] changes food procurement & preparation	Acquire specific unhealthy dietary practices of host country, e.g., eating fast food
Unavailability of traditional foods & ingredients Such as specific vegetables and spices	Not indicated	Unavailability of traditional foods while shopping changes food procurement & preparation	Unable to maintain healthful dietary practices of heritage country
Children's preferences One of the most important barriers linked to mothers' desire to satisfy children's needs/wants	Children in the home as a demographic factor Mothers wanting to satisfy children can facilitate unhealthy dietary practices	May lead to changes in food procurement and preparation	Acquire certain unhealthful dietary practice of host country, such as eating potato chips
Food uncertainty & unfamiliarity Limits selection & preparation of new foods/dietary practices due to language or other barriers	Fluency with host language as a demographic factor, or other socioeconomic, demographic, or cultural factors, leads to uncertainty and unfamiliarity, possibly leads to use of convenience foods	May contribute to changes in food procurement and preparation	Acquire specific unhealthy dietary practices of host country
Busy lifestyle for immigrant families Work schedules and family lifestyles hinder maintenance of healthy dietary habits by women	Employment[3] as a socioeconomic/demographic factor, possibly creates time constraints Busy lifestyle,[2] possibly as a cultural factor	May lead to changes in food procurement and preparation	Acquire specific unhealthy dietary practice of host country, such as pizza

Barriers to healthy dietary acculturation[1]	Precursors/ cofactors	Factors	Outcome of unhealthy dietary practices
			as family dinner
Psychological adjustment Stress, loneliness, feelings of exclusion/isolation, unemployment, boredom, and lack of purpose contribute to higher intake of unhealthy (but tasty) food, and lack of adequate physical activity	Unemployment as a socioeconomic and demographic factor, along with other factors[2] categorized as psychosocial factors relevant to immigrant dietary behavior	Contributes to changes in taste preferences towards tasty but unhealthy food choices	Acquire specific unhealthy dietary practices of host country, which may readily generalize to other foods
Digestion problems New and/or unknown foods often linked to digestive problems	Possibly a biological factor[2]	May contribute to food avoidance	Possibly linked to dietary acculturation; known to lead to negative health outcomes for immigrants
Appealing taste Unhealthy foods/snacks often have pleasant tastes	Not indicated	Changes in taste preferences toward unhealthy foods with more pleasant tastes	Acquire new, unhealthy dietary practices of host country
Convenience & affordability Foods from fast food restaurants and pre-packaged dinners simplify meeting family needs	Employment & income may be influential as socioeconomic and demographic factors	Convenience & affordability[2] of pre-packaged food & eating at fast food restaurants change food procurement & preparation	Acquire specific unhealthful dietary practice of host country

[1] Popovic-Lipovac & Strasser, 2015.

[2] Factors not depicted in the Satia-Abouta model.

[3] The Satia-Abouta model identifies factors, such as employment and other socioeconomic, demographic, and cultural factors that may be present before immigration and may continue to be influential after exposure to the new host culture.

The Importance of Understanding the Dietary Acculturation Process

It is crucial to understand how dietary acculturation works. Knowledge about the dietary acculturation process holds the key to understanding how the dietary culture of the host society shapes immigrants' and the general public's dietary practices and subsequent public health outcomes. A better understanding of the dietary acculturation process can help guide that process in a healthful direction. In their suggestions for future practice, Ayala et al. (2008) recommended emphasizing the message of maintaining healthful dietary practices to the less acculturated and the message of reducing less unhealthful practices, such as eating fast food, to the more acculturated. They also pointed out the importance of children, family, neighborhood, and environment during dietary acculturation. However, understanding why the process develops as it does can increase the success of interventions. Intervening efficiently depends on a better understanding of the dietary acculturation process, including how the process leads to the non-maintenance of healthy dietary practices or the acquisition of unhealthy ones, and how factors play out during the process, be it independently or in interaction with others.

Indeed, Popovic-Lipovac and Strasser (2015) indicated that a better understanding of the dietary acculturation process is needed for intervention to be successful. Referencing Perez-Escamilla and Putnik (2007), Satia (2010), and others, Popovic-Lipovac and Strasser pointed out that even with significant efforts in emphasizing messages of maintaining the dietary practices of the heritage country, minor changes, such as the unavailability of traditional foods or children's preferences, can result in abandoning healthful dietary practices and acquiring unhealthful ones. Therefore, studies aiming to better understand the dietary acculturation process are necessary as they could help explain how these minor changes work in this dynamic, complex process.

Consequently, understanding the process of dietary acculturation is essential to designing and implementing preventive interventions for immigrant populations. Moreover, knowledge of the dietary acculturation process will shed light on changes needed in the social structure and context related to the social norms of dietary practices to achieve a healthier dietary culture for public health in general.

Even now, few studies explore the process of dietary acculturation. To explore the influence of immigration on dietary practices and the process of dietary acculturation, Osei-Kwasi et al. (2017) conducted a qualitative study of adults aged 25 years (N = 31) of Ghanaian ancestry living in Greater Manchester, United Kingdom, using face-to-face interviews. Thematic analysis revealed three distinct dietary practice typologies: 1) continuity practices; (2) flexible practices; and (3) changed practices. Dietary practices were shaped by the interrelation of factors in four clusters: (1) social and cultural environment; (2) accessibility of foods; (3) migration context; and (4) food beliefs/perceptions. Consistent with many other scholars, the authors concluded that the dietary acculturation process was not linear and dependent on multiple factors.

There is considerable consensus that the process of dietary acculturation is not simple nor linear; rather, it is multidimensional, dynamic, and complex (Popovic-Lipovac & Strasser, 2015; Satia-Abouta, Patterson, Neuhouser et al., 2002). Its complexity arises due to the weighting of different factors and the combination of factors present. A number of individual, social, and environmental characteristics influence the degree to which dietary changes occur (Popovic-Lipovac & Strasser, 2015); the process varies from person to person, depending on the personal, cultural, and environmental attributes of the immigrant (Satia-Abouta, Patterson, Neuhouser et al., 2002). Nor is the process simply bidirectional, going toward either

maintaining the dietary practices of the heritage country or acquiring the dietary practices of the host country. Immigrants may find new ways to use traditional foods (Satia-Abouta, Patterson, Neuhouser et al., 2002) or new foods, actions that transcend the two directions.

The goal of this dissertation was to explore how the process of dietary acculturation works by gathering data on individual experiences of mothers engaged in this process. To minimize the complexity inherent in studying the dietary acculturation process and to build upon some crucial findings in the field, this study focuses on individuals who are *Chinese* immigrant *mothers/females* with *children* in the *early period* following their immigration to the *U.S.* Focus group interviews were used to efficiently collect data on the dietary acculturation process. Through detailed qualitative data analysis, this study aims at uncovering the steps of dietary acculturation, teasing out the factors in those steps, and examining how the factors work. This study was undertaken in the hope of expanding scholarly perspectives on dietary acculturation by systematically interweaving cross-sectional data, within individuals and among them, into a roughly sequential and general view of the dietary acculturation process.

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CHAPTER 3: RESEARCH METHODS

This chapter describes the study's research methods. It begins with an overview of the study's philosophical underpinnings and then provides details of the approach, including research design, setting, sample and sample size, criteria for participation, and recruitment process. Finally, research strategies used to ensure trustworthiness are discussed.

Naturalism served as the philosophical underpinning of this study on the process of dietary acculturation among newly immigrated Chinese mothers with dependent children. Naturalism can be understood as an alternative paradigm to traditional scientific positivism. Naturalism requires engaging with different ways of knowing and adopting alternative perspectives, particularly for incipient research on sociocultural behavior. Dietary acculturation, the subject of this study, is related to human behavior and within the purview of the social sciences; thus, it is within the purview of naturalism.

The epistemological and ontological bases of naturalism differentiate it from the positivist standpoint. From the naturalistic perspective, dietary acculturation is a social phenomenon and a complex process. The experience is subjective for each individual. Thus, ways of knowing require methods that delve into subjective dietary acculturation experiences.

In contrast to naturalism, the positivist viewpoint is that objective knowledge can best be obtained by studying the subjective human experience using the scientific method, including systematic approaches (e.g., empirical experimentation), empirical evidence gathering using established measures, and analysis based on deductive and inductive reasoning. From this perspective, individual perceptions of dietary acculturation can be discerned scientifically by outside observers, but methods for generating such knowledge differ.

As the goal of this study is to open a new line of research, it is neither logical nor practical to

study the process of dietary acculturation through direct observation or with empirically designed measures, as would have been undertaken had a positivist perspective been adopted. Given that dietary acculturation is a phenomenon of human behavior, the human experience of this phenomenon and descriptive information related to it are subjective and require research strategies that permit broad and in-depth exploration of the experience within and across individuals. In addition, the process is one that changes across time. The concepts of time and change are relatively objective; therefore, they can be empirically teased out of narratives used to describe the process of dietary acculturation, particularly with systematic and iterative analyses of the data.

Thus, a qualitative research approach within the naturalistic perspective was selected as the appropriate means to explore this new area of research. The anticipated richness of the qualitative data provided an opportunity to uncover novel insights needed to begin describing and understanding the process of dietary adaptation and acculturation. Given the nature of the inquiry described above, it was neither feasible nor judicious to use a single established qualitative methodology in conducting this study. Therefore, a generic qualitative approach was taken, using tools from multiple established qualitative methodologies to develop a research design suitable to the study purpose and aims (Kahlke, 2014).

Study Design

The study was designed to explore the *process* of dietary acculturation for Chinese immigrant mothers with dependent children using analytic strategies drawn primarily from qualitative methodology. Using a focus group method, data were collected from small group discussions of Chinese immigrant women's dietary acculturation experiences. Supplementary materials regarding research methods are included in Appendices B through J (pp. 178–208).

Sample, Setting, and Recruitment

The study population consisted of newly immigrated Chinese mothers with dependent children; the sample included 42 Chinese mothers with dependent children residing in a Pacific Northwest metropolis (i.e., Seattle, Washington) and its surrounding areas. Of the 42 study participants, 40 were newly immigrated, that is they had lived in the United States less than five years. One had lived in the United States for five years and a few months, and one had lived in the United States for more than five year and was asked to discuss only her dietary experiences upon immigration. Also, three of the 42 participants had lived in other foreign countries outside of China or Taiwan before immigrating to the United States. Another three of the 42 were newly visiting the United States, and their immigration status was uncertain.

The five research sites included a local Chinese American community organization/Chinese community service center, two Chinese schools, and two separate sites of a large Chinese church. The Chinese Information and Service Center (CISC) in the downtown International District (ID) of Seattle was chosen to ensure that voices from that unique demographic area were included. The ID is an enclave of immigrant families, unique because dietary acculturation in ethnic enclaves tends to be slower (Gordon-Larsen et al., 2003). CISC has many programs designed for immigrant families, including the Immigrant Transition program, which newly immigrated Chinese can attend for help as they resettle. Immigrant mothers utilizing its services include those with babies and toddlers.

Chinese schools were included because they were likely to provide access to Chinese immigrant mothers with school-age children. These are Chinese language schools where children come to learn the Chinese language and culture, and they usually operate year-round on Saturdays, except in the summer. There are at least four major Chinese schools in Seattle and its

surrounding areas, two of which were chosen for study recruitment. The larger of the two schools serves about 1000 students per school day. One school teaches mainly simplified Chinese characters, and the other teaches traditional Chinese characters, from which one can often infer the mothers' country or location of origin prior to immigration. Different schools were selected for the study to ensure the inclusion of Chinese immigrants from outside of mainland China.

Chinese churches were selected because they too were likely to include Chinese immigrant mothers with dependent children. Two sites, both from the same large Chinese church, were chosen. One site has approximately 500 adults attending worship services and about 200 children attending Sunday school. The other site was chosen because it is located in a suburban area, separated from the site in Seattle by Lake Washington. This broadened the geographic area of the study in order to include immigrant participants living in the surrounding area, not just Seattle.

As dietary acculturation is a social phenomenon, care was taken in determining recruitment sites. The literature on acculturation shows that immigrants who dwell in ethnic enclaves tend to acculturate more slowly and/or to be generally less acculturated. Thus, to ensure capturing a broad range of immigrant experiences, special efforts were made to include mothers residing in the ID of Seattle given their unique experiences of living in this cultural enclave. Also, because the recruitment criteria included mothers with dependent children, efforts were made to target organizations and social groups that offered activities for both Chinese immigrant mothers and their children. Thus, Chinese schools and Chinese churches were also identified as suitable as recruitment locations. Participants in each focus group were purposefully selected from within a similar social group. This approach was taken so that focus group discussions would be

conducted in terms and about contexts generally familiar to most focus group members.

The recruitment of study participants was achieved with the help of multiple agencies and organizations. Sixteen participants for two focus groups (eight mothers/group) were recruited through a Chinese social service center in Seattle. Two other groups were recruited from two separate Chinese schools, with five participants from one school and six participants from the other. Finally, participants for two additional groups were recruited from two separate sites of a large Chinese church. The group from the urban site included seven participants, and the group from the suburban site had eight participants. In total, 42 participants were recruited from five sites to form six focus groups (Table 3.1).

Table 3.1

Summary of Focus Group Recruitment by Organization

Focus group	Recruitment organization	Number of participants
Group 1	Chinese Social Service Agency	8
Group 2	Chinese Social Service Agency	8
Group 3	Chinese School 1	5
Group 4	Chinese School 2	6
Group 5	Chinese Church, Urban site	7
Group 6	Chinese Church, Suburban site	8
Total participants		42

Flyers (Appendix B) were used for recruitment at all sites. The text of the flyers was similar across sites, varying only in the name of the facility where the focus group discussion would take place. Flyers were written in both traditional and simplified Chinese, as some Chinese immigrants still use traditional Chinese characters. To meet the inclusion criteria, participants

had to be at least 18 years old, the mother of at least one dependent child, of Chinese ethnicity and able to speak Chinese, and living in the United States for less than five years. Exclusion criteria were if participants were unable to stay for 90 minutes for the discussion session or were visitors to the United States with no intention to immigrate.

The researcher communicated with one or more of the leads or agency contacts at each site to seek approval for recruitment and to gain assistance in recruitment. In most cases, potential participants were instructed by the flyer and the lead or agency contact to contact the researcher personally by phone. In other cases, the researcher called potential participants who had provided their contact information through the Research Participant Contact Information Form (see Appendix C.1) to the lead or agency contact. The researcher explained the study, screened potential participants, and obtained consent from those willing and suitable to participate. The consent form was reviewed with potential participants to obtain verbal consent by phone. Then at the beginning of the focus group, prior to the start of the discussion, written consent was obtained. In one case, the researcher emailed the consent form prior to the focus group at the request of the participant.

Data Collection

Focus groups were used to generate in-depth discussions about the complexities of the dietary acculturation process. The focus group approach is a reliable and efficient way to collect data regarding a particular process based on participants' own frames of reference (Nielsen et al., 2008). Importantly, the focus of these discussions was the immigrant dietary acculturation *process*—the process of *change in dietary intake and dietary behaviors*—not individual experiences of dietary acculturation itself. While individual interviews are helpful in collecting information about the individualized experience of dietary acculturation, focus groups generate

dynamic discussions and allow the group to reach a general consensus about the general dietary acculturation process.

Prior to Data Collection

Research procedures were reviewed and approved by the University of Washington IRB prior to contacting any potential subjects, UW Human Subjects Division Application NO. 45413 EB (See Appendix C.2-4). The study was approved as Exempt Category 2 because it did not involve tests of interventions or the collection of highly sensitive or confidential data.

The recruitment in the different organizations followed a similar process. First, within each organization, the investigator contacted the designated contact person. With guidance from the contact person, recruitment flyers were distributed by the investigator and/or the contact person of the organization and/or posted in approved locations within the organization. When necessary, the contact person further assisted the investigator in the distribution and posting of flyers.

During Data Collection

After agreeing to participate, participants attended focus group discussions at the designated place and time. Just prior to the commencement of the focus group, the study's purpose and procedures were explained, and participants had time to ask questions. Participants completed the written informed consent form approved by the University of Washington IRB and gave written permission to audio-record the group conversation for data analysis.

The six focus groups were conducted in Mandarin, as it is the official spoken language for China and Taiwan, and most Chinese speak Mandarin. All discussions were audio-recorded. Each participant was assigned a number to use rather than their name during the focus group discussion to ensure participant confidentiality. The assigned number allowed the researcher to

weave together responses from the same individual, necessary for analysis. The link between the participant and participant code number was kept separate from the data, secure, and only available to the researcher.

The researcher served as the moderator, leading and facilitating each focus group discussion using the Discussion Guide for Focus Groups (Appendix D). The focus group discussion guide was based on an extensive literature review and consultation with the Dissertation Supervisory Committee. The actual content of dietary intake and dietary behaviors under discussion was determined within each group based on participants' responses and group consensus. Group discussions lasted between 60 and 85 minutes.

A research assistant (RA) helped with each focus group. The role of the RA was to be the timekeeper, to note non-verbal reactions, and to contribute to a debriefing following each focus group discussion. She also served as an extra pair of eyes and hands in case unexpected situations arose. For example, she helped by holding a baby so that the mother could attend to her toddler briefly when he came into the room. With the exception of one focus group, the same RA was present for each discussion. The RA holds a doctoral degree in Nursing and has experience in conducting focus groups. Another individual, a professor in Nursing, assisted with one focus group discussion when the RA was unable to attend. Mainly due to recruitment difficulty with the last group, data collection for all six groups took 17 months.

To remain objective and reduce the potential for social conformity effects in the focus group discussions, several approaches were used to support participants' expressing varying views. The researcher asked open-ended questions to initiate discussion, re-focused to keep the discussion centered on key questions, and summarized participants' responses without making suggestions or providing interpretations. For example, the researcher asked open-ended

questions like, “How has your diet changed since coming to the United States?” and reminded participants that individuals were likely to have had different experiences. To allow all participants time to speak and to manage the overall timing of the focus group, if a participant became distracted and began talking about other aspects of her life when she first arrived in the United States, the researcher would express understanding and gently guide her focus back to dietary change. Similarly, if a participant’s response was unusual or unexpected, the researcher would summarize the response to make sure the message was understood, but would not make suggestions or provide interpretations that might unnecessarily put the participant on the spot.

At the end of the focus group discussion, each participant was asked to complete a simple two-page Research Participant Background Information Form (Appendix E) that asks questions about demographics and diet. Participants received $30 in compensation for their time and effort. Snacks and beverages were provided during the focus groups to create a culturally appropriate environment for conversations and discussions.

Following Data Collection

Following data collection, the researcher and RA met to debrief about the focus group discussion and to initiate data management.

Debriefing and Guide Modifications. Following each focus group, the researcher/moderator and the RA debriefed about the focus group content and process. If necessary, and based on the focus group discussion and participants’ responses, the focus group discussion guide was modified prior to the next focus group. For example, adherence to the sequencing of the guide occasionally hindered the natural flow of discussion in the first focus group. Thus, the guide was modified for subsequent groups to keep the discussion, which may have diverged from the sequence in the guide, centered on the main study questions.

Data Management. In the course of conducting the study, the researcher became very familiar with the focus group data and processes through her engagement in the focus group discussions, transcription of the discussions, and analysis of the data. Transcription of each focus group session generally began within two weeks of the focus group. The researcher transcribed the entire focus group discussion, from audio tape to digital format. To ensure the trustworthiness of the data, the accuracy of the transcription was independently verified by the RA. The recording and its transcription were sent to the RA, who sampled a transcribed section of the discussion that was at least 15 minutes in length, transcribed the discussion, and compared her transcript to the researcher's. Transcription agreement was high, with only a few minor differences between the RA and the researcher, both of whom are bilingual in Mandarin and English. These minor differences were limited to speakers' expressive sounds, such as "Eh" and "En," which did not interfere significantly with understanding the verbalizations before and after these sounds.

Data Analysis

Qualitative data analysis was conducted using logical and systematic sequences, described below. This involved using both specific analytic strategies during the iterative analysis process and some sophisticated tools recommended by qualitative researchers as standardized approaches to increase rigor and trustworthiness in qualitative analysis (Erlingsson & Brysiewicz, 2017; Green et al., 2007; Malterud, 2012). Below the analytic procedures and analytic process are described, followed by specific and detailed description of the immersing, coding, categorizing, synthesizing, theming, and describing used in this study.

Analytic Procedures

The analytic procedures included decontextualizing, synthesizing, and recontextualizing. Decontextualizing is "temporarily removing parts of the text from their original context"

(Malterud, 2012, p. 797), like in coding. Immersing helps ensure the removal process is done appropriately. It is a systematic penetration and reduction, or "crystallization," of the text, to facilitate the categorization of constructs or ideas. Synthesizing is used to conceptualize ideas across cases and groups; it is a procedure used to merge the researcher's acquired knowledge with the study participants' descriptions of lived experiences and to interpret lived experiences in terms of the study question(s). Recontextualizing is used to gather together the reduced concepts and ideas in a new way to address the study question(s). At this point in the process, the investigator addresses the study question(s) with descriptions of participant experiences, supported by the data gathered.

Decontextualizing. Three techniques were central to the decontextualizing process: immersing, coding, and categorizing:

1. *Immersing* is a time-consuming, yet essential, analytic technique. It involves plunging into a particular state of mind with the data, delving deeply into the process of familiarizing oneself with the depth and breadth of the data (Green et al., 2007; Nowell et al., 2017). For this study, the researcher immersed herself in the data during data collection, data transcription, and data analysis. Early immersion was possible because the researcher moderated all focus group discussions and transcribed all recordings. Early immersion facilitates depth in understanding the data context and breadth in subsequent data interpretation (Green et al., 2007). For this study, having been present in each focus group, the researcher had the advantage of being fully immersed in the discussion content and flow. This early immersion helped provide clarity to the researcher when the audio recordings were transcribed. During data analysis, immersion involved "repeated reading of the data in an active way searching for meanings and patterns" (Nowell et al., 2017, p. 5).

Immersing was used by the researcher to become familiar with the data and to absorb the context by examining the whole text from (1) one focus group discussion, (2) one participant (extracted from the whole text of the focus group discussion and brought together into one text) (3) all six focus groups, (4) text related to one theme, and (5) text associated with all themes derived from examples from all 42 participants. Immersing involved splitting text from its context and lumping relevant text together.

2. *Coding* was carried out in order to abstract meaning from the text. In vivo coding (using the original keyword or phrase in the text) was used for this study. The codes were identified while focusing on relevancy to the study question, aim, and objectives (i.e., the process of dietary acculturation, dietary intake, dietary behaviors, mechanisms, and factors). One code per line of the Chinese transcription was created even if it contained no keyword or phrase relevant to the study's focus. This facilitated the potential emergence of generic categories during the categorizing procedure.

3. *Categorizing* was used to sort codes into fewer categories by grouping and regrouping them. Different highlight colors were used to represent different categories in the word documents containing the codes. Some codes for original keywords or phrases with interchangeable meanings were modified or merged with other original keywords or phrases. Categories included those created based on assumed knowledge of the subject matter studied, e.g., the process of dietary acculturation, dietary intake, dietary behaviors, mechanisms, and factors. Generic categories, meaning those that were developed from the terms or literal meanings extracted from the data, were also included.

