

DOMINICAN WOMEN'S EXPERIENCE OF THE INTERACTION OF FOOD  
CULTURE AND ENVIRONMENT

A Dissertation

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of Cornell University

In Partial Fulfillment of the Requirements for the Degree of  
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by

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# DOMINICAN WOMEN'S EXPERIENCE OF THE INTERACTION OF FOOD CULTURE AND ENVIRONMENT

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[Worsening diet-related health outcomes with acculturation level suggest that Latino culture has a protective effect that could be harnessed to address diet-related health disparities between Latinos and Non-Latino Whites. However, within the dietary acculturation literature, there is a lack of consensus as to how and why diet changes with acculturation. Research is needed in order to understand and conceptualize the process of dietary acculturation and to identify possible avenues of intervention. The purpose of this grounded theory research was to gain a greater understanding of the food and eating behaviors of Dominican women living in Santo Domingo (SD), Dominican Republic and New York City (NYC). Dominican women, who were purposively recruited in order to capture a range of experiences, participated in two qualitative interviews, addressing usual food and eating behaviors and the ways that they interacted with their food environments. . Three key findings emerged, illustrating the critical roles of food routines, food activity footprints and a cohort effect in shaping food and eating behaviors. Women in SD and NYC described food routines, which included shopping, cooking and eating, that influenced when, how much and what they ate. Women in NYC attributed weight gain after immigration to changes in their food routines. Women's narratives indicated that differences in food routines were related to immigration-related changes in their economic (e.g. employment), social (e.g. household structure) and physical (e.g. food activity) environments. Participating women described the establishment of food activity footprints, rooted in their life course experiences, which included all of the places in their urban environments in which they procured food. These footprints differed based on the amount of time and space used when procuring food in SD and NYC. Contextualizing life course events and experiences revealed a cohort effect in which the influence of participants' immigration experiences on food and eating were shaped by

the point in history and the point in women's lives at which they immigrated. These findings emphasize how the food and eating practices of participants were related to factors in their social, economic and physical environments. While prior dietary acculturation research has focused primarily on changes in the physical food environment at immigration, the findings of this study suggest a need for reconceptualization of dietary acculturation that includes the social and economic factors, not currently captured in dietary acculturation research, that are equally important contributors to the processes of dietary acculturation and should be incorporated into dietary acculturation research.]

## BIOGRAPHICAL SKETCH

[Pamela Weisberg-Shapiro began her nutrition career at Cornell University as an undergraduate nutrition major. After graduating from Cornell, she went on to complete her dietetic internship at SUNY Stony Brook and her Master's in Public Health at the Rollins School of Public Health at Emory University. Her passion for public health nutrition brought her to New York City working in nutrition research and education. During her time working in New York City, Pamela observed that there was a miscommunication between health care professionals and patients, especially low-income patients. This fueled her interest in health disparities, specifically health disparities between Latinos and Non-Latino Whites. Pamela believed that most health professionals had a limited understanding of the experiences of low-income individuals and the barriers to health that they faced, which influenced their ability to treat these patients. Based on this, she decided to return to school in order to explore the issue. She chose to focus on Dominican women living in Washington Heights and the Bronx because she spent a lot of time working in these neighborhoods and identified a great need. Pamela returned to Cornell to complete her doctorate in Nutritional Sciences, minoring in Latino Studies and Development Sociology.]

[I dedicate my dissertation to my husband, Dave, and my sons, Solomon and Clayton.

My family patiently supported me and helped me keep everything in perspective throughout this long journey. Words can express how grateful I am to Dave for moving to Ithaca in order for me to pursue my doctorate and stepping up when all my time and energy was focused on my dissertation. I am eternally grateful. I am also grateful to my children for making me laugh and helping me look at the world from a different perspective.]

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# **CHAPTER 1**

## **INTRODUCTION**

### ***1.1 Introduction***

The Latino population in the United States (US) systematically has worse health outcomes compared with those of the Non-Latino White population. These health disparities have been attributed to differences in access to healthy foods, places to exercise, and health care, which is supported by findings that low-income, minority neighborhoods have worse health outcomes compared with White neighborhoods<sup>1</sup>. However, research indicates that newly arrived Latino immigrants, who have fewer resources and more barriers to health, have better health outcomes compared with more established Latinos<sup>1</sup>. This phenomenon, which is referred to as the “Latino Paradox,” has been explained using dietary acculturation theory. It is hypothesized that immigrants import healthy eating behaviors from their home countries and replace them with less healthy US eating behaviors as they acculturate. Results indicating that acculturation level is associated with unhealthy food behaviors support this hypothesis and suggest that immigrants interact with the environment differently based on acculturation level, as defined by time in the US or language.<sup>2,3</sup> However, research indicating a null effect of acculturation challenges this hypothesis<sup>4-6</sup>. Given growth in the Latino population and the social cost of poor health care, understanding the interaction between culture and environment and the role of acculturation in health disparities takes on added importance.