Synthesizing. The synthesizing process was used to reach a deeper understanding of the data, facilitated by acquired knowledge of the subject matter in the literature. This process

allowed for interpretation of the "latent" meanings based on the "literal" meanings in the content of the text (Erlingsson & Brysiewicz, 2017). For example, the literature points out that children are a strong factor in the dietary acculturation of a family and that eating school lunch is a factor in the dietary acculturation of a child. Thus, when raw data showed that one participant talked about making pizza for her son and another talked about eating raw carrots with her son, the investigator was able to understand the data better, and spotted the pattern of school lunch-children-family influence. In other words, the investigator was able to interpret the latent meanings of children as dietary acculturation facilitators based on the literal meanings in the content provided by participants.

Recontextualizing. Through the recontextualizing process, data were transformed, rendering the findings logical and comprehensible, thus providing new understandings or knowledge about the subject matter. The process was accomplished using two key strategies: theming and describing.

1. *Theming* was used to formulate a "crystalized structure" that encompassed the important concepts that emerged in synthesizing the data. Theming is accomplished by gradually building a prototype structure, constantly examining the fit of new data with each addition, and modifying the established structure until it fit all cases. Thus, the findings are transformed into a new form. Over time, the new structure evolved as a result of the continued synthetization of newly added text. The beginning of chapter four shows the crystalized structure of this study. It indicates that the dietary acculturation process involves four phases: change, encounter, appraisal, and reaction. The prototype structure and the subsequent structures were different and had different substructure terms. When the prototype structure did not fit as new data was added, it was modified along with its substructure terms so that the new

data could fit into the structure; the same was done for subsequent structures and their substructure terms. This process continued as analysis went on until the data from every one of the 42 participants fit into one of the substructures under each of the four phases.

2. *Describing* was used to fill in the formulated structure with content from the raw data and to explain the themes based on evidence from the data. The process included verifying that all parts of the evolving structure were represented with examples from all 42 participants. During the describing step, the substructure for each theme was developed by re-reading the original text and organizing logical examples under each theme.

Analytic Process

The analysis was conducted as an iterative process. In addition to the analytic procedures described above, the approach employed constant data comparison and constant "testing the fit" of structured themes with the raw data. Multiple steps were carried out simultaneously, and at times, steps were repeated to refine understanding and ensure consistency of interpretation. For example, during the analysis of text from the second focus group (Stage 2), some Stage 1 steps were repeated if the newest results warranted further examination and/or yielded novel insights. Table 3.2 below outlines the steps taken for relevant analytic procedures.

Because the study collected data from six focus groups consecutively, the analytic process used the procedures of decontextualizing, synthesizing, and recontextualizing repeatedly across stages. Procedures like immersing, coding, categorizing, theming, and describing were interwoven into the analytic process across stages. Data analysis started once the first focus group transcription was done. Data analysis started once the first focus group transcription was completed. Data analysis for the next focus group did not begin until the

analysis for the prior group was completed. However, the focus groups were pre-scheduled, so there were occasions when the data analysis process for one group was temporarily interrupted so the investigator could run another focus group session and transcribe the recording soon after.

Table 3.2

Summary of Analytic Steps Within Each Stage of Analysis

Stage 1 Analytic process for first focus group (six steps) • Immersing and coding text for the whole group • Decontextualizing data for the first participant of the group • Decontextualizing and synthesizing by adding data from the second participant of the group • Decontextualizing and synthesizing by adding the data of each subsequent participant of the group • Theming of text for the group • Immersing, splitting, and lumping text into major themes
Stage 2 Analytic process for second focus group (eight steps minimum) • Conduct Stage 1 analysis steps • Rework themes and categories as those from the second group are added • Return to the raw data to re-read, test the fit, and modify as necessary
Stage 3 Analytic process for all subsequent focus groups (eight steps) • Conduct Stage 1 analysis steps • Rework themes and categories as those from each subsequent group are added • Return to the raw data to re-read, test the fit and modify as necessary
Stage 4 Process for ensuring inclusion (two steps) • Place examples from each participant into the structure of themes • Return to the raw data to re-read, test the fit and modify as necessary
Stage 5 Process of describing content and structure (three steps) • Describe findings • Return to the raw data to re-read, test the fit, modify, and reconceptualize the text, as necessary • Rework themes and substructures

After completing data analysis for the first focus group, a preliminary structure was built with preliminary categories and themes. Each subsequent focus group's data was analyzed to

extract the meanings and to test the fit with the preliminary structure. Testing the fit can only strengthen the build of a structure. If the data fit, the structure gets more support; if not, the structure is modified so that it fits more data of a similar sort. In this way, conducting six focus groups consecutively instead of just one offered certain effects similar to the formal member checking technique; that is, information, feedback, and observations from each subsequent group served to verify or refute observations made in earlier stages of the analysis, serving to verify and strengthen the analytic findings.

Ensuring Trustworthiness and Rigor

The trustworthiness criteria appropriate to the naturalistic paradigm are credibility, transferability, dependability, and confirmability, which are equivalent to the quantitative terms of internal validity, external validity, reliability, and objectivity (Lincoln & Guba 1985).

Credibility

Graneheim and Lundman (2004) point out that one "critical issue for achieving credibility is to select the most suitable meaning unit" (p. 110). Tables 3.3, 3.4, and 3.5 illustrate how meaning units, codes, categories, and themes were used to facilitate judging the credibility of the findings.

These three tables illustrate the building of the conceptual framework, part of which was done using procedures similar to those of the qualitative content analysis method. The text describing participants' experiences of the dietary acculturation process was extracted for analysis. The text then was divided into meaning units. Each meaning unit was then extracted into a condensed meaning unit. Next, the condensed meaning unit was labeled with a code. The study used in vivo codes wherever possible. The codes were compared and contrasted to see patterns among them so as to sort them into categories and sub-categories when there were

sufficient codes for patterns to emerge. Finally, through the procedure of synthesizing, themes and sub-themes emerged as the overarching structure above categories.

Table 3.3 shows examples of how a meaning unit from raw data was turned into a condensed meaning unit and then into a code. It demonstrates how the raw data were decontextualized by the investigator. Generally, a meaning unit is not lengthy, such as more than several paragraphs, and likewise is not short, such as a single word (Graneheim & Lundman, 2004).

Table 3.3

Examples of Meaning Units, Condensed Meaning Units, and Codes

Meaning unit	Condensed meaning unit	Code
Later, I saw, ah, such a good flavor/taste as people eating it, so I tried it, and I liked it after trying.	Such a good flavor/taste	Good flavor
I think, ah, eaten raw, lots, a lot of water, moisture, oh, very sweet, wow, very, very, very crunchy, it's very crunchy; It's very tasty, extraordinarily tasty, had not tried, therefore, therefore not dare to eat (raw), the habit was habitually eating it cooked.	Very sweet; very crunchy; very tasty	Tasty
Of course, there were flash frozen dumplings in China too, so then we went to find flash frozen dumplings, and later discovered that dumplings (here) were pretty tasty;	Pretty tasty;	Tasty
The Japanese-style flash frozen dumplings, those that just fry directly, right, pot stickers, yes, I think those are even tastier; And later, there were those small, tiny ones that were also very tasty.	even tastier; also very tasty	Tasty
I think that is tastier than those that were completely fried, and it can be kept for a long time.	Tastier than those…;	Better taste
Ah, when you fry it, it will soften shortly, but this way, bake, it remains crunchy, still crunchy, better taste.	better taste	Better taste

Table 3.4 illustrates examples of how codes were transformed into categories or subcategories, how categories then were transformed into themes or subthemes under Phase III (i.e., reaction) of the dietary acculturation process. It illustrates how the codes derived from the raw data were recontextualized by the investigator. Up until the creation of categories, the literal meanings of the raw data were noticeable in the terms used. After that, the data transformed, and the terms used for themes and sub-themes signaled latent meanings of the text relevant to the inquiry. Constant testing the fit at each addition of new data is a way to ensure that the transformation from literal meaning to latent meaning is grounded in the data.

Table 3.4

Examples of Sub-themes, Categories, Sub-categories, and Codes for Primary Acculturating

Phase	**III. Reaction**			
Theme	**Primary acculturation**			
Sub-theme	***Habituating to new food***			***Adjusting food***
Category	*Enjoying the food*		*Enjoying the eating*	*(NA)*
Sub-category	Taste of the food	Worthiness of the food	(NA)	(NA)
Codes	Good flavor Tasty Better taste	Pregnancy Very good (for the body) Beneficial to bone health	Share Ate together	Modify Substitute Replace

Table 3.5 shows all the themes with varying substructures under one process phase. The themes and subthemes and their underlying structures show how well the focus of the research was addressed by the data.

Table 3.5

Examples of Theme, Sub-themes, Categories, Sub-categories, and Codes for Reaction Phase

Phase	**III. Reaction**					
Theme	**Resisting acculturation**	**Primary acculturation**				**Secondary acculturation**
Sub-theme	**(NA)**	***Habituating to new food***			***Adjusting food***	**(NA)**
Category	(NA)	*Enjoying the food*		*Enjoying eating*	(NA)	(NA)
Sub-category	(NA)	Taste of the food	Worthiness of the food	(NA)	(NA)	(NA)
Codes	Will not try Not bought Not eating it	Good flavor Tasty Better taste	Pregnancy Very good (for the body) Beneficial to bone health	Share Ate together	Modify Substitute Replace	Been to other Western country Been to U.S. before Ate Western dish weekly before

Transferability

Knowledge generated from naturalistic inquiry is inherently dependent on context and time, and thus the researcher cannot address the external validity of the findings (Lincoln & Guba, 1985). However, the naturalist can provide "thick descriptions" to enable understanding transferability of the findings. Thick description is providing relevant illustrative data that may be sufficient to determine potential applicability to other settings (i.e., other contexts and times). To promote transferability, thick descriptions are reported in the results chapter. Purposeful sampling was used to conduct six focus group discussions with individuals from three different social organizations, sampling from both urban and suburban areas, and recruiting ethnic enclave immigrants. Through purposeful sampling, the data from the study should be transferable to immigrant groups in other metropolitan areas with similar contexts, such as areas with Chinese enclave immigrant families and various household types, such as those with single

mothers, three generations living together, and Western husbands. Purposeful sampling provided a broad range of information for inclusion in the thick descriptions, helping to establish the transferability of the findings.

Dependability

Audit trails (see Table 3.6 and earlier aspects of this chapter) are provided as a means to demonstrate the dependability of this inquiry and its findings. Dependability is established by examining both the process and the product of the inquiry (Lincoln & Guba, 1985). Equivalent to ensuring reliability, such an examination focuses on the stability and consistency of the process and the product. However, as Lincoln and Guba (1985) pointed out, instability and "instrumental" unreliability cannot be simply dismissed as "unreliability" under naturalism, which does not assume an unchanging reality. Conditions under natural inquiries can never be the same. Human instruments display decay/fatigue and the human mind makes mistakes. Thus, the inquiry audit is a technique for establishing dependability. It allows for the evaluation of changes while taking into account both factors of instability and factors of phenomena- or design-induced change. As an example of change made due to the investigator's decisions, the focus group discussion guide used in this inquiry was modified after the first group discussion to enhance the natural flow of verbal expression in the discussion.

Confirmability

Confirmability is concerned with establishing that the researcher's interpretations and findings are clearly derived from the data (Tobin & Begley, 2004). An audit trail was used to help establish confirmability (Lincoln & Guba, 1985), which involved ongoing scrutinizing and archiving of data, findings, interpretations and recommendations. A variety of evidence and strategies (Table 3.6) were used to establish an audit trail for this inquiry across the research

process. Table 3.6 shows what trails were left during which inquiry process for audit purposes. Drawing from Halpern (1983, as cited in Lincoln & Guba, 1985), the following audit trail categories are described in terms of how they help to establish the confirmability of this inquiry:

1. *Raw data.* Information was recorded, transcribed, and archived.
2. *Data reduction and analysis products.* Data reduction was achieved by decontextualizing the transcribed texts through coding and categorizing. Appendix G shows a sample of an in vivo coding file. Coding was checked and verified by the RA at the beginning of the coding process. Appendices F.1 through F.6 show samples of the evidence from summarized transcripts.
3. *Data reconstruction and synthesis products.* A final report was generated, see the Results chapter.
4. *Process notes.* Methodological notes were made about procedures, designs, strategies, and rationale described in this chapter. Also see Table 3.6 and the Appendices to which it refers.
5. *Materials relating to intentions and dispositions.* The dissertation research proposal approved by the Dissertation Supervisory Committee shows the intentions of the study. In addition to ongoing personal reflexive notes about recognized biases, preconceptions, and/or expectations, the final dissertation also provides an audit trail of disposition with evidence of theoretical and methodological preferences throughout the study process.

For confirmability, Table 3.6 points out the trail of all transcribed audio recordings during the immersion process for Halpern's audit trail category of *raw data*, Appendix G during coding and categorizing for *data reduction and analysis products*, and Appendices H, I, and J during theming and defining and naming themes for *process notes*. In sum, multiple strategies

(Table 3.6) were used to ensure the trustworthiness and rigor of this study (Nowell et al., 2017), attesting to the credibility, transferability, dependability, and confirmability of the findings. This careful documentation lends confidence to the findings and their interpretation.

Table 3.6

Audit Trails Documenting Trustworthiness of the Inquiry and Its Findings

Inquiry process		Trails
Data collection	Immersing	Moderated and debriefed all focus groups
	Immersing	Transcribed all audio recordings
	Data managing	Stored raw data in well-organized archives
		Maintained records of all data notes and transcripts
Data analysis	Immersing	Engaged extensively with the data
		Documented theoretical and reflective thoughts
		Documented thoughts about potential themes
	Coding & categorizing	Engaged in reflexive journaling
		Used a coding framework
		Established audit trail of code and category generation (see Appendix G)
	Theming	Diagrammed to make sense of theme connections (see Appendix H)
		Kept detailed notes about the development and hierarchies of concepts and themes (see Appendix I)
	Reviewing themes	Tested referential accuracy by returning to raw data
	Defining & naming themes	Documented theme naming (see Appendix J)
	Describing	Described the process of coding and analysis in detail
		Recorded thick descriptions of context (see Results chapter)
		Described the audit trail
		Reported reasons for theoretical, methodological, and analytical choices

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CHAPTER 4: RESULTS

The objective of this dissertation study was to understand the dietary acculturation process among newly immigrated Chinese American mothers. The specific aims were to:

1. Generate a new framework for conceptualizing phases that captured the dietary acculturation process.
2. Identify fundamental mechanisms and factors associated with change in dietary intake and dietary behaviors.

Data were collected from 42 immigrant mothers by conducting six in-depth focus groups about their experiences and reflections on dietary adaptation behaviors and processes following immigration to the United States.

Description of the Study Sample

The study sample consisted of 42 Chinese American mothers with dependent children. All participants were female immigrants who had emigrated from urban, rather than rural, areas in their countries of origin, primarily China. Thirty-six participants were living in mainland China just before immigrating to the United States. Five participants were from Taiwan. One participant was originally from China but lived in South America before moving to the United States. The participants were recruited to take part in six focus groups conducted at five urban sites: two Chinese schools, two Chinese churches, and a central Chinese social service agency.

Table 4.1 summarizes the demographics for study participants, including age (mean = 37.6, SD = 5.3) and level of education (mode = college degree). Twenty-six of the 42 participants (62%) were married and 16 did not disclose their marital status; modal household income was under $15,000, and the average length of time living in the United States was 2.5 years (SD = 1.5). Thirty-one of the participants (74%) were not employed outside the home.

The ages of participants' dependent children ranged from infancy to teens.

Table 4.1

Study Sample Demographics

Variable	N (%)
Mother's age	
Under 30	2 (4.76%)
30-40	26 (61.90%)
Over 40	13 (30.95%)
Education	
Middle school	5 (11.90%)
High school diploma	8 (19.05%)
College	19 (45.24%)
Master's degree	6 (14.29%)
Professional degree	1 (2.38%)
Doctoral degree	3 (7.14%)
Marital status	
Married	26 (62%)
Undisclosed	16 (38%)
Household income	
Under $15, 000	11 (26.19%)
$15,000 - $24,999	8 (19.05%)
$25,000 - $34,999	4 (9.52%)
$35,000 - $49,999	2 (4.76%)
$50,000 - $74,999	4 (9.52%)
$75,000 - $99,999	5 (11.90%)
Over $100,000	5 (11.90%)
Length of stay in the U.S.	
Under one year	7 (16.67%)
1-2 years	8 (19.05%)
2-3 years	9 (21.43%)
3-4 years	7 (16.67%)
4-5 years	7 (16.67%)
5-6 years	3 (7.14%)
12 years	1 (2.38%)

Note. (N = 42). Individuals were recruited who had immigrated to the United States within, or a few months beyond, the last five years. One participant, who had lived in the United States for 12 years, was asked to limit her discussion to her dietary experiences upon immigration. One case was missing age data, and two cases were missing household income data.

Phases of Dietary Acculturation

The organization of the study results presented in this chapter are outlined in Table 4.2. Table 4.2 also identifies the major themes in the data that are discussed below.

Table 4.2

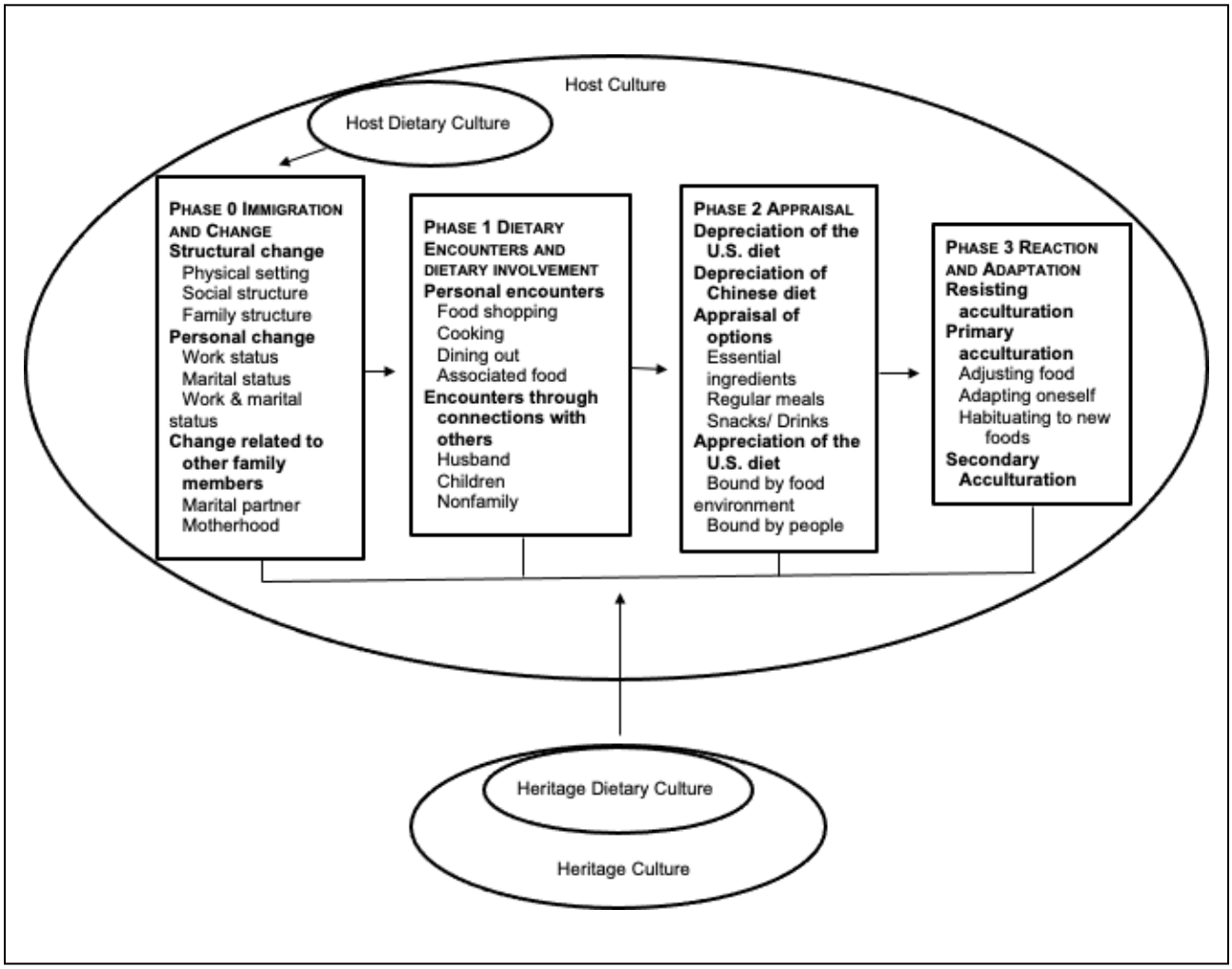
Overview of Focus Group Results: Phases of Dietary Acculturation

Phase 0 **Immigration and Change**	**Phase 1** **Dietary encounters and dietary involvement**
Structural Change	**Personal encounters**
Physical setting structure Change in food environment Change in kitchen ***Social structure*** ***Family structure***	***Food shopping*** ***Cooking*** ***Dining out*** Restaurants Social gatherings ***Associated foods***
Personal Change	**Encounters through connections with others**
Work status ***Marital status*** ***Both work & marital status***	**Husband** **Children** **Nonfamily**
Change related to family members	**Phase 3** **Reaction and adaptation**
Dietary acculturation of spouse **Motherhood** Childbirth Child attending school *Preschool* *Elementary school* *Middle school*	**Resisting acculturation** **Primary acculturation** ***Adjusting food*** ***Adapting oneself*** ***Habituating to new foods*** Enjoyment of food (substance) *Taste* *Taste of combining flavors* *Worthiness of the food* Enjoyment of the eating (activity) Enjoyment of both food & eating
Phase 2 **Appraisal**	
Depreciation of the U.S. diet	
Depreciation of the Chinese diet	
Appraisal of options	
Essential ingredients ***Regular meals*** ***Snacks/drinks***	
Appreciation of the U.S. diet	**Secondary acculturation**
Bound by food environment ***Bound by people***	

The four phases of dietary acculturation, depicted in Figure 2 below, emerged from qualitative analysis of the six focus group discussions. Additionally, the figure includes the key mechanisms and influential factors (also identified in the analysis of the focus group discussions) that participants associated with changes in their dietary intake and dietary behaviors. The four phases were used to build the dietary acculturation framework discussed in Chapter 5.

Figure 2

Phases in the Dietary Acculturation Process Derived from Analysis of Focus Group Discussions



For this dissertation study, the term *mechanism* is defined as a process that the immigrant mothers experienced and through which they became more acculturated to the U.S. diet (e.g., "habituating oneself to a new food"). Mechanisms are the means that propel the process of dietary acculturation, and without which, dietary acculturation would not proceed. The term *factor* is defined as a variable that influences the direction and pace of dietary acculturation (e.g., one's marital status). Factors, like mechanisms, are integral to the dietary acculturation process. Factors were derived using the analytic procedures described in the research methods chapter: they were coded during the de-contextualization stage, analyzed during the synthesis stage, and extracted during the re-contextualization stage relevant to the emerging and evolving themes of the dietary acculturation process.

The processes illustrated in Figure 2 capture the sequence of dietary phases described by participants as they discussed the dietary acculturation process. Important contributions from this analysis, as shown in Figure 2, are the inclusion of concepts such as "adjusting certain foods to maintain existing dietary habits," "adapting oneself to fit the new food environment," and "habituating oneself to the new food," relevant to taste and food preferences, along with the concepts of "enjoying the food" and "enjoying the eating." Another important contribution is the identification of "others" (i.e., "change related to other family members" in Phase 0, "through others" in Phase 1, and "through people" in Phase 2) as important factors in dietary acculturation. These concepts provide new insights as to why and how taste and food preferences change during the process of dietary acculturation.

The following sections provide "thick" descriptions of the dietary acculturation process, detailed with findings from the focus group discussions that support the phases, mechanisms, and factors of the proposed dietary acculturation framework. The following descriptions of

Phase 0 through Phase 3 make use of examples given by each of the 42 participants to demonstrate that all participants exhibited some signs of going through each of the four phases, except in cases where participants' dietary acculturation process did not advance further. The examples were selected because they depict participants' progression from Phase 0 to Phase 3 of the dietary acculturation process. As such, the examples recur in the discussion of each phase, though only the aspects salient to the phase under discussion are emphasized.

Phase 0 Immigration and Change

Immigration is change. Specific changes due to immigration influence an individual's process of dietary acculturation. Table 4.3 summarizes the major types of change and key themes characteristic of Phase 0, as described by study participants.

Table 4.3

Phase 0 Summary of Major Changes with Major and Minor Themes

Major changes	Major & minor themes
Structural change (21)	Change in structure of physical setting (14)
	Differences in food environment (12)
	Differences in kitchen setting (2)
	Change in social structure (3)
	Change in family structure (4)
Personal change **(**6)	Change in work status (3)
	Change in marital status (2)
	Change in work & marital status (1)
Change related to other family members **(**15)	Change related to marital partner (3)
	Change related to motherhood (12)
	Childbirth (3)
	Child attending school (9)
	Preschool (2)
	Elementary school (6)
	Middle school (1)

Note. Values in parentheses represent the number of participants who provided relevant examples.

Structural Change. Structural change is experienced by immigrant mothers due to factors outside of themselves or their family members. It includes changes in the physical setting, social structure, and family structure. Structural change is universal for this population because immigration involves moving to a new location and society. Structural change occurs immediately upon immigration, though immigrants may not be conscious of it. The mothers who participated in the focus group discussions described three types of structural changes that they encountered upon immigration during the initial phase of dietary acculturation (Phase 0).

Change in Structure of Physical Setting. Typical changes in the structure of physical settings described by the participants include

- a shift from the predominant take-out or eat-in Chinese food environment to an U.S. food environment;
- a change from a Chinese kitchen to a U.S. kitchen.

Table 4.3.1 below lists specific examples of structural changes that are described in this section.

Regarding the shift from the Chinese food environment to the U.S. food environment, in Chinese cultural settings, restaurants and food stands characterize the food environment. Take out and eating out are common mores reflected in the Chinese food environment. Because the food environment changed with immigration, some immigrant mothers began to cook in order to eat familiar foods. Had the U.S. food environment supplied these foods, they might have continued the behavior of eating out. That is not to say that eating out is not common in the United States as well, just that the altered food environment did not offer access to the types of food the immigrant mothers and their families were accustomed to eating.

Table 4.3.1

Examples of Structural Change—Change in Structure of Physical Setting

Change in structure of physical setting	Participant	Differences	Food/dietary behavior
Differences in food environment	#2.3	Scarcity of food stands/restaurants serving familiar foods	Breakfast
	#5.2		Meal
	#2.4		Home cooking
	#6.5		
	#4.4		
	#2.8	Places for eating	Home cooking
	#2.5	Affordability of eating out	Home cooking
	#3.5		
	#5.4	Tastiness of familiar foods	U.S. restaurants
	#2.7		Frozen foods/ingredients
	#6.3	International cuisine	Eating out
	#6.4		
Differences in kitchen setting	#5.5	Cooking fan	Eating out
	#3.3	Oven	Baking

Many of the participants, both from China and Taiwan, spoke about how their prior food environment cultivated their eating out dietary behavior. Several remarked on the frequency with which they ate out in their heritage country. One participant (#2.5) recounted that she ate out "seven days a week" when living in China. Another (#6.5) noted that she "ate out all three meals plus night snack every day" in Taiwan. Upon immigrating, these behaviors eating out or ordering take-out were impacted by marked differences in the new food environment. Twelve mothers described differences in eating out in the new food environment. These differences created challenges for ten mothers but were embraced by two mothers. Of the challenges faced, six were about accessibility, two about affordability, and two about food taste.

With respect to accessibility, eating out in the heritage food environment was described by participants as "easy" and "convenient," and in the host food environment, it was described as "difficult." For example, participant #2.3 did not cook when she lived in China, as it was "very easy to buy outside." Participant #5.2 likewise commented that it was "easy, just take out." Participant #2.4 ate out routinely with her family in Taiwan as the food was "very easy to get; here, very difficult." Participant #6.5 said that "because it's too convenient in Taiwan," her family would buy food from foods stands or restaurants. The family of participant #4.4 ate out almost all three meals in Taiwan. "Purchasing [takeout Chinese food] is very convenient" there; here, "purchasing is very inconvenient. You must make it yourself." The affordability of eating out was also a concern. Participant #3.5, who did not cook at home in China, noted, "[I] must home cook by myself every day; otherwise, eating out is very expensive." Participant #2.8 also rarely cooked at home just for herself in China, often eating out or eating at her sister's. Here, she has to decide what to eat on a daily basis and feels that the "daily dish menu is more difficult to accomplish."

With respect to taste, when participants managed to locate and buy Chinese foods in the United States, they found that the taste was "off." The family of participant #5.4 ate out weekly when living in China, but after coming to the United States, the child in the family "refused to eat" at Chinese restaurants. The father felt that the Chinese dishes made in the United States were no match to those made in China. With immigration, the food environment where it was easy or convenient for most people to buy familiar and appetizing Chinese foods outside the home was suddenly replaced by an environment where U.S. food was dominant. Nor was this change limited to eating out. Participant #2.7, who primarily cooked fresh fish and vegetables every day at home in China, found that most of the foods in the United States were "flash

frozen, not fresh," so it was "very difficult to make dishes tasty."

Differences in food environment appeared to be difficult to adjust to for most of the participants, with the exception of two, who found food choices in the United States easy and authentic. Participant #6.3 recounted that feeding her son U.S. food was very convenient, "What I felt [that made me] relaxed is that starting from the first day I moved to the U.S., I no longer have to feed him. No need. Because, what he saw was, any restaurant, Western, pizza, pasta, all his favorites." Not only did her son prefer Western foods, she liked Southeast Asia dishes prepared in the United States. The preferences of this participant and her son were not limited to Chinese foods, which made adapting to the new food environment easier. Similarly, participant #6.4 did not limit herself to eating only prepared Chinese foods and commented, "In fact, I am quite similar to her [#6.3]. There are more restaurants here, and more authentic;" whether the restaurants be "Vietnamese, Thai, Chinese, even if it's American, [in] the U.S., it's more authentic, so I eat at restaurants more."

Participants described considerable changes in the food environment associated with changes in restaurant foods and available food ingredients. Accessibility, affordability, convenience, and the variety of accessible foods were all salient to this food environment change. U.S. foods were mostly unfamiliar to the immigrant mothers, and Chinese foods had an unfamiliar taste to some of the participants. Instead of "delicious," participants described such foods as "not tasty," "rancid," or "does not smell good." Consequently, their diets changed as the foods available in their surroundings changed.

Another physical setting change was to the kitchens where foods were prepared. To participants, immigration involved changes in both cooking methods and kitchen appliances, such as cooking fans and ovens. Chinese kitchens are usually in a closed space with powerful

cooking fans suited to Chinese cooking methods, particularly stir-frying. U.S. kitchens tend to be open concept with much less powerful cooking fans, causing the grease and smell of stir-frying to spread to other living spaces. Participant #5.5 "wouldn't dare to stir-fry" in her large rented apartment because she worried about "what to do if you stir-fry and mess up people's [property]?" In addition, the oven is not a common kitchen appliance in Chinese homes, as participant #3.3 pointed out, saying, "in China, our home did not have the, the oven."

Change in Social Structure. In addition to the physical structure, participants also described change in social structure, namely changes in the length of lunch breaks and food purchasing power related to changes in their earnings as well as food costs (see Table 4.3.2).

Table 4.3.2

Examples of Structural Change—Change in Social Structure

Participant	Difference	Food/dietary behavior
#6.1	Lunch break	Cookie for lunch
#1.4	Purchasing power	Basic food, e.g., an apple
#1.8		Chinese food, e.g., ingredients of Cantonese soup

With immigration, eating customs and food costs tend to change. In China, participant #6.1 had at least two-hour lunch breaks, during which time "everyone can go out to have a meal, come back to take a nap, and then still be in time to get back to work." In the United States, she would just "grab something randomly, getting a cookie to eat would do," during her lunch breaks. To participant #1.4, immigration heralded changes in food purchasing power. That is, money earned in the United States went farther than in China, even if food costs were higher in the U.S: "because here you earn, like 3000 [US] dollars per month; in China, 3000

[Chinese] dollars per month too. But in China, like she said, the apple, 20 [Chinese] dollars per kilogram, here, uh two, a little over two [U.S.] dollars [per pound]." Participant #1.4's reflections help shed light on a scenario mentioned by participant #1.8. She said that spending "ten or twenty [U.S.] dollars" is enough to make a dish of Cantonese soup in the United States, whereas it is "very expensive" to "buy the ingredient [for soup]" in China. Aside from other costs of living, participants generally believed that meeting basic food needs was easier in the developed, modern U.S. society than it had been in China.

Change in Family Structure. In addition to changes in physical and social structures, participants described changes in family structure. The sudden changes in family structure discussed by the participants were related to parents, family members, or a nanny/housekeeper. These changes affected cooking both directly and indirectly. Many participants found themselves having to cook after they moved to the United States, even though, in the past, someone else had cooked for them (see Table 4.3.3).

The absence of help with cooking meals in the United States caused a marked change in the lives of several participants. Participant #2.2 said, "In general, my mother made [food] for me and I didn't have to cook." Similarly, participant #3.7 said, "when I was in Shanghai … there were more family members … I did not cook." For participant #5.3, this help came from having "a babysitter [housekeeper] at home" who cooked for the family. Even when participants had to cook themselves, having extra helping hands available meant saving time during meal preparation. Participant #5.1 said, "In China, you, you still have parents [around], sometimes they help you … here raising [children], one person already has so, so many things to do, and you don't have time in the morning up so early to prepare this and that."

Personal Change. Personal change refers to participants' own experiences, including changes in work status and marital status. Change in work status was mentioned by three participants, change in marital status by two, and change in both work and marital status by one.

Table 4.3.3

Examples of Structural Change—Change in Family Structure

Participant	Difference	Food/dietary behavior
#2.2	Presence of mother	Home cooking
#3.7	Presence of more family members	
#5.3	Presence of a nanny/housekeeper	
#5.1	Presence of parents	

Change in Work Status. The change in status from working to not working was one factor that initiated or increased home cooking for three participants. For them, not working after immigrating to the United States meant they had more time for cooking or taking personal responsibility for providing meals. Working or not working are key factors that, in combination with being a mother of dependent children, influenced changes in participants' responsibilities related to home cooking (see Table 4.3.4).

Not working influenced the likelihood of home cooking for the mothers participating in this study. Participant #4.2 said she used to be "constantly busy all day long, busy at work," but since stopping working after immigrating, she had time for "thinking about eating" and could "use foods already in the refrigerator to make some…foods." Likewise, in China, participant #4.3 "needed to work therefore [she was] making [dishes] less," but after arriving in the United States, she spent "day after day figuring out what dish to eat." Not working not only caused participants to prepare more meals for their families, but they also had to assume personal

responsibility for meals of their own that had previously been provided by their employers. Participant #1.1 recalled, “There were lunch and dinner to eat at the company,” so she never had to cook for herself. Now, things are very different for her: “only my husband is working, and because I am now a mother of two children, [I] cook by myself at home.”

Table 4.3.4

Examples of Personal Change—Change in Work Status

Participant	Change	Food/dietary behavior
#4.2 #4.3 #1.1	Working → not working	Home cooking

Change in Marital Status. In addition to work status, participants described changes in marital status. The change from being single and living alone to being married and living with a spouse was a mechanism that initiated home cooking behavior among immigrant mothers. For participants, being single or living alone often meant there was no need to cook; being married and living with a spouse frequently meant assuming responsibility to cook for the family. Being married and living with a spouse thus was a factor that contributed to beginning to cook at home for participants, who seemed to naturally take on this responsibility. For them, the responsibility of cooking for the family was even more challenging because, on top of learning to cook, they needed to navigate a new food environment (see Table 4.3.5).

Participant #2.6 had “never entered kitchen to play [as a cook]” before marriage; after marriage, she forced herself to learn for her family. For participant #2.1, cooking meals after her marriage in the United States was especially challenging because her husband is picky, and “choosing ingredients is a very big problem” given the unfamiliar food environment.

Table 4.3.5

Examples of Personal Change—Change in Marital Status

Participant	Change	Food/dietary behavior
#2.6 #2.1	Single→ married	Home cooking

Change in Work & Marital Status. One participant underwent changes in both work and marital status, which influenced her home cooking (Table 4.3.6). Participant #3.6 was single in China, so she commonly ate at her company or ate out, and only cooked for herself on weekends. After immigrating to the United States and marrying, she commented that she and her husband "eat out on weekends, and basically home cook every day."

Table 4.3.6

Examples of Personal Change—Change in Work & Marital Status

Participant	Change	Food/dietary behavior
#3.6	Single→ married Working → not working	Home cooking

Change Related to Other Family Members. "Change related to other family members" differs from "structural change" in that this change is brought about by people. It also differs from "personal change" in that this change is brought upon by people other than oneself. Immigrant mothers view cooking for other family members as their responsibility. Thus, it is easy to understand how changes related to other family members could be mechanisms that influence the process of dietary acculturation for both the mother and the family. The presence of a husband and/or child are factors that contribute to a mother's indirect contact with a dietary

culture other than her own. That is, other family members may be more acculturated with respect to diet than the mother due to their contact with U.S. culture through the work or school environment. In turn, their cultural and dietary experiences may be influential when brought into the household.

Change Related to Dietary Acculturation of Marital Partner. Being married to someone who is more acculturated is a mechanism that influences change in an immigrant mother's dietary behaviors and intake. Having a more acculturated husband can mean more opportunities for and assistance in becoming familiar with U.S. foods and/or ingredients, and thus the mother can learn U.S. dietary habits from family members and/or individuals for whom the mother prepares U.S. meals (see Table 4.3.7).

Partly because participants felt responsible for their families' diet, husbands were described as a key factor contributing to immigrant mothers' dietary behaviors, influencing the food they purchased, the way they ate (such as consuming cold instead of warm milk), the foods they ate, and the dishes they prepared. Participant #3.8 commented that her diet in the United States was "influenced by [her] husband particularly," because he "understands American foods very well." Her husband came to the United States when he was 13 years old, returning to China after he was 25. Thus, she related that, from the start of her immigration, she bought frozen vegetables and fruits, "because this is what he recommends." In contrast, another adaptive approach is a diet that is half Chinese and half Western. Participant #6.6 described making pan-fried steak or salad for her husband and, at the same time, preparing a Chinese meal for herself and her child.

Table 4.3.7

Examples of Change Related to Other Family Members—Change Related to Marital Partner

Participant	Acculturation of husband	Food/dietary behavior
#3.8	Since 13 years old	Frozen vegetables & fruits
#4.6	At least 17 years	U.S. breakfast
#6.6	Westerner	Western dishes

Change Related to Motherhood. In addition to the influence of a marital partner already acculturated to the U.S. diet, participants described dietary changes and acculturation related to motherhood. Before a child begins school, the mother is the child's main social contact and food provider, and home is the main dietary environment. After children begin school, as the findings of this dissertation study supported, peers and friends become significant social contacts, and the educational institution becomes the child's new and most significant dietary environment. The influences of the child's new environment and novel contacts facilitate the child's dietary acculturation and can indirectly influence the dietary acculturation of the mother and the family as the child brings new dietary preferences and behaviors home. Change related to motherhood included pregnancy and the postpartum period as well as periods of the child attending school, including (a) preschool, (b) elementary school, and (c) middle school (see Table 4.3.8).

Pregnancy and the postpartum period contributed to changes in the immigrant mothers' approach to and/or knowledge of U.S. foods. Pregnancy-related factors mentioned included altered taste, breastfeeding needs, and consulting with a nutritionist. For example, participants #1.2 and #1.5 mentioned the unpleasant experience of eating frozen chicken in the United States, but childbirth influenced dietary changes because they were willing to sacrifice personal taste preference for their children's nutritional needs. Participant #1.2 built up her taste tolerance across time. She did not previously eat frozen chicken, which she experienced as

unappetizing, even disgusting. Yet, following childbirth, she "felt that anything is delicious."

Due to having a child, participant #1.5 also began eating frozen chicken, despite the fact that she still found it distasteful: "the chicken is not tasty. But it's not okay to not eat. Need, need to feed the kids. Ugh, bite the bullet, and eat it. It's really not tasty. Those chicken, pork are not tasty. There's a little, I think it's a bit rancid. It's that, that smell, uh, it doesn't smell good." Childbirth provided participant #1.7 with opportunities to increase her knowledge about U.S. food ingredients and ways to prepare foods. For example, she learned that "[if] the child doesn't drink milk, you can use the milk to make soup." Normally, an individual would decline to eat something that he or she does not like. However, out of consideration for their child's nutritional needs, these participants willingly prepared and ate new foods. Eating undesired or unfamiliar food as well as acquiring new dietary knowledge because of motherhood became a means for dietary acculturation.

Regarding the period of school attendance, depending on a child's age and learning stage, the educational environment had unique mechanisms and factors that contributed to the dietary acculturation process of the child and subsequently of the mother as well. Examples of such mechanisms and factors are described in detail below by educational level: (a) preschool, (b) elementary, and (c) middle school. Preschool is considered as part of school attendance in this dissertation study because it is the start of a child's exposure to a regular dietary environment outside of the home.

Table 4.3.8

Examples of Change Related to Other Family Members—Change Related to Motherhood

Change related to motherhood	Participant	Change	Food/dietary behavior
Pregnancy & postpartum	#1.2	Taste preference needs	Frozen chicken
	#1.5		
	#1.7	Food knowledge	Tofu, milk
Child attending school			
Preschool	#3.2	Packing child's lunch	Sandwiches, hot dogs, pizza[a]
	#4.1		U.S. lunch[a]
Elementary school	#6.2	Child's developing taste	U.S. foods[a]
	#1.3	Child's food knowledge	Eating raw vegetables
	#1.6		
	#3.1	Child's developing taste	Pizza, hot dogs, salad, etc. [a]
	#4.7		Pizza, bread[a]
	#4.5		Pizza[a]
Middle school	#3.4	Child's demand for food choices	Purchasing unfamiliar foods

[a] These are foods that have an influence on the child. However, the mother needed to consider permitting the child to have these foods when managing the family diet.

When a child begins attending preschool, packing their lunch is a mechanism that brings about dietary acculturation in the child and most likely the mother as well. For participants in this study, their children's peers were a factor that influenced what foods they were asked to buy and what their children would eat for lunch. Preschoolers wanted to learn from or conform to what their peers packed and ate for lunch.

Two participants whose children were attending preschool spoke about packing lunches and the influence of their children's peers. Participant #3.2 described:

I think the change in your taste is a sense of commonality. For example, like my son,

> going to the Montessori school, he always needs to bring his own meals... they [schoolmates] would bring the sandwich, or hot dog, or pizza. And my son would come home and say to me, "Mom, my friend, my classmate ate sandwich today." Later he would say again, the next day, said, "My classmate still ate that," and then I said, "Do you like to eat that, or because, or want to be like that?" He said, "Mom, I want to eat that too."

The daughter of participant #4.1 entered preschool upon arrival in the United States at two years of age. At that time, the participant did not know what to pack for lunch. Her daughter would say, "Kids brought such and such. I want to bring such and such too." So, she said, "her taste basically was formed here."

Regarding elementary school, changes were related to a child's developing taste and food knowledge. Food/dietary behaviors related to a child's developing taste in this study included eating general U.S. foods, mostly pizza, but also bread, hot dogs, salad, etc. Food/dietary behavior related to a child's food knowledge was eating raw vegetables. Moreover, eating school lunch changed the content of children's dietary intake. Such changes could lead to dietary acculturation in other family members, particularly through changes in the mother's food preparation. Eating school lunch also taught children a different way of eating the same foods. Mothers then learned new dietary behavior from their children. The following examples indicate how children's tastes developed through exposure to the elementary school environment.

Participant #6.2 stated that her son began to "adjust to American foods" as his taste developed after entering kindergarten and eating lunch at school. For the 20 months prior to that, he had been eating Taiwanese-style foods she cooked for the family. The daughter of participant # 4.5 told her that the pizza in her school lunch was "more delicious than Pizza Hut

in China." Similarly, participant #3.1 said that her son, who had gone to elementary school, "normally likes to eat American foods, mainly pizza, hot dog, salad, etc." Thus, the family's diet was gradually "developing towards American foods …mainly due to [him]." When participant #4.7 served Chinese dishes, her son would say, "I want bread. I want to eat pizza." Thus, she constantly had to change according to her son's likes.

Participants #1.3 and #1.6 were two examples of changes brought about by a child's food knowledge. They learned from their child to eat raw vegetables. Participant #1.3 remarked:

> My son, he eats at school, those like carrots, uh, those were eaten raw, and also celeries that were eaten raw, he thinks, he also thinks it is delicious, because he got used to eating [this way] at school, … he said, "this can be eaten raw." Later I…also accepted a little, also, now also, can eat some.

Similarly, the elementary school child of participant #1.3 informed her that vegetables such as red or yellow peppers "can be eaten raw" when they went to the supermarket.

As these examples show, elementary school children, who are immersed in U.S. dietary culture during lunchtime and have become accustomed to regularly eating U.S. foods, learn new dietary behaviors, and change their dietary intake. This process could also be influential on the mother's dietary acculturation by altering her dietary behavior and her food preparation for the family. Thus, a main mechanism by which mothers' dietary acculturation proceeded during this period of motherhood was the regular incorporation of new dietary practices acquired by children through their exposure to U.S. dietary culture at school.

When children began attending middle school, socializing with friends and peers was central to their dietary acculturation and most likely the mother's as well. Changes in a child's social development that resulted in their socializing with friends within and beyond the school

environment exposed them to different foods and diets that they began to experiment with. This in turn influenced mothers' food purchasing choices. For instance, participant #3.4, described the influence of her daughter while grocery shopping:

> I am mainly influenced by my daughter. Every time going to the supermarket, [she] said, "Mom, this is delicious." So on and so forth, ugh, "uh mom, um I must have this. I want this." Well, next time, "ah mom, this is delicious." I don't know, because she, she also, also has a circle of friends … I was passive, ah to, to want to buy these things. And then [when] she was going out to the, engage in activities or something, she said, "ah, I want to bring this; ah, I want to bring that." Because she is 12 years old this year. She is already, she wants, she has her own ideas. I am just passive … All passive, all, being influenced by the child to, to buy.

The Phase 0 findings discussed above reveal how a number of single factors influence the dietary acculturation process. Many of these factors, however, occur simultaneously or in various combinations, adding to the complexities of dietary acculturation, which progresses at different rates and to different degrees for different individuals.

Phase 1 Dietary Encounters and Dietary Involvement

In general, the process of dietary acculturation begins with encountering new foods, behaviors, environments, and influencing factors. Differences in the food environment, as part of the structural change that comes with immigration, are usually the starting point for immigrant mothers' dietary acculturation. In Phase 1, individuals take notice of new diet-related stimuli as they engage in new dietary activities, which tend to become more routine. Study participants described details of their early experiences with and initiation into dietary acculturation. They discussed what they encountered as they tried to continue their existing

dietary practices or adapt to the new food environment, describing their food shopping, preparation and cooking, and consumption, alone or with others. These dietary encounters were experienced both directly through their own actions and indirectly through their interactions with other people (Table 4.4).

Personal Encounters. Direct encounters as experienced by participants were facilitated by several key mechanisms: food shopping, cooking, eating out, and being presented with associated foods.

Table 4.4

Phase 1 Summary of Major Encounters with Major and Minor Themes

Major encounter[a]	Major & minor themes
Personal encounter (32)	Food shopping (16)
	Cooking (3)
	Dining out (11)
	Restaurants (8)
	Social gatherings (3)
	Associated food (2[a])
Encounter through contact with others (11)	Husband (5[a])
	Children (2)
	Nonfamily (4)

Note. Values in parentheses represent the number of participants who provided relevant examples.

[a] One participant provided information included in both types of major encounters.

Food Shopping. Food shopping is a mechanism by which the immigrant mothers encountered the abundance of Western foods and ingredients as well as the scarcity of Chinese foods and ingredients. Factors that contributed to dietary acculturation in this phase were the characteristics of foods observed while shopping, including food supply, cost, availability,

accessibility, safety, variety, and convenience. Participants described new encounters with frozen chicken, U.S. crab, and frozen entrées while shopping for chicken, crab, and Chinese dumplings, respectively (see Table 4.4.1).

Participant #1.5, who liked seafood, noticed differences in the size and cost of crab in the United States and China. She noted that U.S. crab was "big crab… cheap too." For participant #3.3, buying frozen foods "began with dumplings." She sought out frozen dumplings similar to those in China and found them tasty. Subsequently, this participant started purchasing a variety of frozen dumplings and began "to buy fast frozen egg rolls … as well as "fast frozen pizza."

Table 4.4.1

Examples of Personal Encounters—Food Shopping

Participant	Encounter	Food/dietary behavior
#1.2	Frozen vs fresh	Frozen chicken
#3.1		Frozen corn
#3.3	Variety of frozen dumplings	Frozen egg rolls & pizza
#1.5	Affordability of crab	Crab
#2.3	Scarcity of fresh fish	Salmon & cod
#3.6		Salmon
#2.1		Less fresh fish
#2.7	Scarcity and cost of fresh fish	
#6.2	Cost of ethnic vegetables	Romaine lettuce
#2.4	Available variety of ethnic vegetables	Meats
#5.1	Availability of snacks	Chips
#4.3	Scarcity of Chinese breakfast	Bread
#1.6	Accessibility of bread	
#4.2	Safety of milk	Milk
#4.5	Safety and cost of cheese	Cheese
#3.7	Accessibility of pizza	Pizza

Four participants commented on fish in the United States. These participants came from locations in China where fresh fish was a major part of their cultural diet. In the United States,

however, they encountered a scarcity of fresh fish and had to buy frozen fish and different types of fish. For instance, participant #2.3 declared that China has “more variety of seafood.” In the United States, she ate less fresh fish and more frozen fish. However, she also commented that in China fish like salmon and cod are “very expensive, and rarely accessible.” Participant #2.7, who consumed fresh fish every day in Canton, China, said that fresh fish was “especially scarce and also relatively more expensive” in the United States In summary, these participants encountered decreased availability and decreased affordability of fresh fish in the United States, but they also experienced the increased availability of frozen fish as well as the increased affordability of certain fish, such as salmon.

Three participants mentioned difficulties in obtaining familiar vegetables. These difficulties were related to availability, accessibility, and affordability as well as the manner which in the vegetables were prepared. When shopping for fresh corn for her son, participant #3.1 had to shop further away from home than she was accustomed to in China and had to purchase frozen rather than fresh corn. When looking for Taiwanese vegetables to cook, participant #6.2 discovered that she could get romaine lettuce from a U.S. supermarket instead of getting Taiwanese A choy from an Asian supermarket, an acceptable substitute because she found the taste of the vegetables to be similar. Participant #2.4 noticed the very limited choice of vegetables in the United States compared to Taiwan, noting that “vegetable variety [in the United States] is relatively less, that is, less option.” As a result, she learned to replace some vegetables with meats when preparing some dishes in the United States.

For participant #3.1, the experience of shopping for corn highlighted new facts: stores are not always within walking distance and fresh vegetables are not always available. Such an encounter initiated dietary adaptations. It introduced her to frozen foods. Similarly, for

participant #6.2, shopping for A choy highlighted the expense of purchasing traditional foods and the relative affordability of U.S. substitutes, like romaine lettuce. This triggered her dietary acculturation process. Participant #2.4 encountered difficulties in obtaining the vegetables she needed, even at the Asian supermarket. This encounter initiated her dietary acculturation process of shifting toward eating more meats and fewer vegetables.

Food shopping was an entry point for participants to discover differences in the food environment that ultimately affected their dietary practices. For example, three participants described encountering the abundance of U.S. snacks and bread while grocery shopping while also seeing fewer options for Chinese snacks, breakfasts, and ingredients. Participant #5.1 mentioned that, in China, chips represented only a small proportion of the variety of snacks sold in supermarkets. In the United States, however, she found "the whole aisle is chips." Such an encounter can shift dietary acculturation toward snacking on chips. Unsurprisingly, other focus group members spoke about their children's preferences for widely available snacks like chips over lesser available Chinese snack options.

Similarly, participant #4.3 encountered few grocery options for Chinese style breakfasts. She remarked, "is not much choice [for breakfast], there is nothing to eat, so you can't help it [buying available foods, like bread]." The newly immigrated Chinese mothers were inundated with unfamiliar Western foods and simultaneously lost access to familiar Chinese foods. These challenges called for adaptation, and even though they did not like Western foods, they bought them based on what they encountered most frequently.

Another notable difference was the abundance of food in the grocery store in the U.S. dietary environment. Participant #1.6 mentioned encountering quantities of bread while shopping, which lead to her incorporating it into her diet in place of traditional staples like rice.

Even though bread is sometimes eaten alone or with simple foods like butter or cheese that require minimal preparation, rice is rarely eaten by itself and usually accompanies prepared dishes. Since it was difficult to find Chinese ingredients to make the dishes that usually include rice, the role of rice in immigrant mothers' meals tended to decrease. On the other hand, the consumption of bread, which was readily available and versatile, was viewed as a food that immigrant mothers could use to solve mealtime challenges.

Three participants learned more about dairy-related products while shopping and began to incorporate them more into their diets. They noted the safety and lower cost of milk and cheese, as well as the convenience of eating cheese-based pizza. Participant #4.2 noted: "In China, milk, always made me feel, unsafe … so I rarely drank it. Except I, I wanted, [when] I was pregnant … [I] was forced to drink it, and then I just drank a little. Then when I came here, I drink desperately." In China, participant #4.5's family seldom ate cheese due to both the cost and safety. After coming to the United States, she found that she didn't "need to consider" these two issues anymore and began including cheese in her family's diet. Even though Pizza Hut was well known to participant #3.7 when she lived in Shanghai, eating pizza was "not as convenient as in U.S." Thus, her family began eating more pizza, which her child preferred, because pizza is ubiquitous and convenient: "a trip to Costco, a slice of pizza."

Cooking. Cooking is a mechanism by which immigrant mothers encounter new food ingredients, cooking methods, and kitchen styles. Factors involved in cooking that contribute to dietary acculturation include available food ingredients, time, and the appropriateness of the kitchen facility. Three participants faced problems with home cooking due to the limited availability of Chinese ingredients, lack of time to cook using traditional Chinese methods, and problems encountered using Chinese cooking methods in U.S. kitchens (Table 4.4.2).

Table 4.4.2

Examples of Personal Encounters—Cooking

Participant	Encounter	Food/dietary behavior
#2.5	Meal planning difficulty	Western meals
#4.7	Time-consuming cooking methods	Baking
#5.5	Mismatch of kitchen setting & cooking method	Eating out

When trying to plan Chinese style dinners, participant #2.5 encountered challenges that were offset by her new knowledge about Western meals. She usually tried to plan dinners for the next two or three days, stating, "Sometimes, it appeared that I have used up, I have exhausted, my, those ingredients [that I can think of for Chinese style dinner] in my head and then, I don't know [what to cook]." She felt restricted by the lack of Chinese ingredients and feared that her child would become tired of having the same foods. As a result, she incorporated Western meals, notably spaghetti with meatballs. Participant #4.7 was used to making Cantonese soup. But she found that her ingredients for Cantonese soup went unused "because time doesn't allow [her to use them]." To save time and avoid wasting ingredients, she began to make Cantonese soup less and bake more. Participant #5.5 "wouldn't dare to stir-fry" after her family moved into an apartment in the United States for fear that it would be "ruined, once you start to stir-fry." Consequently, her family chose to eat out more frequently.

Eating Out. Eating out is a mechanism by which mothers experienced new eating venues as well as new foods. Eating out included dining at restaurants or food stands as well as dining at social gatherings. Factors related to dining out that mothers identified as contributing to dietary acculturation included the taste of new foods, convenience, and the variety of foods offered at Western or international restaurants.

Eight participants described encountering differences in new dining environments.

These included the altered taste of Chinese food prepared in the United States and convenient access to international and U.S. food instead of Chinese food (see Table 4.4.3).

The family of participant #5.4 encountered different flavors when dining out at Chinese restaurants in the United States. She recalled, “As for Chinese restaurants, in the beginning, she [her daughter] refused to eat, refused to go.” When asked about the reason, she replied, “the taste is different.” Instead, her daughter liked to go to Western restaurants and loved to eat pizza. Participant #6.3 mainly relied on home cooking in Shanghai, where it took her 40 minutes to get to restaurants. In the United States, it is a “one-minute drive” from her house to a variety of restaurants, so she can “eat out 99%” of the time. But, because “there is no Taiwanese eatery” nearby, she had to “accommodate completely” and began to eat at Vietnamese, Tai, Japanese, and eventually Western restaurants instead.

Five participants described their encounters with international or Western restaurants. Dining at restaurants or food stands exposed these immigrants to foods that were new to them, including the Vietnamese dish Pho, pizza, Western desserts, and ranch dressing. These encounters with new foods at restaurants or food stands were so forceful that the participants felt compelled to try them for the first time. Participant #3.4 described the circumstance well. She had no desire to eat pizza when she went to a pizza restaurant with her family, but “there’s nothing else. Besides pizza, it is salad,” and she was “very hungry” at the time. Participant #6.1 first encountered Western desserts while dining out with friends. She said that “other people ordered [things like ice cream, pie and cheesecake], so I ordered too.”

Table 4.4.3

Examples of Personal Encounters—Dining out

Dining out	Participant	Encounter	Food/dietary behavior
Restaurants	#5.4	Changed taste of Chinese dishes	Western dishes
	#6.3	Accessibility of international dishes	Southeast Asian dishes
	#2.8	Dislike of Western foods	Home cooking
	#1.3	Unfamiliar food	Pho
	#4.1		
	#3.4	Fixed food options	Pizza
	#6.1	Customary meal course	Ice cream, pie, cheesecake
	#6.4	Complementary condiments	Ranch dressing
Social gatherings	#1.8	Western appetizer	Raw celery
	#5.2	Baked goods	Baking
	#2.2	U.S. foods	Refusing to eat

Two participants described newly experiencing Western food at social gatherings. Although participant #1.8 had "never eaten raw [celery] at home," she decided to try it at a party after seeing people dipping raw celery in ranch dressing to eat it. She mimicked what she saw and found the food to be "very delicious." Participant #5.2 had a similar novel experience. She had rarely used an oven before coming to the United States. Then, at a friend's party, she found the baked goods brought by other guests to be "very nice in color, smell, and taste." She attributed "utilizing oven more" to this encounter.

Not all of the participants began eating more U.S. food due to encounters in restaurants and social gatherings. When asked about her consumption of U.S. food, participant #2.2 replied, "I do not like to eat [U.S. food]," elaborating, "I don't like these things, so I … don't want to try it, when I see that [it's something] I don't like to eat, then I don't eat it." This resistance to U.S.

food extended even to her encounter with it during the focus group, where Bundt cake was available on the table. “I told you, what I don’t like to eat,” she said, “if I take a look at it, look, like this [Bundt cake], I also don’t eat.”

Presentation with Associated Foods. Certain foods are usually presented together due to cultural conventions or in social settings. In the United States, such is the case for coffee and sweets at coffee shops as well as pizza and hot dogs at food courts. Foods are commonly encountered in pairs or combinations. Therefore, exploring different social settings or cultural events is another mechanism by which immigrant mothers encountered new foods. Two participants encountered unfamiliar Western foods while eating other Western foods, as the foods were commonly presented in the same food setting (see Table 4.4.4).

Table 4.4.4

Examples of Personal Encounters—Associated Food

Participant	Encounter	Food/Dietary Behavior
#3.5	Hot dog presented with pizza	Pizza
#4.1	Coffee presented with sweet	Sweet

Participant #3.5 described why she finally ordered pizza instead of a hot dog at Costco after she had been in the United States for six months: “Suddenly I thought I would buy pizza today. And sometimes I actually, I think it was the smell, not that I wanted to try it at first.” In the past, she did not like cheese, but “Then [she went from] maybe slowly accept[ing] the taste of cheese from other foods, and then slowly evolv[ing] into, eh, thinking pizza was also delicious.” Participant #4.1 began drinking more coffee since coming to the United States. Since she drank so much coffee, it became “very natural to prepare a small sweet to eat with” her

drink.

Encounters through Connections with Others. Encounters with food through other people occurred as the result of several social mechanisms, including through the influence of one's husband, one's child, and nonfamily persons. Immigrant mothers commonly described encounters with new dietary information, dietary behavior, dietary patterns, and foods in the United States as occurring through others. Whereas in Phase 0, husbands and children were factors influencing immigrant mothers' dietary acculturation as mothers took their food preferences into consideration, in Phase 1, husbands, children, and nonfamily others were actively engaged in the mothers' dietary decisions and shopping behavior. The following describes how the mothers encountered new foods and adopted new dietary behavior *through* diet-related activities, such as grocery shopping, food preparation, and eating, as they related to their connections with others.

Connections with Husbands. The husband's influence was a mechanism by which a mother encountered new dietary information, dietary behavior, dietary intake, and dietary patterns, including food shopping, cooking methods, trying new foods, and using new meal styles. Factors involved in such encounters included the mother's nutritional knowledge, cooking responsibility, food sharing in the relationship, and convenience (see Table 4.4.5).

Table 4.4.5

Examples of Encounters through Connections with Others—Through Husbands

Participant	Encounter	Food/dietary behavior
#3.8	Recommendation	Frozen fruits & vegetables
#4.4	Expectation	Baking
#3.5	Tasting offer	Pizza
#6.6	Tasting opportunity	Bagel sandwich
#4.6	Behavior modeling	Cold U.S. breakfast

Five participants described new food encounters influenced by their husbands. These included buying frozen produce, learning to bake, and eating pizza, bagels, and U.S.-style breakfasts. Participant #3.8 began to buy frozen fruits and vegetables in response to her husband's recommendation, described in Phase 0. She learned from him that frozen produce was "fast frozen immediately right after picked, and all the nutrition was preserved," which made her more comfortable with choosing it over fresh produce. Participant #4.4 reflected on the reason she learned to bake: it was "because of my husband," and "not because of my child." Seeing other mothers baking cakes, her husband asked, "how about you?" leading her to "learn to do this." Participant #6.6 enjoyed eating toasted bagels, mentioning that she would "put some cream cheese, and then put some salmon" on the bagels. When asked about the first time she ate a bagel, she noted "I tasted it" while her husband, who is American, "ate it." The husband of participant #4.6 was similarly influential, as he liked to eat breakfast food directly out of the refrigerator without cooking it. Their son, mimicking his father, also ate directly from the refrigerator. Initially, she thought this was like eating a snack, "not like eating breakfast." Later, she followed their behavior, and then they began to eat breakfast together in this way.

Connections with Children. Another key mechanism by which immigrant mothers encountered new foods in the United States was through their relationships with their children. Factors linked to this mechanism included tasting and developing new tastes as well as the mother's overall cooking responsibilities (see Table 4.4.6).

Table 4.4.6

Examples of Encounters through Connections with Others—Through Children

Participant	Encounter	Food/dietary behavior
#5.3	Snacks given by daycare	Cheese stick
#6.5	Foods given by neighbors on a playdate	Apple pie

Two participants described encountering U.S. foods through interactions with their children. When participant #5.3 went to pick up her daughter from daycare, she noticed that her daughter was eating a cheese stick given to her by the teacher. “She gave me a small piece,” she remembered, and it was “so delicious.” Later, she described herself as “addicted to [the snack].” The son of participant #6.5 loves to eat apple pie. After coming home from a neighbor’s house, he told her that he had eaten delicious apple pie and “wanted [her] to make it for him.” Though she does not bake apple pie for her son, she has “bought premade” pie for him instead. The influence of family members who are being exposed to and trying new foods on mothers can be continual, as the family lives together and the mother typically plans and prepares family meals regularly.

Connections with Nonfamily Others. A third mechanism by which immigrant mothers encountered new foods in the United States was through their associations with nonfamily others. In these experiences, factors identified by participants as contributing to dietary acculturation included a nutritional service program, dining out with a friend or colleague, and sharing food among friends (see Table 4.4.7).

Table 4.4.7

Examples of Encounters through Connections with Others—Through Nonfamily Connections

Participant	Encounter	Food/dietary behavior
#1.1	Nutritionists for pregnancy	Bread with peanut butter
#1.7	Friend’s invitation	Salmon
#2.6	Breakfast with colleagues	Donut, bagel
#3.2	Lunch at a neighbor friend’s home	Pizza

When participant #1.1 arrived in the United States, she was pregnant and could not tolerate foods like beef or other meats. Thus, her nutritionists encouraged her to “eat peanut butter.” Over time, she became accustomed to “eating bread with peanut butter.” Participant

#1.7 described how her attitude toward eating salmon changed when she ate out with a friend. After eating salmon as her entrée, she found it "delicious, more delicious than ours over there." After that encounter, she "bought [salmon] and cooked it" at home, remarking, "It's very fragrant, the flavor." Participant #2.6 initially encountered bagels as a breakfast food when she ate with her Chinese colleagues: "they sometimes went buy breakfast, they would buy [bagels], so at that time, eh, [I] ate." When participant #3.2 was in China, many of her friends liked to eat at Pizza Hut because "the environment of Pizza Hut in China was very good." When she moved to the United States, however, she thought that the pizza shops were too narrow and not sufficiently sanitary, "so I never ate pizza in the U.S." However, that changed due to encounters with a friend, who really liked pizza: "She was my neighbor, and then I would go to her house to have lunch every day, and then I was forced, I accompanied, accompanied her to eat pizza."

Phase 2 Appraisal

Appraisal processes characterize the third phase of dietary acculturation, including depreciation of U.S. dietary foods, depreciation of the Chinese diet as prepared in the United States, appraisal of dietary options, and appreciation of some U.S. dietary foods (see Table 4.5).

Table 4.5

Phase 2 Summary of Major Appraisals and Themes

Major appraisals (42)	Major themes
Depreciation of the U.S. diet (1)	N/A
Depreciation of Chinese diet (5)	N/A
Appraisal of options (16)	Essential ingredients (8)
	Regular meals (6)
	Snacks/drinks (2)
Appreciation of the U.S. diet (20)	Bound by food environment (11)
	Bound by people (9)

Note. Values in parentheses represent the number of participants describing appraisals.

Depreciation of the U.S. Diet. Depreciation of the U.S. diet is when an immigrant mother de-values the U.S. diet based on her personal preferences. Depreciation of the host culture diet may limit opportunities for dietary acculturation. Thus, the depreciation of the U.S. diet is a mechanism that impedes the dietary acculturation process. Factors involved are primarily personal preferences and lack of familiarity (see Table 4.5.1).

Table 4.5.1

Examples of Depreciation of the U.S. Diet

Participant	Criteria	Food/dietary behavior
#2.2	Liking/familiarity	Refusing U.S. foods

Participant #2.2 was the only participant who did not like U.S. food at all and showed no evidence of dietary acculturation toward U.S. food. Even if someone asked her to eat out, she would refuse: "I would not go [just to try eating something that I think I do not like]." After almost five years of living in the United States, she still had a Chinese diet. She prepared Chinese dishes for meals and snacked on Chinese style food.

Depreciation of Chinese Diet. Depreciation of the Chinese diet occurred when immigrant mothers devalued the Chinese diet as it exists in the U.S., due primarily to differences in taste and the inaccessibility of Chinese foods in the host culture. Though this mechanism does not involve appreciation of the U.S. diet, it does provide opportunities for such appreciation to occur. Thus, the depreciation of the Chinese diet is a mechanism that facilitates dietary acculturation. Factors identified by the study participants as influential included the accessibility, supply, taste, quality, and feasibility of Chinese cooking. Examples of items mentioned relevant to depreciation included fresh seafood, Chinese snacks, street foods, Chinese restaurant foods, Chinese foods in general, Chinese kitchen fan, and Chinese cooking methods (see Table 4.5.2).

Table 4.5.2

Examples of Depreciation of the Chinese Diet

Participant	Criteria	Food/dietary behavior
#3.6	Accessibility	Eating less seafood
#2.8	Accessibility, norm	Eating less Chinese food
#5.5	Accessibility, quality, feasibility	
#5.3	Variety, quality, feasibility	Eating fewer Chinese snacks, preparing less Chinese food
#5.4	Taste	Eating less prepared Chinese food

Participant #2.8 observed that, in contrast with her heritage culture, "Eating out all day till past 11 pm here is not as possible or normal here." Participant #3.6 noted, "There is a lot less seafood here. There is nothing except salmon, only shellfishes." Participant #5.4 noted the inferior taste of U.S.-prepared Chinese food, commenting, "My husband feels that the taste of Chinese restaurant food here cannot compare to those in our hometown." Participant #5.3 said that "Chinese snacks here are sometimes spoiled and of limited options." She also noted difficulties in preparing Chinese food in the United States, as the "American kitchen fan is not strong enough for stir-frying." Participant #5.5 summarized many of these points, saying, "The accessibility and quality of hometown food is decreased, and [the] hometown cooking method is less feasible."

Appraisal of Options. Appraisal of options is when immigrant mothers recognize the value of the U.S. diet, rather than depreciating the U.S.-style Chinese diet. This includes both depreciating some essential ingredients or foods in the U.S.-style Chinese diet and appreciating the corresponding/contrasting ingredients or foods in the U.S. diet. The process allows individuals to reduce the dissonance that arises when food preferences cannot be met. Thus, when a certain food is depreciated as dietary environment changes, other foods of similar function in the new dietary environment are likely to be gradually recognized and appreciated.

The depreciation of the U.S.-style Chinese diet opens up opportunities for appreciation of the U.S. diet.

Appraisal of options is a mechanism through which immigrant mothers pay closer attention to the U.S. diet, including frozen fish, frozen chicken, steaks, boiled/cooked vegetables, salad, milk with cereal or bread, certain U.S. breakfast foods, informal lunches, certain Western dinner meals, U.S. sweets, and coffee. Appraisal occurs as individuals who are practicing old dietary habits begin to perceive the reduced value of the U.S.-style Chinese diet and start to recognize the value of the corresponding/contrasting options in the U.S. diet. Data from this study showed that factors involved in the appraisal of options are accessibility, cost, supply, convenience, time, and effort. Appraisal can occur while any dietary habits are being enacted, including eating meals and snacking. Thus, appraisal can be categorized into essential ingredients, regular meals, and snacks/drinks.

Appraisal of Essential Ingredients. Both the Chinese and U.S. diet have common essential ingredients, yet these ingredients are handled and prepared differently in these dietary cultures. Essential ingredients in the Chinese diet, as described by study participants, include fresh fish, fresh chicken, and stir-fried Chinese vegetables. In the U.S. diet, it is more common to encounter frozen fish and chicken, steamed or boiled vegetables, or salads with raw vegetables (see Table 4.5.3).

Some participants' appreciation of frozen fish increased, eventually replacing fresh fish, which had been depreciated due to perceptions of scarcity. As participant #2.3 observed, "There are less fresh swimming fishes here. In contrast, previously-frozen fish was readily accessible." Participant #1.3 began eating frozen fish in the United States, despite its lessened flavor, because fish was an essential element in her diet: "I personally prefer to eat fish, but the fish I

eat here are all frozen." In contrast, other meats were appreciated by some participants and were used to offset fresh fish in their diet. Participant #2.1, for whom fish was a main food staple, noted that "steak is not as expensive here, while fish is very rare." Participant #2.7 agreed, noting, "Meat is a little cheaper in comparison." Participants' pattern of responses was similar with respect to eating frozen chicken instead of fresh chicken.

Table 4.5.3

Examples of Appraisal of Options—Essential Ingredients

Participant	Criteria	Food/dietary behavior
#2.3	Cost, accessibility	Salmon, cod
#2.1		Steak
#2.7		Meat
#6.2	Cost, familiarity	Stir-frying salad vegetables
#1.7	Taste	Salad, blanching vegetables
#3.8	Taste, preference, nutrition	Salad, stir-cooking (not frying) vegetables
#1.3	Preference	Frozen fish
#1.2	Availability	Frozen chicken

The depreciation of Chinese vegetables due to cost was coupled with the appreciation of U.S. vegetables by some of the participants. Participant #6.2 said that her family "will not buy A choy" because "A choy vegetable is very expensive." Instead, they opted to "buy [U.S. vegetables] that [they] are familiar with, for example, salad." Participants also depreciated stir-fried vegetables due to changes in their taste or changes in cooking methods or equipment. Participant #1.7 thought that "stir-frying vegetables with meat diminishes the flavor of vegetables, and stir-frying vegetables by itself is not flavorful enough." She has adapted by boiling vegetables rather than stir-frying them and by preparing/eating salads instead. Participant #3.8 resorted to "stir-cooking before the oil even heated up" because the cooking fan

in her U.S. kitchen was not powerful enough to dispel the grease even though this method made the taste "a little worse." She now adds salad to every meal.

Appraisal of Regular Meals. The appraisal of options described by participants with regard to regular meals also involved the appreciation of the U.S. diet and depreciation of the Chinese diet as prepared in the United States. As described by participants, the depreciation of Chinese meals in the United States was linked to the limited supply or nonexistence of Chinese foods or ingredients in the U.S. food environment. Also, depreciation was influenced by the time-consuming nature of preparing or eating some Chinese-style meals. Appreciation of U.S.-style meals was related to their being relatively convenient, effortless, and less time-consuming in addition to their prevalence in the U.S. food environment (see Table 4.5.4)

Table 4.5.4

Examples of Appraisal of Options—Regular Meals

Participant	Criteria	Food/dietary behavior
#3.1	Convenience	Frozen meals
#3.4	Convenience, availability	Milk & cereal as breakfast
#4.3	Convenience, availability, cost, nutrition	Milk & bread as breakfast
#2.5	Time, child, availability	Western meals
#4.6	Time, efficiency	Cold milk, cereal, bread, cheese, yogurt as breakfast
#6.1	Time	Chips, cookies as lunch

Four participants described how the limited supply or nonexistence of Chinese foods or ingredients for meals influenced their consideration of Western meals or food. Participant #3.4 described breakfast before moving to the United States as "abundant" three times in the discussion. She then talked about how her breakfast had to change to milk and cereal: "Originally exceptionally abundant breakfast, after coming here, in addition to milk, the largest increase, the most is the cereal." Though she initially resisted this change, she came to accept it,

asking “doesn’t it save trouble?” Participant #4.3 “did not like to drink milk” or eat bread when in China; after coming to the United States, she began “eating these foods” because “milk is cheap,” its “nutrition [value] is okay,” and bread “is convenient.” When asked about first making spaghetti with meatballs, participant #2.5 noted that “[Western] food’s a little faster [to make].” Similarly, participant #3.1, who used to conveniently run to the market to get freshly cooked warm corn for her son in China, now opts to get frozen foods for regular meals, such as pizza and hot dogs, which are “especially convenient to make.”

Examples from two participants demonstrate that making or eating Chinese-style meals can be more time-consuming than U.S.-style meals. Participant #4.6 felt that the biggest change in the new host culture diet was breakfast. When she attempts to make a Chinese-style breakfast, she “has to spend time” doing so; eventually, she “thought, forget it.” Participant #6.1’s biggest change was from eating a formal lunch to quickly consuming time-saving options, like chips or cookies. In China, she had a two-hour lunch break, enough to “eat a meal and take a nap,” but in the United States, she has “no time.”

Appraisal of Snacks/Drinks. The appraisal of options occurs with snacks and drinks as well. The depreciation of Chinese-style snacks and drinks is due to their nonexistence or limited supply in the U.S. food environment. On the other hand, appreciation of U.S.-style snacks derives from their abundance in the U.S. food environment (see Table 4.5.5).

Table 4.5.5

Examples of Appraisal of Options—Snacks/Drinks

Participant	Criteria	Food/dietary behavior
#4.1	Availability, time	Cake for snack
#6.5	Availability, hot drinks	Coffee drinks

In China, when participant #4.1 was hungry, she would eat snacks on the street, where she chose the "basically salty or spicy kind." When she is hungry in the United States, she goes to a store and "buy[s] some cake and the like, and eat[s] it in the car on the road." Participant #6.5 drank more coffee after immigrating due to her need for hot drinks and the scarcity of Taiwanese drink shops in the United States. "You still want to drink something hot," she said. And, because there are "not many milk tea [shops], then you change to coffee, or simply tea."

Appreciation of the U.S. Diet. Appreciation of the U.S. diet is when immigrant mothers take notice of the U.S. diet for its own sake, regardless of how it relates or compares to the Chinese diet. Appreciation of the U.S. diet occurs through the mechanisms of the food environment and people. Being in the U.S. food environment or being with people who are more acculturated in the U.S. diet makes immigrant mothers pay closer attention to the U.S. diet. Factors involved in this appreciation are nutrition/health value, cost, safety, convenience, taste, appearance, and smell as well as trust from family relationships and friendships, eating during social gatherings, eating out, and the willingness to conform.

Bound by Food Environment. The food environment is a mechanism through which appreciation of the U.S. diet occurs in immigrant mothers. Contributing factors to the appreciation of the U.S. diet are nutrition/health value, cost, safety, and convenience. In the U.S. food environment, the U.S. diet has the advantage of constant exposure, lower cost, higher safety, and convenience, compared to the U.S. diet in China or the Chinese diet in the United States. Consequently, appreciation of the U.S. diet occurs (see Table 4.5.6).

Two participants discussed how their appreciation of dairy products changed. They already considered milk and cheese to be nutritious in the Chinese food environment. However, they did not begin to appreciate dairy products until entering the U.S. food environment, where

their health value is more highly regarded. Participant #4.2 has increased her consumption of milk because the "nutrition is better and healthier." Participant #4.5 said cheese was "especially beneficial" when it came "to bone health." The cost of and safety issues concerning milk and cheese in China made participants #4.2 and #4.5 unwilling to consume it, despite the health benefits. Thus, in the United States, where milk and cheese are abundantly and safely produced, their concerns were assuaged and the participants' appreciation of dairy products increased rapidly.

Table 4.5.6

Examples of Appreciation of the U.S. Diet—Bound by Food Environment

Participant	Criteria	Food/dietary behavior
#1.6	Accessibility	Bread
#5.1		Chips
#2.4	Accessibility, cost	Salmon
#3.3	Cost	Fish
#1.5		Crab
#4.2	Health, nutrition	Milk
#4.5	Health	Cheese
#6.3	Convenience	Western foods
#3.7		Pizza
#2.6	Work learning	U.S. sandwiches
#4.7	Utilitarian	Baking

Three participants showed an appreciation of local seafood. After encountering the U.S. food environment, they noticed the low cost of local seafood, including salmon, fish (unspecified), and crab. Participant #2.4 felt that in Seattle, salmon "is abundantly produced." Salmon is "very cheap and then more easily attainable," she remarked. To participant #3.3, the affordability of fish was relative. Because vegetables are more expensive in the United States

than in China, the price of fish "is not considered expensive" in comparison. Participant #1.5 mentioned that crab is cheap in the United States, yet the taste is different.

Five participants showed appreciation not only of the U.S. diet but also of international cuisine. The appreciation of the U.S. diet occurred as they noticed the U.S. food environment that constantly surrounds them, including U.S. supermarkets, ovens in the U.S. kitchen, and the convenience of eating out at U.S. and international restaurants. It was inconvenient for participant #6.3 to buy foods in suburban Shanghai (as described previously in Phase 1), but buying "American, Western foods [is] too convenient." Participant #3.7 found that purchasing pizza on shopping trips to Costco was also "very convenient." Upon first seeing a U.S. oven, participant #4.7 thought, "this thing is very big, can make a lot of snacks." Participant #2.6 recalled that she was initially resistant to trying sandwiches, but she forced herself to due to her job at a supermarket: "Because I work at Safeway, I must understand these ingredients…. I must try [sandwiches] myself, in order to know what it tastes like." Though participant #5.1 first ate chips in China, prior to immigrating, she began appreciating chips as a snack more once she entered the U.S. food environment, stating, "The whole aisle are chips…more popular…see more." Surrounded by chips, she and her husband both developed a taste for the snack.

Bound by People. People is a mechanism through which appreciation of the U.S. diet occurred among immigrant mothers. Be they acquaintances or strangers, being around people who were more acculturated in the U.S. diet made participants take notice on many different eating occasions. Factors involved that contribute to the appreciation of the U.S. diet are trust in family relationships and friendships, eating during social gatherings, eating out, and the willingness to conform as well as nutrition, taste, appearance, smell, and cost of food.

Food sharing is common among family members, especially between spouses. When one partner is more acculturated in a certain U.S. food, the other will soon be introduced to it. Similar influences can be through people in other social networks as they eat together at each other's homes or at restaurants or share food knowledge. Such social network includes other relatives, neighbors, and friends. Other occasions for eating together include celebrating with friends. On these occasions, eating can become an opportunity for learning about and appreciating aspects of the U.S. diet (see Table 4.5.7).

Three participants began appreciating the U.S. diet through their husbands. If not for their husbands, participant #3.5 would not have tried pizza, participant #6.6 would never have tried an U.S.-style breakfast, and participant #4.4 would never have considered learning to bake. Participant #3.5 remarked of her husband: "sometimes, he would give me [pizza] to taste." Participant #6.6's husband was her only reason for eating a salmon bagel. "Because he ate it, I tasted," she said. Participant #4.4 stated that her husband caused her to begin baking by comparing her to other women. According to her, he said, "Mrs. Wang, Mrs. Li, everyone can make cakes, and how about you?" So, she thought "I must learn" how to bake.

Table 4.5.7

Examples of Appreciation of the U.S. Diet—Bound by People

Participant	Criteria	Food/dietary behavior
#3.5	Husband offering taste	Pizza
#6.6	Husband offering taste	Salmon bagel
#4.4	Husband's expectation	Baking
#6.4	Sister ordering for her	Buffalo wings
#3.2	Neighbor friend's sharing	Pizza
#1.1	Friend's recommendation	Salmon
#5.2	Friends brought to a party	Baked goods
#1.8		Raw celery with dipping sauce
#1.4	Other restaurant patrons' behavior	Pho

Three participants began appreciating the U.S. diet because of their sisters, neighbors, or friends. Participant #6.4 now loves to eat Buffalo wings after her "younger sister ordered [buffalo wings] at a U.S. restaurant." Participant #3.2 attested that she "would never have eaten pizza in U.S." if not for her neighbor friend, who liked to eat pizza very much. While visiting this neighbor for lunch, she had to eat pizza with her and began to enjoy it likewise. Participant #1.1 bought salmon to cook at home through a friend's recommendation. She explained, "in mainland China, basically salmon, hardly seen, very few, yet another, price is also higher." Her friend made her aware of the value of eating salmon in the United States: "The salmon, was introduced by a friend, who told me that it's nutritious and delicious too."

Three participants began appreciating the U.S. diet through the influence of people at parties or restaurants. When she attended some friends' party, participant #5.2 saw that baked goods had a "very nice color, smell, and taste," and thought to herself, "Maybe I should learn [baking] a little." Participant #1.8 went to a party and saw "very tidily cut celery" and many dipping sauces with different tastes. Whereas she had always stir-fried celery in the past, she tried eating it raw after seeing the other party guests do so. Participant #1.4 used to pick out the raw ingredients on top of her Vietnamese Pho until she "saw people are all eating [those raw ingredients] there … as if the taste is very good." As a result, she tried eating them too.

Phase 3 Reaction and Adaptation

Phase 3 captures the behavioral responses of the discussion group participants to some notable U.S. foods. Consistent with the literature, these U.S. foods included chips, fast food, dairy products, and pizza. In addition, other U.S. foods also gained much attention during the focus group discussions relevant to this phase (e.g., salad, salmon, and frozen foods) along with U.S. ways of preparing or eating certain foods. The reaction and adaptation phase begins with

the first bite of U.S. food after immigrating to the country and the subsequent dietary behavior associated with eating that food. Three categories of dietary acculturation (Table 4.6) emerged from the analysis of the focus group discussions: non-acculturation, primary acculturation, and secondary acculturation. Participants provided the most details on primary acculturation.

Table 4.6

Phase 3 Major Reactions and Summary of Themes

Major reactions (42)	Major & minor themes
Resisting acculturation (5)	None
Primary acculturation (34)	Adjusting foods (6)
	Adapting oneself (6)
	Habituating to new foods (22)
	Enjoying the food (substance) (13)
	Taste of the food (6)
	Combining food flavors (2)
	Worthiness of the food (5)
	Enjoying eating (behavior) (5)
	Enjoying the food & eating (4)
Secondary acculturation (3)	None

Note. Values in parentheses represent the number of participants describing their reactions toward dietary acculturation.

Resisting Acculturation. Lack of dietary acculturation occurs when an immigrant resists trying U.S. food or stops eating a specific U.S. food after a few tries upon finding the food unappealing. Without interest in sampling or continuing to try new foods, an individual misses the opportunity to evaluate whether the food has qualities she enjoys or appreciates. The dietary acculturation process, therefore, can slow overall or just with regards to some foods. Influencing factors to resisting acculturation described by the participants include the taste of foods and their lack of familiarity with and/or knowledge of U.S. food preparation methods (see Table 4.6.1).

Table 4.6.1

Examples of Resisting Acculturation

Participant	Reason for rejecting	Food
#2.2	Dislike prior to tasting	Coffee
#2.8	Taste	Cheese, butter
#3.6	Taste	Pizza
#1.5	Taste	Chicken, pork
#2.7	Taste	Salmon

Participant #2.2 has lived in the United States for almost five years, yet she has "never drunk [coffee]," because she "will not try a little bit" of foods that she doesn't think that she will like. Some immigrants have a less extreme attitude and may try a certain U.S. food once or a few times, yet if they find it unappealing, they may never eat it again. In such cases, the acculturation outcome is similar to never trying the new food; that is, acculturation to the food does not occur.

Participant #2.8, on the other hand, resisted acculturation because her limited cooking experience made it difficult for her to devise daily menus. Moreover, when she bought prepared food, most of which were made with cheese and/or butter, she found them unappealing, stating, "I don't, don't like this kind of food." While eating prepared foods presented opportunities for dietary acculturation, she rejected it due to taste. When the husband of participant #3.6 bought a whole pizza at Costco, she could barely eat a piece. Not only were some U.S. foods difficult to adapt to, but participants also were resistant to food ingredients they consumed in China because of their different taste in the United States. Participant #1.5 declared that she would rather eat stir-fried rice with egg every day because she found chicken and pork unpalatable as they are prepared in the United States, saying, "It is true, very, not that tasty."

Sometimes, the reason immigrant mothers disliked certain U.S. foods was that they did

not know much about U.S. cooking methods and could not prepare the foods to their liking. That is, not knowing how to prepare new foods contributed to the altered taste of the food. For example, Participant #2.7 described her frustration in trying to make salmon appetizing: “these fish are all fresh frozen, not fresh. You want to make it delicious; I think I, very difficult to achieve it.” Moreover, she was discouraged if her family did not like how the food tasted when she experimented with U.S. preparation methods: “I tried steamed fish once, and he [her child] totally didn’t eat it.” Her family might have found the taste of salmon more appetizing had she known how to cook frozen fish with different, more suitable methods. But, her resistance to continuing to try to prepare the food resulted in its being discarded from the family’s diet.

Primary Acculturation. Primary acculturation is the process when immigrants start getting accustomed to a previously unfamiliar U.S. food as well as the context in which it is eaten. Both past experiences and the present environment contribute to this process. Primary acculturation includes two mechanisms: reacting based on a previously established Chinese diet and reacting based on the newly encountered U.S. food environment. The U.S. food environment includes both the food itself and the physical setting relevant to food (e.g., restaurants or kitchens). The resulting adaptations are as follows: adjusting certain foods to maintain existing dietary habits, adapting oneself to the new food environment, or habituating oneself to the new food. These adaptations are all different components of primary acculturation, not sequential stages of primary acculturation through which every immigrant progresses. Any of these three adaptations may occur depending on the food/dietary behavior and the situation it creates for the immigrant. In short, adaptation can be either changes to the foods (outside), changes to oneself (within), or both.

Adjusting Certain Foods to Maintain Existing Dietary Habits. Adjusting food to fit

with one's preferences is a fundamental mechanism in primary acculturation, which occurs by modifying food preparation and/or presentation to achieve a preferred taste, texture, and/or nutritional value. Strategies for adjusting food include modifying, substituting, and/or replacing food or ingredients. Adjustments to food occurred when the immigrant mothers experienced the taste of new foods or changes to the relative importance of foods with which they were already familiar. Examples provided by six participants capture the mechanism of adjusting in primary acculturation, illustrated by modifications in cooking method, substitution in breakfast variety, and replacement of food items (see Table 4.6.2).

Table 4.6.2

Examples of Primary Acculturation—Adjusting Foods

Participant	Adjustment	Food/dietary behavior
#2.4	Replacing	Chinese vegetables→ meat
#6.2	Substituting	A Choy→ romaine lettuce
#1.7	Modifying	Stir-frying→ blanching
#2.1	Replacing	Fish→ steak
#2.3	Replacing	Fresh fish→ frozen salmon & cod
#4.3	Including	Milk, bread

Six participants described adjustments made to their existing dietary habits. Three were related to vegetables, two to fish, and one to breakfast. To participant #2.4, the variety of vegetables was limited, even at Asian supermarkets: "Here, vegetables … one kind, one kind of vegetable." For variety, she adjusted by replacing some Chinese vegetable dishes with meat dishes to add variety to her diet. Even when the accessibility of certain vegetables was not an issue, the affordability or the flavor could prompt immigrants to make some adjustments. Participant #6.2 substituted Taiwanese A Choy with Western romaine lettuce. She said, "A Choy is very expensive," but romaine lettuce is much cheaper and similar in flavor: "a big bag

only three dollars, yes romaine, but the taste is really the same." Participant #1.7 adjusted how she prepared vegetables, from stir-frying them with meat to blanching them in water to enhance their bland flavor.

Some adjusted by replacing fresh fish with steak or frozen fish. Participant #2.1 mentioned, "In China, fish is the main thing," but "A lot of times [we] eat more steak [in the United States]; eat some meat." Participant #2.3 adjusted by replacing fresh fish with frozen salmon and cod because they are "cheaper, and easily attainable." Immigrant mothers also described dietary adjustments due to the decreased variety of familiar breakfast items. To adapt, they started eating U.S. breakfast foods. Participant #4.3 unwillingly added milk and bread because she got tired of eating the same few breakfast items day after day after being accustomed to variety in China. "We have too many gourmets in China, I don't need to eat bread at all," she said, but "coming here [I am] eating this stuff."

Adjusting foods is a dietary acculturation mechanism that serves to satisfy an established dietary habit associated with eating familiar foods from the home culture. Adjusting new food to achieve a desired taste or to fulfill a nutritional need becomes necessary when the originally desired food is unavailable. Immigrants seem to naturally begin adjusting foods available in the host county to suit existing dietary habits acquired in the heritage country. Moreover, for immigrants who are actively adopting Western dietary practices, adjusting foods allows them to cope with the changes. Adjusting food is a passive form of dietary acculturation in immigrants. That is, if the circumstance for eating the food they wanted to eat had not changed, they would not have accepted new, though adjusted, foods as alternatives. This adaptive effort seeks to make the new food environment as similar to the immigrant mother's established dietary practices as possible. Thus, when only modest adjustments are needed, the dietary acculturation

process is easier.

Adapting Oneself to Fit in the New Food Environment. Adapting one's own dietary behaviors to suit available resources is another mechanism common to primary acculturation, as described by the study participants. Adaptation occurred when immigrant mothers altered their dietary wants and needs by including foods prevalent in the new host environment under two conditions. First, they experienced limitations in continuing their Chinese dietary practices in the U.S. environment. Second, they had already accepted some foods that are part of the U.S. and/or international diet *prior to* coming to the United States, although they had not routinely included such foods in their diet. Analysis of the data showed that adaptation is influenced by available food resources and includes adapting to certain foods and adapting during food preparation. Examples from six participants illustrated adaptation in primary acculturation under these two conditions (see Table 4.6.3).

Table 4.6.3

Examples of Primary Acculturation—Adapting Oneself

Participant	Adaptation	Food/dietary behavior
#2.5	Searching for recipes online	Western dishes
#3.1	Accepting frozen foods mentally	Frozen foods
#5.5	Preparing Chinese meals less often	Eating out
#4.2	Utilizing milk in many ways	Milk
#6.3	Embracing	International dishes, eating out
#6.5	Embracing, preparing meals	Romaine lettuce, home cooking

Participant #2.5 faced difficulty preparing Chinese dishes due to limited Chinese ingredients in the United States. So, she adapted by searching online to learn how to prepare Western dishes, stating "because I could no longer think of what Chinese dish to make, I, therefore, searched online [for Western recipes]." Participant #3.1 gradually made the mental

adjustment of accepting that it was not convenient to access freshly-made Chinese foods in the United States and that frozen foods are part of the U.S. dietary culture. She frequently spoke about her attitude toward frozen foods, stating, “slowly, slowly mentally accepted. Other people also eat that way; therefore, we have slowly accepted.” Participant #5.5 accepted that it was not wise to cook in the Chinese style in her U.S. apartment. She adapted to her new environment by altering her behavior: “[We] can only eat out. So go out to eat frequently.” In fact, her family eats out so often that “now [her] daughter especially loves to eat pasta,” and her husband “can make better pasta than what restaurants make.” Though this adaptation was prompted by the setup of her kitchen, it led to acculturation toward Western foods.

For participant #4.2, adapting her dietary behavior to consume more milk was easy because she already believed in the nutritional value of milk. In China, she avoided milk despite this belief because she felt that milk “is unsafe,” But, after immigration, she began consuming milk for its nutritional value, as she was no longer concerned about its cost or safety, stating, “Coming here, I try my hardest to drink [milk].” Participant #6.3 seemed to be liberated by the ease of eating out and eating Vietnamese dishes in the United States. Prior to immigrating, she primarily cooked at home, even though she was worried that this behavior led to overeating, pointing out, “every time [someone does] home cooking, [it] always became whoever cooks, eats the most.” With the easy access to restaurants in the United States, she asserted that she “won't do that [home cooking] anymore,” and that she doesn’t “want to, get out of shape anymore.” Moreover, the variety of international restaurants in the United States has also created a major change in her diet: “Here it is very easy to be able to eat southeastern Asian, like Vietnamese dish, Thai dish.”

Participant #6.5 had the opposite experience. In Taiwan, she could eat out “anytime

anywhere," because "small eateries and whatever others [food vendors] are all very convenient." Being out of the Chinese food environment meant losing the convenience of eating out. She adapted by cooking at home more, which entailed shopping for food ingredients more often as well. For her, home cooking is something she "normally [does] most of the time" in the United States. As part of this adaptation, she began eating salads prepared at home using easily accessible ingredients more frequently.

The above descriptions provide examples of adaptations due to the loss of the heritage food environment and adaptations due to gains realized in the host food environment. The losses included limited Chinese ingredients, fresh foods, eateries serving familiar foods, and no access to Chinese-style kitchens. The gains were related to milk, international and Western-style foods, and romaine lettuce. These examples of adapting dietary behavior to fit with a new food environment illustrate that immigration can facilitate fast and dramatic change in dietary behaviors. Immigrants adapted to accommodate losses and take advantage of gains presented by the new food environment.

Habituating to New Foods. Habituating is the process of modifying one's attitude and/or behavior in adopting new foods, characterized as an expanded spectrum of food tastes and/or as increased frequency of eating a food. Instead of changing the food, as in "adjusting certain foods to maintain existing dietary habit," the change is within the individual, much as it is was when "adapting oneself to fit in the new food environment." Habituating includes the following mechanisms:

- enjoying the food (substance);
- enjoying eating (behavior);
- enjoying both the food & eating.

These mechanisms can be understood by considering the new food from two aspects: participants' descriptions of the food itself (i.e., attributes of the food substance) and participants' experiences of eating the food (i.e., their behavior toward the food). Factors described by participants that facilitate habituation were primarily the taste of the food and relative worthiness of the food. The *taste* of the food included not only the taste of the food by itself but also its taste in combination with other foods commonly with it. Repetition is needed for a behavior to become habitual. If an immigrant enjoys a new food immediately, repetitive consumption is likely. But, what happens if a new food is initially disliked by an immigrant? The study findings revealed that later exposure to such foods may lead to repetitive consumption and thus to habituation. Repetitive consumption can be facilitated by appealing attributes of the new food. It can also be due to associations between the new food and other foods or associations between the food and the eating activity. Thirteen participants indicated their enjoyment of the food itself, five their enjoyment of the behavior of eating, and four indicated their enjoyment of both (see Table 4.6.4).

Enjoying the food (substance), as described by participants, was associated with: (a) the taste of the food, (b) combining food flavors, and (c) the worthiness of the food to the individual. Participants provided six examples regarding the taste of the food. Taste is an intrinsic value of food, and in the biophysical sense, taste serves survival (Bolha et al., 2020; Hallock et al., 2017; Kavaliauskienė et al., 2021; InformedHealth.org [Internet], 2006). Taste and texture determine whether or not a person will enjoy a food. Taste, therefore, appears to be a good indicator of immigrants' initial acceptance and ongoing consumption of a new food. The participants' examples illustrated how a pleasing food taste influenced their adoption of new foods early in the process of habituation.

Table 4.6.4

Examples of Primary Acculturation—Habituating to New Foods

Habituating to new foods	Participant	Habituating	Food/dietary behavior
Enjoying the food			
Taste of the food	#1.4	Repeat frequently	Pho
	#1.8	Repeat	Raw celery
	#3.3	Repeat on weekends	Frozen foods
	#3.8	Repeat every meal	Salad
	#5.2	Repeat frequently	Baking
	#6.6	Repeat at breakfast & lunch	Salmon bagel
Combining food flavors	#4.1	Repeat at breakfast & lunch	Coffee & sweets
	#6.4	Repeat eating out	Ranch dressing, buffalo wings
Worthiness of the food	#1.1	Repeat prior to liking	Peanut butter
	#1.2	Repeat prior to liking	Frozen chicken
	#1.6	Repeat	Wheat products
	#4.5	Repeat	Cheese
	#4.7	Repeat, incorporating	Cheese
Enjoyment in eating	#1.3	Repeat activity with child	Raw vegetables
	#2.6	Repeat activity with husband	Coffee
	#3.7	Repeat activity with child	Pizza
	#4.4	Repeat activity for husband	Baking
	#4.6	Repeat activity with husband & child	U.S. breakfast
Enjoying both the food & eating[a]	#3.5	See Table 4.7	Pizza
	#3.2	See Table 4.9	Pizza
	#3.4	See Table 4.10	Pizza
	#6.1	See Table 4.11	Desserts

[a] These four examples demonstrate a more complex process of habituating.

Participant #1.4, for example, saw others eating Pho, and the food appeared to have "such a good flavor/taste." After she tried it, she discovered that she liked raw vegetables with Pho and "[more] frequently went to eat Pho." The first time participant #1.8 ate raw celery with dipping sauce, she thought that it was "very tasty," "very sweet," and "very crunchy." After that experience, she noted, "I just don't stir-fry [celery anymore]," preferring to eat it raw with dipping sauce. Participant #3.3, who found frozen dumplings "pretty tasty," broadened her food choices and "started to buy [frozen] egg rolls [and] pizza." Although the family of participant #3.8 frequently tried foods from different countries when dining out, the participant remarked, "What I like to eat the most is still vegetables." So, she found a meal strategy to integrate her love for vegetables, "I add salad, add salad in every meal." After participant #5.2 first tried using the oven to bake cookies that she normally fried, she found them "tastier than those fried solely in oil." Since that discovery, she learned how to bake and does so frequently. Participant #6.6 enjoyed the taste of a salmon cream cheese bagel when she initially tried it, and it is now her breakfast of choice. To summarize, for these participants, taste was a key factor to their enjoyment of new foods. Taste, thus, enhanced their tendency to eat these new foods repeatedly, facilitating habituation to the foods.

Regarding combining food flavors, two participants described how their enjoyment of the taste of foods in combination with other foods facilitated their habituation. For participant #4.1, the sweetness of some foods complimented the bitterness of coffee. Once she began to drink coffee in the United States, it was "very naturally to prepare some sweets to eat, to compliment." In a similar way, ranch dressing kindled participant #6.4's acceptance of Buffalo wings, which became her favorite food. She tried Buffalo wings for the first in a U.S. restaurant during her first year in the United States but did not enjoy the taste, which was "so spicy, so

sour, totally different." However, over time, she "slowly came to like ranch" and eventually enjoyed Buffalo wings when paired with ranch dressing. These examples illustrate how, for new immigrants, the customary pairing of new foods with foods of complementary taste—and which they had previously enjoyed—paved the way for the adoption of new foods. In other words, the pairing of foods increased immigrants' enjoyment and likelihood of consuming such foods in the future.

Food worthiness, the value of food as recognized by each individual, is based on one or multiple aspects of the food, such as nutrition, convenience, affordability, and accessibility. Five examples drawn from the focus group discussions show how the value or worthiness of food is a factor that facilitates enjoying a food when habituating to it. Participant #1.1 found peanut butter initially difficult to eat, "like the throat, could not swallow … mouth was too dry to tolerate." Yet, because she was introduced to peanut butter by her prenatal nutritionists as a nutritious alternative to meat during pregnancy, she eventually became accustomed to the taste and texture, noting, "Bread with peanut butter and milk almost has become my main breakfast now." Participant #1.2 similarly grew accustomed to eating frozen chicken because of her appreciation of its nutritional value during pregnancy and after childbirth: "Now different, now after childbirth… feel that [frozen chicken] is tasty." She repeatedly ate frozen chicken despite her dislike of it during pregnancy, so she became habituated to its taste and can even enjoy it. Similarly, over time participant #1.6 adapted and ingested more wheat products, "because eating wheat [products], to the body, I feel, very good." Now, she commented, "I can [eat] noodle and bread as main meals… only eat one rice meal."

Participant #4.5 believes that cheese is "especially beneficial to bone health." So, she was more receptive to eating cheese despite initially finding its taste to be only "fine, not that

unacceptable." After her first exposure, she kept purchasing cheese and "slowly has been able to accept it." Participant #4.7 described her experience in encouraging her son to eat more cheese because she too believed it is good for health. In the beginning, this was a struggle. Her son complained, "Don't want to eat. That [cheese] is stinky." So, she devised strategies to help him overcome his dislike of the flavor to reap cheese's nutritional benefits (e.g., pulling cheese apart to make the flavor milder or pairing it with fresh fruits). In time, cheese became a routine food for the family.

Enjoyment in eating (behavior) was demonstrated in examples from five participants. Contrary to enjoying the food (substance) for its flavor or worthiness, enjoyment in eating derives from the fulfillment or satisfaction that the eating activity brings. Nonetheless, just like enjoying the food, this mechanism also brings about repetition of the eating behavior and therefore augments habituation to new foods. Examples from participants #4.4 and #4.6, in particular, illustrated that enjoyment in eating could come from the satisfaction of doing an activity with family members (i.e., the occasion).

Participant #4.4 felt that her own dietary behaviors, such as cooking or baking, were affected by her role as a wife. Her husband saw that the wives of his friends could bake, and even though he "does not like sweets," he likes it when she bakes for him. "He only likes the feeling," she explained. As she learned to bake, she was passively habituating to baking food. This is significant because food preparation could be a dietary behavioral precursor to eating the prepared food. Participant #4.6's comments illustrated how she became habituated to eating an U.S.-style breakfast because of her role as a wife and a mother. Her husband, who had been in the United States longer than she had, ate breakfasts consisting of coffee, cold milk, yogurt, or

bread. Though she did not enjoy the taste of this food, she habituated herself to it by repeatedly eating U.S.-style breakfasts with her husband and son, which was an activity that she did enjoy.

Participant #1.3's habituation was also influenced by her enjoyment of spending time with her family. Whereas she found raw vegetables so distasteful that she "couldn't swallow" them, she was eventually motivated to eat them with her eight-year-old son, who had become accustomed to raw vegetables at school. Likewise, participant #2.6 began to drink coffee daily even though she seldom drank coffee before coming to the United States. She has developed the habit of drinking coffee "a little bit every day" because her husband "can't do without coffee." Since she is unable to finish a full cup, they "share a cup together," making the simple act of coffee drinking an enjoyable shared experience between the two. Participant #3.7 became habituated to pizza in an unusual way due to her desire to please her family. Her son was not willing to eat the Chinese congee that she preferred for breakfast and would eat just milk and bread. Concerned about the lack of variety in this meal, she started to make him a simple pizza for breakfast by topping an English muffin with ingredients like pepperoni, cheese, and ketchup. It is "not only simple but also kids love to eat," she said, adding that she only eats a little of the breakfast pizza herself.

When enjoying food (the substance) and enjoying eating (the behavior) are linked, as the following examples demonstrate, the complex nature of dietary acculturation is revealed. In the initial analysis, the process of dietary acculturation was described in a singular way, teased out from participants' descriptions upon which a thematic structure was built. However, in the section below, habituation is described in a more holistic way, providing novel glimpses into the dynamics of habituation itself and the complexity of the dietary acculturation process as a whole.

During the focus group discussion, participant #3.5 described habituating to new foods through both enjoying the food and enjoyment in eating, illustrating the multi-directionality among mechanisms (see Table 4.7). The process was influenced primarily by two factors, food taste and food worthiness. In Panel A of the table, quotes from participant #3.5 are first presented in the order that they occurred during the discussion. In Panel B, they are re-organized to reflect the chronological sequence of habituation, identified in terms of both mechanisms and factors involved in habituating. The table illustrates how the process of becoming acculturated to one food item is connected to that of another food item. It also illustrates how being more established in one's dietary acculturation process for one food item (in this case, cheese) accelerated the acculturation process of another (pizza).

Several elements were key to the pace of this participant's habituating to a new food and hence to the pace of her dietary acculturation. To illustrate these key elements, relevant quotes from participant 3.5 have been realigned in Table 4.8, with the elements of dietary change listed. After participant #3.5 accepted the flavor of cheese, she noticed the smell of pizza (with cheese) while shopping, which prompted her to order pizza for the first time. For this participant, developing an acceptance for the flavor of pizza involved her acceptance of the flavor of cheese, which involved first accepting the smell of cheese. Her acceptance of the smell of cheese was transferred to the smell of pizza cooked with cheese, which developed into her acceptance of the taste and flavor of pizza. This example highlights two crucial concepts, flavor acceptance and flavor transfer, and how connection between them accelerates the pace of dietary acculturation.

Table 4.7

Typification of #3.5's Dietary Acculturation Process: Mechanisms and Influential Factors

Panel A: Participant #3.5's statements in order of occurrence in the focus group discussion

- "And every time I went to Costco, [I] ordered hot dog every time." (**Quote 1**)
- "But my husband would go eat…pizza…sometimes he would have me taste, actually in the beginning [when] I taste, I felt [it is] not tasty… how is this tastier than hot dog?" (**Quote 2**)
- "I felt that it is the smell, not that I started out with wanting to try." (**Quote 3**)
- "I ordered [pizza] too, myself. After ordering, I felt like [it is] not bad." (**Quote 4**)
- "Taste is not bad, (**Quote 5**) and no such feeling of burden like after eating hot dog." (**Quote 6**)
- "[It is] mainly because in the beginning the smell [made] me feel [it was] very tasty." (**Quote 7**)
- "And I feel that [it] is a slowly transformed process, because I could not accept cheese in the beginning. …but I perhaps by then have stayed in U.S. for at least half a year or longer time, I feel maybe slowly, … [I went from] disliking the taste of cheese, and then maybe was slowly accepting the taste of cheese from other foods (**Quote 8**), and then slowly transformed again to… feel that pizza is very delicious too. (**Quote 9**) And then from then on, every time I would not order hot dog, every time I order pizza." (**Quote 10**)

Panel B: Participant #3.5's statements in chronological order by mechanisms and factors

Mechanisms & influential factors	Quotes reorganized to reflect the dietary acculturation process
1A. Enjoying the activity	**Quote 1:** "And every time I went to Costco, [I] ordered hot dog every time." **Quote 2:** "But my husband would go eat … pizza … sometimes he would have me taste, actually in the beginning [when] I taste, I felt [it is] not tasty … how is this tastier than hot dog?"
1B. Enjoying food: cheese In parallel, developing taste for cheese	**Quote 8:** "And I feel that [it] is a slowly transformed process, because I could not accept cheese in the beginning. … but I perhaps by then have stayed in U.S. for at least half a year or longer time, I feel maybe slowly, … [I went from] disliking the taste of cheese, and then maybe was slowly accepting the taste of cheese from other foods.
2. Enjoying food: pizza	
Taste via smell of the food	**Quote 3:** "I felt that it is the smell, not that I started out with wanting to try." **Quote 7:** "[It is] mainly because in the beginning the smell [made] me feel [it was] very tasty."
Taste of the food	**Quote 4:** "I ordered [pizza] too, myself. After ordering, I felt like [it is] not bad." **Quote 5:** "Taste is not bad, …" **Quote 9:** "… and then slowly transformed again to … feel that pizza is very delicious too."
Worthiness of the food	**Quote 6:** "Taste is not bad, and no such feeling of burden like after eating hot dog."
3. Habituation	**Quote 10:** "And then from then on, every time I would not order hot dog, every time I order pizza."

Additionally, this example supports the notion that flavor acceptance includes smell acceptance as well as taste acceptance. Flavor is perceived mainly through taste and smell. Like taste, smell acceptance is an indicator of food acceptance; therefore, it is an important marker in dietary acculturation. It is likely that smell is as important as taste in facilitating dietary acculturation toward new or previously unfamiliar foods. Thus, in addition to actively tasting a new food, an immigrant can become more acculturated through passively smelling the food.

Smell functions more significantly than taste in dietary acculturation; taste is sensed only if one eats food, while smell is sensed before one eats. Taste acceptance requires the willingness of an immigrant to actually taste the new food to be exposed to its flavor, whereas smell can expose an immigrant to the flavor of a new food, whether or not the individual is willing to try the food. Smell can stimulate seeking and eating behaviors if the aroma is acceptable or pleasing, as illustrated in this example. Therefore, flavor acceptance through the sense of smell has a unique role in expediting the dietary acculturation process. Many foods contain more than one ingredient. Thus, together with flavor transfer (elaborated below), smell acceptance may speed up the process of dietary acculturation before eating behavior is involved.

Flavor transfer extends the acceptance of unfamiliar flavor(s) through foods or ingredients for which flavor acceptance has been established. When flavor acceptance of a new/unfamiliar food hinges on flavor acceptance of a precursor food, the time it takes to accept the flavor of the new/unfamiliar food will depend on the time it takes to develop flavor acceptance of the precursor food. As in the example of participant 3.5, her flavor acceptance for pizza could not occur until her flavor acceptance for cheese was established because of the flavor transfer from cheese to pizza. Flavor transfer to foods with an unfamiliar taste takes time when flavor acceptance of the precursor food/ ingredient requires time to develop first.

Table 4.8

Mapping the Development of Flavor Acceptance

Elements of dietary change	Relevant quotes
1. Flavor acceptance of cheese and flavor transfer from cheese to other foods	**Quote 8:** "And I feel that [it] is a slowly transformed process, because I could not accept cheese in the beginning. … but I perhaps by then have stayed in U.S. for at least half a year or longer time, I feel maybe slowly, … [from] disliking the taste of cheese, and then maybe was slowly accepting the taste of cheese from other foods."
2. Smell acceptance of pizza	**Quote 3:** "I felt that it is the smell, not that I started out with wanting to try." **Quote 7:** "[It is] mainly because in the beginning the smell [made] me feel [it was] very tasty."
3. Flavor transfer from cheese to pizza	**Quote 8:** "And I feel that [it] is a slowly transformed process, because I could not accept cheese in the beginning. … but I perhaps by then have stayed in U.S. for at least half a year or longer time, I feel maybe slowly, … [from] disliking the taste of cheese, and then maybe was slowly accepting the taste of cheese from other foods, **Quote 9:** and then slowly transformed again to … feel that pizza is very delicious too."
4. Taste acceptance of pizza	**Quote 4:** "I ordered [pizza] too, myself. After ordering, I felt like [it is] not bad." **Quote 5:** "Taste is not bad, …" **Quote 6:** "... and no such feeling of burden like after eating hot dog." **Quote 9:** "And then slowly transformed again to … feel that pizza is very delicious too."
5. Flavor acceptance established for pizza	**Quote 10:** "And then from then on, every time I would not order hot dog, every time I order pizza."

Flavor acceptance is central to dietary acculturation. A number of the examples provided by the immigrant mothers showed that flavor acceptance could be developed with repeated tasting. In contrast, participant #3.5's experience indicated another way of developing flavor acceptance for a new food: flavor transfer. Flavor transfer can significantly speed up the dietary acculturation process because once flavor acceptance is established for a specific

food/ingredient (e.g., cheese), flavor acceptance for other food items bearing a similar flavor (e.g., cheese-containing items such as pizza) can be established easier and in less time. The example of participant #3.5 thus provides important details for understanding an intricate part of the process of dietary acculturation, capturing another way that immigrants may become acculturated to a food that was unfamiliar or initially unappealing to them. It is worth noting that this example is merely about the connection between two food items. It is therefore easy to imagine the complexity of an immigrant's complete dietary acculturation process as many foods are involved.

Compared to the example of participant #3.5, the remaining three examples of enjoying the food and the eating that follow are relatively simpler, only offering data on the dietary acculturation process itself, not on flavor acceptance. Their dietary acculturation processes are shown in Tables 4.9 to 4.11. These tables illustrate that the process of habituating to new foods is individualized. In detail and chronologically, the process is seen to consist of various combinations of mechanisms and factors in various orders. For participant #3.2, habituating included the mechanism of enjoying the food and enjoying the activity, summarized in Table 4.9.

This example of habituating illustrates two ways that the mechanism of enjoying the activity of eating preceded the mechanism of enjoying the food. The participant described enjoying having lunch with her friend and sharing meals with her husband while they traveled before she actually enjoyed eating pizza and began making it for her family. For this participant, her perceptions of the worthiness of pizza had positive or negative influences on her behavior toward the food. Buying and baking pizza had positive worth because her husband and son enjoyed eating it, and she did not have to cook much on weekends. Eating pizza, on the other

hand, had negative worth because the nutritional value of pizza was a concern for her. Consequently, she would bake pizza for her family, but not eat it herself despite developing a taste for it.

Table 4.9

Typification of #3.2's Dietary Acculturation Process: Mechanisms and Influential Factors

Panel A: Participant #3.2's statements in order occurrence in the focus group discussion
• "She can [eat it] continuously … every day is pizza, and I like to hang out with her … she is my neighbor, and then every day I will go to her house to eat lunch …[I] ate pizza with her." (**Quote 1)**
• "Later my husband likes to go traveling frequently … out traveling, eating pizza is the fastest. Order a pizza, after baked, can bring to the car and hurry to hit the road." (**Quote 2**)
• "And then one time in California … the kind that is made right then … from then on … I changed my impression about pizza, pizza can be made so tasty… refreshing, and very tasty." (**Quote 3**)
• "And then on top of that, my son is growing up gradually. He likes to eat pizza very much. (**Quote 4**) So now our family, the frequency of eating pizza is a lot more than before." (**Quote 5**)
• "Buying fast frozen pizza is [convenient] because … sometimes don't want to cook, bake a pizza, my husband and my son eat, I don't eat. (**Quote 6**) Because I feel that fast frozen food is not nutritious enough, and then in it there might include things like preservatives." (**Quote 7**)
• "But in U.S., now I realize that the frequency [of buying frozen food] is higher and higher. (**Quote 8**) Because … cooking the whole week … Saturdays, Sundays, I definitely will not cook … So I would buy some of that pizza. During weekends, bake one when don't want to go out, and then I am free, so this is the only reason I buy fast frozen food." (**Quote 9**)
• "The point is my son and my husband, they love to eat [pizza], so I would buy some." (**Quote 10**)

Panel B: Participant #3.2's statements in chronological order by mechanisms and factors	
Mechanisms & influential factors	**Quotes reorganized to reflect the dietary acculturation process**
1. Enjoying the activity	**Quote 1:** "She can [eat it] continuously … every day is pizza, and I like to hang out with her … she is my neighbor, and then every day I will go to her house to eat lunch … [I] ate pizza with her."
2. Enjoying the activity	**Quote 2:** "Later my husband likes to go traveling frequently … out traveling, eating pizza is the fastest. Order a pizza, after baked, can bring to the car and hurry to hit the road."
3. Enjoying the food Taste of the food	**Quote 3:** "And then one time in California … the kind that is made right then … from then on … I changed my impression about pizza, pizza can be made so tasty … refreshing, and very tasty."

Mechanisms & influential factors	**Quotes reorganized to reflect the dietary acculturation process**
Worthiness of the food	**Positive:** **Quote 4:** "And then on top of that, my son is growing up gradually. He likes to eat pizza very much." **Quote 6:** "Buying fast frozen pizza is [convenient] because … sometimes don't want to cook, bake a pizza, my husband and my son eat, I don't eat." **Quote 9:** Because … cooking the whole week … Saturdays, Sundays, I definitely will not cook … So I would buy some of that pizza. During weekends, bake one when don't want to go out, and then I am free, so this is the only reason I buy fast frozen food." **Quote10:** "The point is my son and my husband, they love to eat [pizza], so I would buy some." **Negative:** **Quote 7:** "Because I feel that fast frozen food is not nutritious enough, and then in it there might include things like preservatives."
4. Enjoying the activity	**Quote 5:** "So now our family, the frequency of eating pizza is a lot more than before." **Quote 6:** "Buying fast frozen pizza is because … sometimes don't want to cook, bake a pizza, my husband and my son eat, I don't eat."
5. Habituation	**Quote 5:** "So now our family, the frequency of eating pizza is a lot more than before." **Quote 8:** "But in U.S., now I realize that the frequency [of buying frozen food] is higher and higher."

In the following example of participant #3.4's process of becoming acculturated to eating pizza, her habituation involved the mechanism of enjoying the food due to the factors of the taste of the food and worthiness of the food, as illustrated in Table 4.10.

Table 4.10

Typification of #3.4's Dietary Acculturation Process: Mechanisms and Influential Factors

Panel A: Participant #3.4's statements in order of occurrence in focus group discussion

- "But after coming here, feel that only pizza is the most delicious out of all things." (**Quote 1**)
- "The most accepted by children … if you want to have a party, make a couple pizzas, children will especially … save us lots of work." (**Quote 2**)
- "Because in our family there are lots of people love to eat pizza." (**Quote 3**)
- "Once I remember particularly clearly, the first time going to eat pizza … looking at that pizza I … really had no desire to eat … but … very hungry … took a bite … felt, not bad." (**Quote 4**)
- "Right away [I] can … feel … this is pretty tasty too … called combo." (**Quote 5**)
- "Later our daughter said, you taste that cheese [pizza] … with the kind of very suspicious look, I then tasted a little … felt pretty, pretty good actually." (**Quote 6**)
- "Later I tasted other flavors. I felt … pretty good …" (**Quote 7**)
- "… and then slowly accepted them." (**Quote 8**)
- "If not wanting to cook, or one day … wanting to take a break, would order pizza." (**Quote 9**)
- "Because where we live and the, the mall is closer … felt very convenient, kids go ordering … very comfortable." (**Quote 10**)

Panel B: Participant #3.4 statements in chronological order by mechanisms and factors

Mechanisms & influential factors	**Quotes reorganized to reflect the dietary acculturation process**
1. Enjoying food	
Taste of the food	**Combo pizza:** **Quote 4:** "Once I remember particularly clearly, the first time going to eat pizza … looking at that pizza I … really had no desire to eat … but … very hungry … took a bite … felt, not bad." **Quote 5:** "Right away [I] can … feel … this is pretty tasty too … called combo." **Cheese pizza:** **Quote 6:** "Later our daughter said, you taste that cheese [pizza] … with the kind of very suspicious look, I then tasted a little … felt pretty, pretty good actually." **Pizza of other flavors:** **Quote 7:** "Later I tasted other flavors. I felt … pretty good, …" **Pizza in general:** **Quote 1:** "But after coming here, feel that only pizza is the most delicious out of all things."
Worthiness of the food in parallel	**Quote 2:** "The most accepted by children … if you want to have a party, make a couple pizzas, children will especially … save us lots of work." **Quote 3:** "… in our family there are lots of people love to eat pizza." **Quote 9:** "If not wanting to cook, or one day … wanting to take a break, would order pizza." **Quote10:** "Because where we live and the, the mall is closer … felt very convenient, kids go ordering … very comfortable."

Mechanisms & influential factors	**Quotes reorganized to reflect the dietary acculturation process**
2. Habituation	**Quote 8:** "… and then slowly accepted them." **Quote 9:** "If not wanting to cook, or one day … wanting to take a break, would order pizza."

Participant #3.4's dietary acculturation illustrates how enjoying one food can expand an immigrant's taste acceptance. She began by accepting the taste of a combo pizza, leading then to accepting cheese pizza, and eventually pizza of other flavors. This taste development expanded her acceptance to variations in flavors of the *same* type of food. Moreover, accepting the taste of cheese can lead to the acceptance of *other* types of U.S. foods prepared with cheese, i.e., taste transfer. This participant's pizza acceptance led to the acceptance of a broader range of flavors. Thus, both taste development and taste transfer (illustrated in Table 4.7 and Table 4.8) are instrumental in accelerating dietary acculturation. In the case of participant #6.1 (Table 4.11), the habituating mechanisms of "enjoying food" and "enjoying the eating" are depicted. Factors involved food taste and food taste *with* other foods.

Table 4.11

Typification of #6.1's Dietary Acculturation Process: Mechanisms and Influential Factors

Panel A: Participant #6.1's statements in order of occurrence in focus group discussion
• "Desserts in China are not so tasty." (**Quote 1**)
• "Must eat a dessert after meal, and then it seems like putting an end. No such habit in the past." (**Quote 2**)
• "Now I can eat very sweet, very sweet things." (**Quote 3**)
• "Will have, definitely will have [desserts after dinner]." (**Quote 4**)
• "It is ice cream in summer time; and then now it is pies, or cheese cakes." (**Quote 5**)
• "Seems like it was when dined out too, yes, would order. Ate out with people therefore [when] people ordered [dessert], I ordered as well." (**Quote 6**)
• "I like to eat [desserts] very much." (**Quote 7**)
• "Not eating a dessert after meal is like, not finished. It must end with a taste in the mouth, right? Otherwise salty mouth, very uncomfortable, yes, it is this kind of a habit." (**Quote 8**)

Panel B: Participant #6.1's statements in chronological order by mechanisms and factors	
Mechanisms & influential factors	**Quotes reorganized to reflect the dietary acculturation process**
1. Enjoying the activity	**Quote 6:** "Seems like it was when dined out too, yes, would order. Ate out with people therefore [when] people ordered [dessert], I ordered as well."
2. Enjoying the food	
Taste of the food	**Quote 1:** "Desserts in China are not so tasty."
	Quote 3: "Now I can eat very sweet, very sweet things."
	Quote 5: "It is ice cream in summer time; and then now it is pies, or cheese cakes."
	Quote 7: "I like to eat [desserts] very much."
Combining food flavors	**Quote 2:** "Must eat a dessert after meal, and then it seems like putting an end. No such habit in the past."
	Quote 8: "Not eating a dessert after meal is like, not finished. It must end with a taste in the mouth, right? Otherwise salty mouth, very uncomfortable, yes, it is this kind of a habit."
3. Enjoying the activity	**Quote 4:** "Will have, definitely will have [desserts after dinner]."
4. Habituation	**Quote 2:** "Must eat a dessert after meal, and then it seems like putting an end. No such habit in the past."
	Quote 8: "Not eating a dessert after meal is like, not finished. It must end with a taste in the mouth, right? Otherwise salty mouth, very uncomfortable, yes, it is this kind of a habit."
	Quote 4: "Will have, definitely will have [desserts after dinner]."

This example illustrates that habituation is one of many ongoing mechanisms that build on each other during dietary acculturation. The mechanism of enjoying the eating activity (e.g., being at a restaurant) allowed food enjoyment to develop, followed by enjoyment of the activity at home. Through enjoying the activity of dining out with people, the participant began to like Western desserts and began to enjoy eating Western desserts at home. Combining food flavors (sweet desserts after salty meals) was a crucial factor to habituation in this example because the practice of eating desserts followed eating dinner, which is a daily activity.

Secondary Acculturation. Sometimes immigrants have already been exposed to a specific U.S. food before immigrating. This exposure may have occurred if they lived in a

Western country, including the U.S, in the past or if they had the opportunity to consume U.S. food in their heritage country, even infrequently. This early exposure initiates the dietary acculturation process, which may be interrupted due to moving out of the Western country or slow to develop due to being in the heritage food environment. When the individual immigrates to a U.S. food environment, however, the dietary acculturation process is likely to resume and intensify.

This resumption of the dietary acculturation process is referred to as secondary acculturation in this dissertation study to differentiate it from primary acculturation (i.e., the process of dietary acculturation that begins only after immigrating to the United States). Two examples of secondary acculturation were described by study participants who had previously visited or lived in Western countries, where they were exposed to potato chips. One example was described by a participant who was living in her heritage country, where she was repeatedly exposed to pizza. These examples illustrate that certain foods that are popular in the Western dietary culture or globally are more likely to be easily adopted during secondary acculturation by immigrants or their families (see Table 4.12).

Table 4.12

Examples of Secondary Acculturation

Participant	Acculturating	Food/dietary behavior
#5.1	Resuming	Potato chips
#5.3		
#5.4	Intensifying	Pizza

Participants #5.1 and #5.3 were both used to eating potato chips due to time spent in Western countries prior to immigration. Regarding her potato chip consumption in the United

States, participant #5.1 described the difficulty she and her husband had *not* eating them, saying "for the sake of our child, we try not to buy the chips. Sometimes really [had to buy them]." She explained she does buy chips occasionally for her daughter, "Because [if] you never let her eat [chips], [when] she sees other kids eating [chips], she would be very, very… [Showing] the look of very excited to eat." Participant #5.3, on the other hand, did not like to pack potato chips for her daughter's snack. Her husband, however, loved to eat potato chips, and she noted that when the father and daughter watched television together, in "only a short while, a pack [of potato chips] is gone." Even though participant #5.3 intended to reject the food, her husband's preference and behaviors reinforced the child's preferences and consequently the child's primary acculturation process.

Participant #5.1's descriptions demonstrated her consumption of chips would have increased once she immigrated with her family to the United States, but for the sake of her child, she tried to resist the family's dietary acculturation toward eating chips following immigration. This was a type of "secondary" dietary acculturation for the child and mother. Participant #5.3 likewise enjoyed chips as did her husband. But for the sake of her child, she avoided incorporating chips into her diet, in contrast to her husband's behavior, during their secondary dietary acculturation.

Participant #5.4's family loved to eat pizza in China when they ate out weekly. Coming to the United States, the family ate pizza even more frequently "For a period of time, when [she] didn't like to cook" and their options for Chinese food were limited. Moreover, her daughter refused to eat at Chinese restaurants in the United States due to the altered taste of the food. This example illustrates how secondary acculturation accelerates the dietary acculturation process due to previous Western food exposure in the heritage country. With the globalization

of some food vendors and media as well as travel opportunities, immigrants are often exposed to certain foods prior to immigration. This could make them more ready to adopt specific foods upon immigration and impact the overall dietary acculturation process for the individual and the family.

Because of its impact on the overall dietary acculturation process, it is important to recognize how secondary dietary acculturation differs from primary dietary acculturation, which beings to unfold only after immigration to the United States. In secondary dietary acculturation, the process has a jump start once an immigrant begins living in the United States. Secondary acculturation can be food-specific, typically with foods that are popular in the West or globally due to changing social norms or media. For some readily accessible foods like chips or pizza, it is likely for immigrants to have had made some movement toward acculturation prior to immigration.

In conclusion, for immigrant mothers with dependent children, the process of dietary acculturation is initiated by immigration, which brings changes in the physical setting and ultimately changes in the individual's dietary preferences and behaviors. The process is forwarded as immigrant mothers directly experience encounters with the new food environment and through connections with others experiencing the same food environment. Immigrant mothers engage in mental appraisal of the value of the available heritage and host diets that are available. In this case, immigrant mothers reacted to the U.S. diet, either by continuously resisting, gradually acculturating, or finding balance in their dietary choices. It is important to recognize that this process does not apply to the entire U.S. diet; rather, it can occur with one food/ingredient at a time or with many simultaneously. Across time, an immigrant may be in different phases of dietary acculturation for different U.S. foods. There are a number of

common ingredients in the U.S. diet, just as in the diet of other cultures. Becoming acculturated to a common ingredient may be synergistic with the adoption of other foods, which may accelerate dietary acculturation. A framework of the dietary acculturation process was proposed by integrating the findings from this dissertation research with existing knowledge of dietary acculturation and the work of Satia-Abouta (2002), along with the work of Schwartz et al. (2010) on acculturation. The next chapter considers what insights this dissertation study might have contributed to knowledge building in this field based on the foundation of the aforementioned works.

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CHAPTER 5: DISCUSSION

The purpose of this dissertation study was to understand the dietary acculturation process, with specific aims to:

1. Generate a conceptual framework to facilitate the identification and understanding of phases in the dietary acculturation process;
2. Identify the key mechanisms and factors associated with changes in dietary intake and dietary behaviors across the dietary acculturation process.

Based on the precede-proceed model (Green & Kreuter, 2005, p. 137), the existing scientific literature, and findings from this dissertation study, a framework was generated to depict four phases involved in the dietary acculturation process (see Figure 2). The phases are as follows: Phase 0, Immigration and Change; Phase 1, Dietary Encounters and Dietary Involvement; Phase 2, Appraisal; and Phase 3, Reaction and Adaptation.

Drawing from the proposed model of dietary acculturation created by Satia-Abouta et al. (2002, p. 1107), the current literature on acculturation and diet, and findings from this study, a framework, illustrated in Figure 3 below, depicts these dietary acculturation phases along with the key factors and mechanisms associated with the dietary acculturation process. Key factors are categorized into six groups: (a) socioeconomic and demographic factors, (b) cultural factors, (c) environmental factors, (d) food procurement and preparation factors, (e) psychosocial factors, and (f) taste and food preference factors. Key mechanisms are the changes occurring across time that are related to these factors. Exposure to a host culture facilitates such changes. Dietary acculturation progresses in response to these factors throughout the ongoing acculturation process. The combination of factors and mechanisms vary for each individual

immigrant across time, leading to changes in individual dietary practices; thus, the dietary acculturation progress is unique for each individual immigrant.

The discussion is organized in four sections. First, the process of dietary acculturation among Chinese immigrants is positioned in relation to the seminal work by Satia-Abouta et al. (2002). Second, the construct of dietary acculturation is discussed in relation to other important aspects of acculturation. A framework of dietary acculturation is presented that draws on the findings and insights gleaned from this dissertation study using established knowledge about general acculturation as its building blocks. Third, the study strengths and limitations are presented. In the conclusion, the study significance for nursing science and implications for future research and nursing practice are discussed.

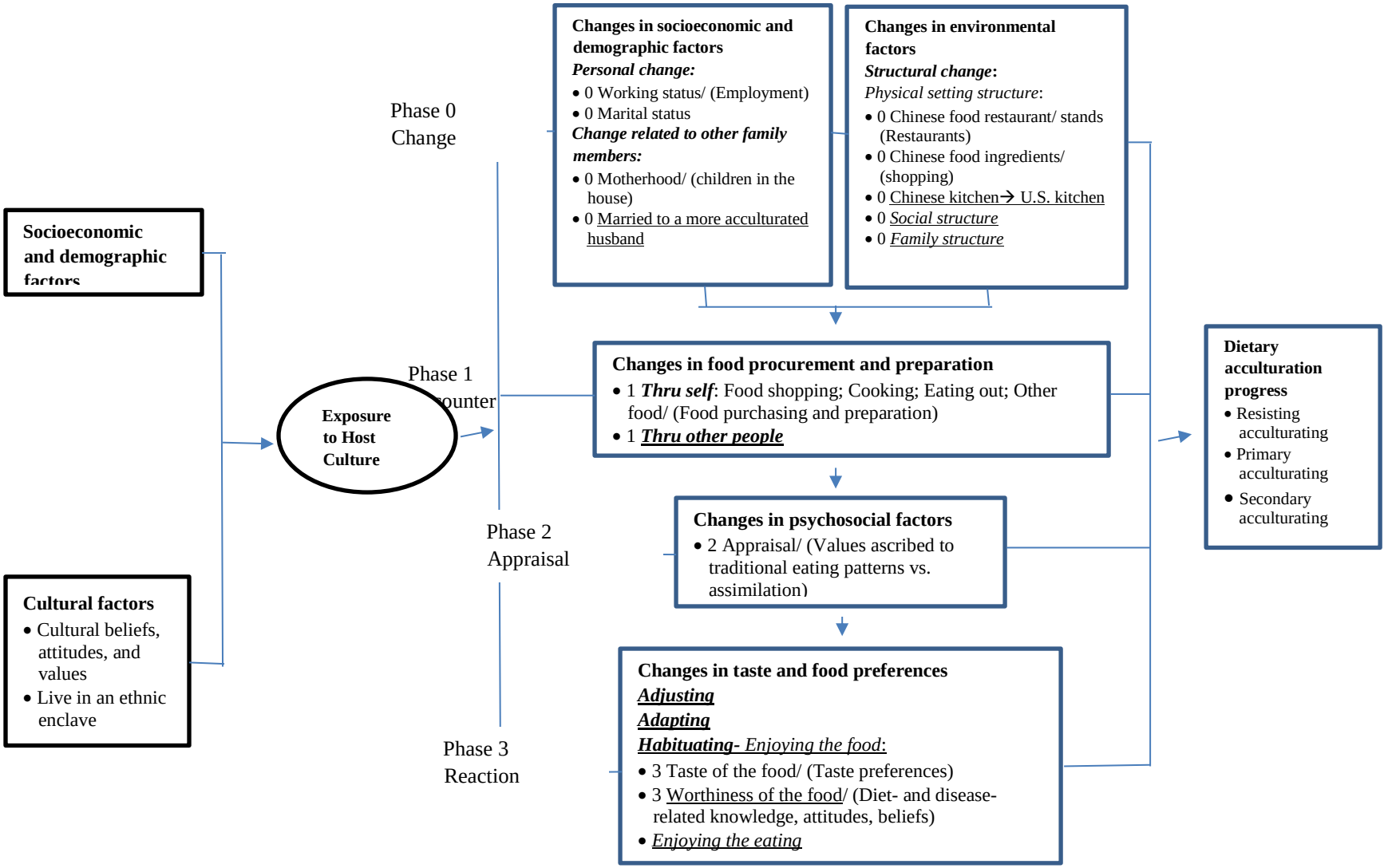
Dietary Acculturation Among Chinese Immigrants

In this section, modifications to the Satia-Abouta (2002) model (Appendix A) are identified and discussed. Three major additions to the Satia-Abouta model are supported by the evidence from this dissertation study (see Figure 3, categories of change are represented in five boxes; new factors are underlined.). First, changes were made related to socioeconomic and demographic factors, as represented under the heading "changes in socioeconomic and demographic factors." The Satia-Abouta model indicated that some socioeconomic and demographic factors might be influenced by exposure to the new host country. Evidence from this dissertation study showed that there were indeed changes in some of these factors following immigration, most notably employment. However, some changes, such as marriage or motherhood, changed after immigration but were not necessarily influenced by immigration. Likewise, Satia-Abouta indicated that cultural factors, such as values, may also be influenced by exposure to the host country. The model depicts "values ascribed to traditional eating patterns

vs. assimilation" as one factor under "changes in psychosocial and taste preferences." Evidence from this study supported this notion. Phase 2, Appraisal, involves changes in the psychosocial factor of such values and is elaborated in Figure 3.

Figure 3

Conceptual Framework of the Dietary Acculturation Process



The second modification is related to the concept of "changes in environmental factors, leading to changes in food procurement and preparation" in Satia-Abouta (2002)'s model. Findings from this study confirmed that "changes in environmental factors" occurred before "changes in food procurement and preparation." Hence, this concept was separated into two concepts, "changes in environmental factors" and "changes in food procurement and preparation," and sequenced under Phase 0, Immigration and Change and Phase 1, Dietary Encounters and Dietary Involvement, respectively, as illustrated in Figure 3. Likewise, findings from the study showed that the concept "changes in psychosocial factors and taste preferences" in the Satia-Abouta model can be differentiated into two distinct concepts, "changes in psychosocial factors" and "changes in taste and food preferences," depending on the phases in which they occur. Hence, "changes in psychosocial factors" is depicted under Phase 2, Appraisal, and "changes in taste and food preferences" is depicted under Phase 3, Reaction and Adaptation, in Figure 3. That is, in Figure 3, "changes" are reorganized and sequenced according to the phases of the acculturation process in which the factors emerged in the analysis.

The third modification shifted the concept "different patterns of dietary intake" to the "dietary acculturation progress." Satia-Abouta et al. (2002) illustrated three different patterns of dietary intake, only two of which were observed in this study. All but one of the 42 participants showed some degree of "bicultural eating patterns;" the one exception showed "maintenance of traditional eating patterns." The preponderance of bicultural eating patterns is likely due to the fact that study participants included mothers who were early in their immigration transition to the United States; none of the participants had fully adopted the eating patterns of the host country. Dietary acculturation is a complex process linked to the vast varieties of food items and

behaviors associated with diet. While the focus of the study was on the early stages of the dietary acculturation process, Figure 3 emphasizes that the process is ongoing and ever-evolving.

In addition, the concept of "taste preferences" in the Satia-Abouta (2002) model was expanded to include the three new concepts depicted in Figure 3. The new concepts that emerged from this study were "adjusting," "adapting," and "habituating." The concepts of "enjoying the food (the substance)" and "enjoying the eating (the activity)" were also added to the framework. Another modification is the inclusion of the concept "others" to "changes in food procurement and preparation" and in "changes in socioeconomic and demographic factors." Changes in environmental factors was expanded by adding social and family structures as a factor. Evidence supporting these modifications is detailed in Chapter 4. Taken together, these concepts offer new insights into why and how taste and food preferences change in the process of dietary acculturation.

The Construct of Dietary Acculturation

Scholars in anthropology and cultural psychology have made the most substantial contributions to scientific knowledge regarding acculturation. Important developments are the concept of adaptation strategies and conceptual advancements of acculturation from being regarded as single-dimensional to bi-dimensional to multidimensional. As a part of acculturation, dietary acculturation is a process of adaptation to changes in diet and dietary behavior. Dietary acculturation involves the interaction of (at least) two dietary cultures and the adaptation strategies used as a result of that interaction. The knowledge building in the area of dietary acculturation has relied heavily on the established knowledge in the field of acculturation, from measurement scales and indexes to related empirical findings. Acculturation is a complex topic, and its conceptual development is still evolving, including the model of acculturation and acculturation strategies.

As a part of acculturation, dietary acculturation bears much resemblance to acculturation more generally in many ways. Insights gained on relevant concepts or theoretical perspectives from studies of dietary acculturation may be of use to the advancement in the field of acculturation as well. In the following section, the construct of dietary acculturation is presented and discussed, built on knowledge from the acculturation literature integrated with findings from this dissertation study. The construct is represented as a dynamic model with three figures: Figure 4.1, Model of Dietary Acculturation, Trajectory 1: Abandonment of Heritage Dietary Practices—Discard; Figure 4.2, Model of Dietary Acculturation: Trajectory 2: Acquisition of Host Dietary Practices—Acceptance; and Figure 4.3, Dietary Acculturation Strategies.

Figure 4.1 depicts the dimension "Abandonment of Heritage Dietary Practices—Discard" across time; Figure 4.2 shows the dimension "Acquisition of Host Dietary Practices—Acceptance" across time. To depict the two bi-dimensional trajectories of dietary acculturation mentioned above across time (the third dimension) requires a 3D display. To simplify, Figure 4.3 is used to depict a cross-sectional (single flat surface plane) view to display the possible expressions of the bi-dimensional dietary acculturation of individuals at a frozen point of time instead of across time. Following the descriptions of the trajectories of change for these two dimensions, the expressions of individuals' dietary acculturation at the intersection of these two patterns are discussed in relation to their adaptation strategies.

The process of dietary acculturation involves two primary dimensions: the dimension of acquiring host dietary practices and the dimension of abandoning heritage dietary practices. The dynamics of these dimensions are complex. The dimension of acquiring host dietary practices includes individual acts of accepting and rejecting various host dietary practices across time. The dimension of abandoning heritage dietary practices includes individual acts of discarding and retaining various heritage dietary practices across time. This dissertation study focused on the

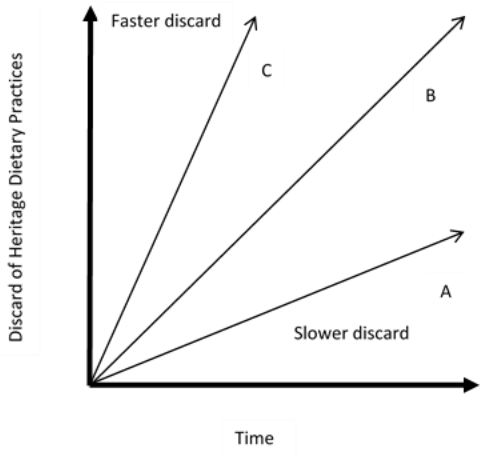
accepting aspect of acquiring host dietary practices and the discarding aspect of abandoning heritage dietary practices. The scope of the study was guided by knowledge of immigrant health problems that result from the adoption of Western dietary patterns typical in the United States.

Model of Early Dietary Acculturation: Trajectories of Abandoning Heritage Dietary Practices

Figure 4.1 depicts the dimension of abandoning heritage dietary practices across time, with different trajectories of change represented. This dimension captures dietary acculturation and includes a gradual increase in discarding heritage dietary practices across time; this process involves both retaining and discarding heritage dietary practices. The X axis represents time moving forward. The Y axis indicates the degree to which heritage dietary practices are abandoned. The three illustrative arrows (A, B, and C) show different trajectories or patterns of abandonment of heritage dietary practices across time. As illustrated, the lines are straight, but the processes are likely to be variable and non-linear, as dietary acculturation evolves at an inconsistent pace.

Figure 4.1

Model of Early Dietary Acculturation Trajectory 1: Abandonment of Heritage Dietary Practices—Discard



Assuming, hypothetically, that arrow B represents the typical, average pace of discarding heritage dietary practices, arrow A indicates a relatively slower pattern of dietary acculturation, a pattern of discarding less and keeping more heritage dietary practices across time. The closer an arrow is to the X axis, the slower the abandonment of heritage dietary practices. Arrow C shows a relatively rapid pattern of dietary acculturation, a pattern of discarding more and keeping fewer heritage dietary practices across time. The closer a trajectory is to the Y axis, the more rapidly the heritage dietary practices are being abandoned. A greater abandonment of heritage dietary practices does not necessarily mean a greater acquisition of host dietary practices. The former does not necessarily act as a replacement for the latter; they are different dimensions. This point is illustrated in Figure 4.3.

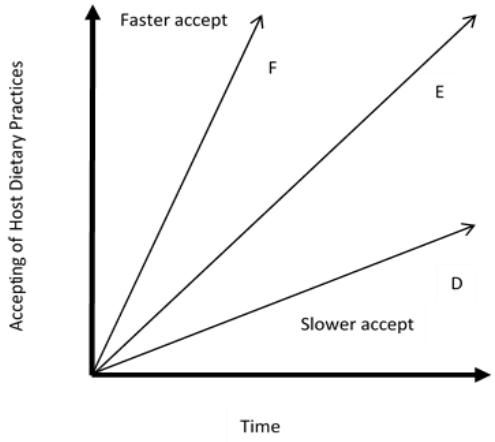
Model of Early Dietary Acculturation: Trajectories of Acquiring Host Dietary Practices

Figure 4.2 depicts the dimension of acquiring host dietary practices across time. Along this trajectory, dietary acculturation involves an increase in accepting host dietary practices

across time; this process involves both accepting and rejecting host dietary practices. The X axis represents time moving forward. The Y axis indicates the degree to which host dietary practices are accepted. The three illustrative arrows D, E, and F show different trajectories or patterns of acceptance of host dietary practices across time. For illustrative purposes the lines are drawn straight, but the actual processes are likely to be variable and non-linear, as dietary acculturation evolves at an inconsistent pace.

Figure 4.2

Model of Dietary Acculturation, Trajectory 2: Acquisition of Host Dietary Practices—Acceptance



For each individual, the pace of dietary acculturation can vary depending on the type and range of influencing factors that are present. For example, an individual who tends to follow traditions may not acquire many host dietary practices early in their immigration; however, the pace at which they acquire these practices can increase due to the influence of their children. Thus, the trajectory for such an individual would have a steeper slope with the influence of their

children; the slope might flatten a bit in their older adulthood. That is, the pace of dietary acculturation differs during different time periods, creating slopes of varying degrees, hence more curvilinear patterns of acculturation. Nonetheless, the direction of the trajectory will most likely trend upward for both of these two dimensions, as abandonment and acquisition are likely to accumulate over time.

Similarly, assume that arrow E indicates the typical, average pace of accepting host dietary practices, arrow D represents a relatively slower pace of dietary acculturation (i.e., accepting less or rejecting more across time). The closer an arrow is to the X axis, the slower the acquisition of host dietary practices. Arrow F represents dietary acculturation at a relatively faster pace (i.e., accepting more and rejecting less across time). The closer an arrow is to the Y axis, the more rapid the acquisition of host dietary practices. Acquiring host dietary practices reflects an increase in dietary acculturation.

Dietary Acculturation Strategies

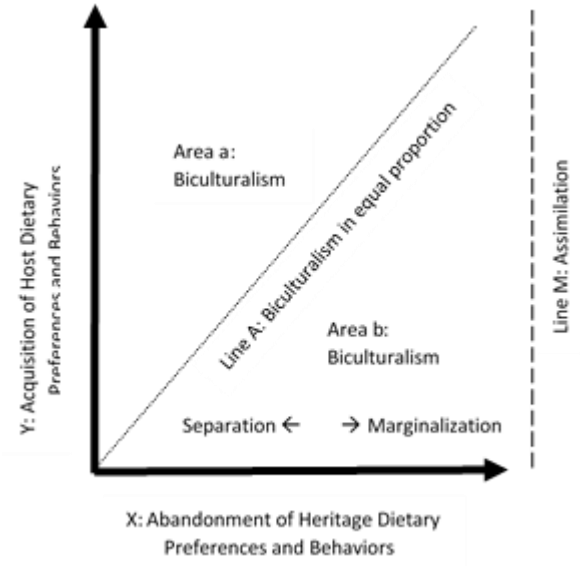
Adaptation Strategies. In adjusting to the new host environment, immigrants are faced with the options of abandoning old cultural customs and acquiring new cultural customs. Adaptation strategies are formed from decisions that stem from these opposing options. Under normal circumstances, but within the constraints of immigrating to and living in a host culture, immigrants decide what elements of their heritage culture to abandon and what elements of their host culture to acquire (Schwartz et al., 2010), as noted in Phase 2, Appraisal, described in Chapter 4. The *expression* of immigrant adaptation strategies is the product of such decisions accumulated across time for both the abandonment of old and the acquisition of new cultural customs.

Expressions. Figure 4.3 depicts expressions of adaptation strategies in dietary acculturation, drawing on Berry's acculturation strategies (1997, p. 10) and based on findings

from this dissertation study. Figure 4.3 represents a snapshot of dietary acculturation taken at a single point in time that locates individuals along the trajectories of two dimensions—"Abandonment of Heritage Dietary Preferences and Behaviors" and "Acquisition of Host Dietary Preferences and Behaviors." Dietary acculturation is reflected by location between these two dimensions at a given time.

Figure 4.3

Intersection of Dietary Acculturation Strategies



In Figure 4.3, the X axis represents the degree to which an individual has abandoned the heritage dietary culture. The Y axis represents the degree to which an individual has acquired the host dietary culture. The invisible points in Areas a and b, between the X and Y axes, represent locations of dietary acculturation. The areas capture the overall possible expressions of adaptation strategies. Specifically, any one location in the area of the graph represents the degree of an individual's abandonment of the heritage dietary culture (X) and the degree of that

individual's acquisition of the host dietary culture (Y). Hence, the figure demonstrates that expressions of adaptation strategies are primarily bicultural, with the exception of expressions that fall directly on the four border lines of the square area, that is, the X axis, the Y axis, line M indicating near total abandonment of the heritage dietary culture, and the invisible border line at the top of the graph parallel to the X axis indicating near total acquisition of the host dietary culture.

Berry (1997) categorized acculturation strategies into four general types: integration (biculturalism), separation, assimilation, and marginalization. *Integration* is defined as when an immigrant individual is interested in both maintaining their heritage culture and seeking interaction with the host culture. *Separation* is defined as when an immigrant individual is interested in maintaining their heritage culture and avoids seeking interaction with the host culture. *Assimilation* is defined as when an immigrant individual is not interested in maintaining their heritage culture while seeking interaction with the host culture. *Marginalization* is defined as when an immigrant individual has little interest in or possibility of maintaining their heritage culture ("often for reasons of enforced cultural loss"), and little interest in seeking interaction with the host culture ("often for reasons of exclusion or discrimination") (Berry, 1997, p. 9). In terms of dietary acculturation, marginalization is an extreme strategy of having acquired almost *none* of the host dietary culture and having abandoned *most* of the heritage dietary culture. Expressions of acculturation strategies are represented by points locating individuals by level of dietary acculturation in Figure 4.3 as shown.

Conceptually, an individual exhibiting the highest degree of *separation* or *marginalization* would be represented by a point along the X axis, since separation or marginalization is about little to no acquisition of the host dietary culture, represented by the Y axis. *Separation* falls closer to the left end of the X axis as it is about maintaining (non-

abandoning) heritage dietary culture, and *marginalization* falls closer to the right end of the X axis as it is about little to no maintenance (abandoning at its most extreme) of the heritage dietary culture. Points on the X axis would represent those individuals who have not acquired the host dietary culture but have abandoned the heritage dietary culture to varying degrees.

Study participant #2.2, who had not tried and would not try any U.S. foods, is one such example. Her diet changed from three meals per day in China to two meals per day plus frequent snacks in the United States. She would be placed somewhere along the X axis at the time of the focus group session. Specifically, she was closer to the left side of the X axis, reflecting a higher degree of separation than marginalization. It may be more likely for immigrants who live in ethnic enclaves, like participant #2.2, to be represented by points on the X axis. Schwartz et al. (2010) point out that in some enclaves, such as the Chinatown neighborhoods in various U.S. cities, the heritage culture is preserved to such an extent that immigrants are able to function in their daily lives without acquiring many aspects of the host culture.

This study did not find any participants who exemplified marginalization. Even for acculturation in general (not dietary acculturation in particular), studies "have found small or nonexistent marginalization groups," compared with groups of other strategies (Schwartz et al., 2010, p. 239). Figure 4.3 clearly illustrates that, compared to individuals located in *Areas* a and b, individuals located directly on any of the four border *lines* would, in probability, be scarce in comparison. Observing individuals located on the far right end of the X axis (marginalization) would be even more unlikely because individuals located there would have little to none of both the heritage and host dietary cultures, as the model indicates.

Points placed on the Y axis would represent individuals who have acquired, to varying degrees, the host dietary culture but abandoned *none* of their heritage dietary culture. There were no such individuals in this study. Every mother participating in the study had abandoned some

aspects of the Chinese dietary culture through adaptation strategies, mostly due to limitations inherent in the new host culture.

The highest degree of *assimilation* is situated along the dashed line M. Locations along line M would represent those individuals who have abandoned most of the heritage dietary culture and acquired the host dietary culture to varying degrees. There were no such individuals in this study. This could be because the study participants were newly immigrated and it takes time to naturally abandon the heritage dietary culture. Nonetheless, participant #6.3 might be considered very close to an example of this degree of assimilation. She was relieved that there was easy access to Southeast Asian foods for herself and her husband and to Western foods for her son; likewise, she was happy that she did not have to cook at home anymore. However, she still preferred to have Chinese foods when friends or her in-laws visited. Similar to locations on the X and Y axes, individuals represented by points located directly on line M would be scarce compared to individuals located in Areas a and b.

Any points on the dotted line A would represent individuals who had made equivalent trade-offs in abandoning the heritage dietary culture and acquiring the host dietary culture. The abandonment of heritage dietary practices and the acquisition of host dietary practices are not necessarily related. The points in Area a above line A indicate a greater acquisition of the host dietary culture than abandonment of the heritage dietary culture. For some immigrants, like those located in the upper left part of this area, this might mean stronger adaptation. In one dimension, a high degree of acquisition of the host dietary culture might give them access to more resources or tools needed for survival, while in the other, they still might have kept aspects of their heritage dietary culture to a high degree. The points in Area b below line A indicate less acquisition of the host dietary culture relative to abandonment of the heritage dietary culture. For some, like those located in the lower right part of this area, this might mean weaker adaptation.

In one dimension, not enough resources or skills have been gained from the host dietary culture, while in the other, heritage dietary practices have been more frequently discarded, resulting in fewer *total* resources or tools needed for survival combined from the two dimensions. This scarcity of resources would be even more extreme for those who are located closer to the location of marginalization.

Biculturalism/integration is the most beneficial adaptation strategy (Schwartz et al., 2010). This is because, in terms of dietary acculturation, separation and marginalization discounts resources and skills of the host dietary culture, and assimilation discounts those of the heritage dietary culture. There are two forms of biculturalism/integration: combined and blended. The descriptions of Figure 4.3 above focus on combined biculturalism. Blended biculturalism/integration is better than combined biculturalism/integration in terms of some health indicators (Schwartz et al., 2010). This is because, in terms of dietary acculturation, in situations where a certain heritage dietary practice is difficult to maintain due to resources and the corresponding host dietary practice has not yet been acquired or one is not interested in it, blended biculturalism/integration serves as a creative strategy to blend resources/ skills for better survival.

Study participant #6.2 is an example of blended biculturalism. She described eating romaine lettuce as an A choy substitute by stir-frying it. In doing so, she merely found a way for herself and her family to continue eating vegetables (a healthy dietary practice) that was more suitable to the new environment instead of giving them up entirely. By blending host and heritage dietary cultures, she was able to enjoy the flavor of A choy in the United States at a more affordable cost by purchasing romaine lettuce instead. On one hand, she might be considered *more* acculturated because she ate romaine lettuce, an uncommon vegetable for Chinese people, even though she did not eat romaine lettuce in salads, a common practice in the

United States. On the other, she might be seen as *less* acculturated because she still stir-fried vegetables, even though the vegetables she prepared were from the host country. Studies should take into consideration these intricate nuances which are inherently part of complex dietary acculturation. Changes and adaptations like these are likely to create conflicting results in studies.

Contrasting to Berry (1997)'s strategies of *acculturation*, Figure 4.3 offers explanations of the logical probabilities of each of the four strategies of *dietary acculturation*, namely, integration (biculturalism), separation, assimilation, and marginalization. This figure provides further understanding of acculturation through the understanding of dietary acculturation—the "foods" aspect within the "practices" dimension of acculturation. The limitation of this figure is that *dietary acculturation* is only a part of the whole, *acculturation*, and it cannot be extended to make inferences about the general idea of acculturation.

Strengths and Limitations

The strengths and limitations of this dissertation study primarily involve the methodology, study focus, and study population. First, although closest to grounded theory in epistemological stance, this dissertation research took the generic qualitative approach to understand the process of dietary acculturation. One weakness of this approach is the "lack of a robust literature" to provide a theoretical framework for it (Kahlke, 2014, p. 43). Conversely, a key strength is that the approach was not limited by one established methodology. The process of dietary acculturation is a crucial area, rarely explored in research. A generic qualitative approach offered the flexibility needed to tailor the exploration to the nature of the study question and allowed for the possibility of "opening new ground" and advancing the theory (Kahlke 2014, p. 47).

Second, the study focused on the *process* of the dietary acculturation phenomenon. This concentrated attention on process helped maintain internal coherency and avoided mining the data in constructing the conceptual framework. However, some themes relevant to the phenomenon of dietary acculturation, but not to the process aspect of dietary acculturation, were not explored within the scope of this dissertation study. Third, the study was about immigrants of Chinese ethnicity, which helped with the consistency of the findings as diet is culture-specific. Nonetheless, the findings may not be generalizable to immigrants of other ethnicities or backgrounds.

Conclusions

It is important to consider context when studying acculturation (Schwartz et al., 2010; Ward & Geeraert, 2016), the context within the host culture and the context between the host culture and heritage culture. Within the host culture is the "realistic context," such as an ethnic enclave, which can lead to different acculturation trajectories. Between two cultures is the "abstract context," such as cultural similarity, which can influence the pace of acculturation. This dissertation study, which included samples of enclave dwelling participants and examined the acculturation from Eastern to Western diets, certainly attended to context. Dietary acculturation fits within the "practices" dimension of Schwartz et al. (2010)'s multidimensionality of acculturation framework. The two other dimensions in Schwartz et al.'s framework are "values" and "identifications," which are depicted underneath the dimension of "practices" to illustrate how all three dimensions are related. Satia-Abouta (2002)'s model partially illustrates this point. In relation to dietary practices, the model identifies cultural values as part of the cultural factors that influence dietary acculturation/practices.

Dietary acculturation is one of many practices in acculturation. Values, which are the basis of practices, are able to shape the trajectory of dietary acculturation, further complicating

the process. Similarly, identifications form the basis for values. The interrelationships among these three dimensions are one reason that evidence in this field is inconsistent or conflicting. Limited in scope and focus, this dissertation study did not incorporate values and identifications in its analysis. It is crucial for future interventions to take into consideration both the values and identification dimensions, especially when dealing with the identified critical steps of dietary acculturation, to better understand the interconnections of these dimensions and better explain the process.

The meaningfulness of this dissertation study is its modifications to Satia-Abouta (2002)'s model of dietary acculturation and its modified perspective on Berry (1997)'s model of acculturation. The contribution of the modifications to Satia-Abouta's model of dietary acculturation lies in the ontological orientation of considering time as an essential element in the process of dietary acculturation and the approach of focusing mostly on one dimension of this bi-dimensional process, that is, the dimension of the acquisition of host dietary practices. In doing so, the study was able to

- tease out and expand the factor categories in Satia-Abouta's model to show the relations among them in more detail and their relation to the process of dietary acculturation;
- demonstrate in the framework (Figure 3) that socioeconomic and demographic factors continue to be influential after exposure to the host culture, as Satia-Abouta proposed yet which is not illustrated in her model;
- examine in more detail the adaptation strategies of participants as they interacted with the host dietary culture in the phase of reaction.

The contribution of the modified perspective on Berry (1997)'s model of acculturation stems from the philosophical thinking of considering time as an essential element in

acculturation, and hence treating the process of acculturation in each of the two dimensions (host culture and heritage culture) as continuous instead of dichotomous. Berry's 2 x 2 matrix of four acculturation categories was formed by dichotomizing responses to each of the two dimensions as "yes" or "no." The model has been criticized partly because not all four of Berry's categories would be well represented in study samples, especially the category of marginalization. By incorporating time and thinking of acculturation as continuous in each dimension, the study was able to propose the model in Figure 4.3 and help rationalize the findings from empirical evidence that (1) the marginalization category is either small or nonexistent, and (2) "the categories were not as well differentiated as would be expected given Berry's model" (Schwartz et al., p. 239).

Significance for Nursing Science

The significance of this research to nursing science is its development of an approach that is cognizant of the need for knowledge building from three perspectives:

- Prevention and Health Promotion. Dietary guidance is one of the primary approaches that can contribute to the prevention of disease and promotion of health. This study aimed to identify key mechanisms and factors of dietary acculturation, a process of changing dietary practices in immigrants that can be modified for better health.
- Population and Community Health: The general socioeconomic status of immigrants can differ from that of the general population, especially for immigrants living in ethnic enclave communities. It is critical to understand what challenges they could be facing in developing and maintaining healthful dietary practices.
- Health Equity: The immigrant paradox—that is, the faster deteriorating health observed in immigrants compared to the nonimmigrant general public—is a health disparity phenomenon. This study's purpose was to understand the process of dietary acculturation,

which is applicable to improving immigrants' health through diet, a modifiable lifestyle factor.

Implications

For Future Research. To advance knowledge in disease prevention through diet for immigrant populations, the findings of this dissertation study have three crucial implications for future research in nursing science as described in the following:

- The study identified important factors and mechanisms of dietary acculturation and described the contexts under which some of these factors and mechanisms work in settings such as homes, schools, and food outlets, including grocery stores and restaurants. Future research can focus on deeper observation of these factors or mechanisms, one or several at a time, or on intervention design based on these factors or mechanisms.
- Diet is an essential and unique part of any culture. Future research can apply a similar research design or methodology to immigrant populations of different ethnicities to expand the knowledge of dietary acculturation factors and mechanisms in general.
- As shown in the literature review and study results, female and low-income immigrants are at higher risk of unhealthy dietary acculturation. Thus, most urgently, future research should focus on disadvantaged immigrants with limited resources to identify and help prevent further health inequities.

For Nursing Practice. The findings from this dissertation study of dietary acculturation in Chinese immigrant mothers have important and direct implications for nursing practice:

- To help reduce racial/ethnic health disparities, nursing professionals can more knowledgeably initiate discussions of dietary practices with immigrant clients and provide needed education accordingly.

- In line with a holistic perspective in nursing, nursing professionals can assess the factors involved in the individual immigrant's dietary acculturation with the help of the proposed framework of the dietary acculturation process, which highlights the socioeconomic, environmental, and psychosocial aspects of that process.
- To provide culturally competent nursing care, nursing professionals can equip themselves with a better understanding of dietary practices relevant to Chinese culture, for example, the significance of stir-frying.

This dissertation study contributed directly to scientific advancement in the field of dietary acculturation. A new framework was generated to understand the dietary acculturation process, a process that has scarcely been investigated despite its importance in understanding dietary acculturation. Importantly, the research extended Satia-Abouta (2002)'s work on dietary acculturation by both elaborating and modifying her model with a new set of data from a similar study population. Key mechanisms and factors in the dietary acculturation process were identified, helping to explain the progression of the dietary acculturation process. Dietary acculturation is a process of adaptation to change. By studying that process in detail, the study contributed to understanding acculturation in general and strengthened the construct of acculturation, which involves many aspects, by examining adaptation in detail from data on the dietary aspect of culture.

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