### ***1.2 Health Disparities***

Health disparities between Latinos and Non-Latino Whites are well documented<sup>7-9</sup>. National statistics indicate that the age-adjusted prevalence of overweight and obesity is 77.9% in the Latino population, compared with 66.7% in the Non-Latino White population<sup>10</sup>. Not surprisingly, Latinos are more likely to suffer from obesity-related diseases, such as type-2

diabetes. The prevalence of diabetes is 12.8% in the Latino population and only 7.6% in the Non-Latino White population<sup>11</sup>. Drawing on the increased prevalence of nutrition-related diseases in low-income, minority, urban neighborhoods compared with their prevalence in higher-income, White neighborhoods, environment has been identified as a key contributor to health disparities<sup>12-15</sup>. Low-income, minority urban neighborhoods have fewer supermarkets, which provide high quality food, and more convenience stores, bodegas and fast food restaurants, which provide less healthy foods<sup>13,16-20</sup>. Based on this, it is hypothesized that decreased availability of healthy food in low-income minority neighborhoods translates into the consumption of a less healthy diet and increased risk of disease in residents of such neighborhoods. This hypothesis is supported by findings that residential neighborhood food environment is associated with diet quality<sup>21,22</sup>.

However, more recent research has questioned the relationship between residential neighborhood food environment and health in response to findings that individuals buy food outside of their residential neighborhoods<sup>20,23-26</sup>. Acknowledging that individuals have agency and may choose to shop outside of the residential neighborhood indicates that a new definition of food environment that accounts for where individuals buy food and why they choose to go there is needed. Interestingly, research in Latinos found that the behavior of shopping outside of the residential neighborhood differed based on country of origin, with foreign-born Latinos leaving the neighborhood for food shopping and US-born Latinos staying in the neighborhood<sup>27</sup>. This suggests that Latinos navigate their environments differently based on nativity and may explain differences in health outcomes between foreign- and US-born Latinos. Therefore, in order to fully to understand health disparities based on ethnicity and residential environment, it is important to understand how acculturation influences interaction with the food environment as

well as food choice and eating behaviors.

Research indicates that, despite fewer resources, less acculturated Latinos have better health outcomes compared with more acculturated Latinos, as in the abovementioned Latino Paradox<sup>1</sup>. Research indicates that acculturation is associated with increased prevalence of obesity, hypertension, coronary heart disease, and stroke<sup>5,28-31</sup>. This Latino Paradox has been attributed to lifestyle differences, including differences in dietary intake. Based on 1999–2004 National Health and Nutrition Examination Survey (NHANES) data, using language and country of birth to measure acculturation, acculturation level was inversely associated with following the American Diabetes Association’s fiber (20g/d) and fat (<30% calories) recommendations among Latinos with ancestry from various countries who were diabetics<sup>32</sup>. A separate analysis of 1999–2004 NHANES data revealed that foreign-born (less acculturated) Latinos born in Mexico, Puerto Rico, Cuba, and the Dominican Republic consumed more calories from fruit and fewer calories from sweetened beverages, snacks, and desserts compared with their US-born counterparts<sup>33</sup>. Lower fat intake and reduced consumption of sugar-sweetened beverages in less acculturated Latinos was confirmed by research in Puerto Rican, Dominican, Cuban, and Latin American elders in Massachusetts<sup>34</sup> and Latino women living in California<sup>35</sup>. Analysis of 1999–2006 NHANES data found that first-generation Mexican American women consumed fewer snacks and desserts and more fruits and vegetables than second-generation Mexican American women, leading to an overall healthier diet<sup>36</sup>. A separate analysis of NHANES data revealed that linguistic acculturation was associated with increased calorie and fast food consumption in Mexican Americans<sup>2</sup>. Therefore, research consistently supports the association between diet and acculturation when comparing US-born and foreign-born Latinos. However, the relationship between diet and acculturation is less clear when examining differences within first-generation



Latinos.

There is mixed evidence pertaining to dietary behaviors associated with acculturation in first-generation Latinos. Research on first-generation Mexicans living in Nevada found that linguistic acculturation was associated with decreased fruit and vegetable consumption<sup>3</sup>. However, research in Los Angeles found no significant differences in fruit and vegetable consumption based on time in country among first-generation Mexicans and Central Americans<sup>5,6</sup>. In addition, there were no significant differences in sugar-sweetened beverage or fast food consumption among first-generation Mexicans in Los Angeles based on time in country, which was supported by findings that there was no association between linguistic acculturation and fat and calorie consumption among first-generation Puerto Ricans in Boston<sup>5,37</sup>. Despite mixed findings pertaining to dietary acculturation in first-generation Latinos, however, acculturation is still associated with negative health outcomes, such as obesity, hypertension and coronary heart disease<sup>5,28-30</sup>. Examination of obesity in island-born Puerto Ricans showed a monotonic increase in obesity with increased time in the US<sup>28</sup>. Mixed results pertaining to the relationship between diet and acculturation among first-generation Latinos suggests that the mechanism of weight gain and worsening health outcomes is more complex than changes in the types of food that are eaten. Therefore, more research is needed to understand the process of change in first-generation Latinos.

Worsening health outcomes among Latinos has been examined through the lens of acculturation theory, which states that acculturation is associated with the adoption of values and behaviors that mirror those of the host culture.<sup>1</sup> While this appears to be an appropriate theoretical basis when defining acculturation based on generation, mixed results from first-generation research suggest a need for re-examining the use of acculturation theory. The

immigrant experience needs to be contextualized, which can be accomplished by drawing on the social–ecological model and the life course perspective. Drawing on concepts from these frameworks, this study aimed to create a better understanding of the interaction of the individual with food culture and environment and provide insight into health disparities related to acculturation, geography, and ethnicity.

### ***1.3 Acculturation Theory***

The study examined the interaction of the individual with the environment within the context of acculturation. Acculturation theory attempts to explain and understand the process by which individuals from another culture adapt to a new environment. Acculturation theory was introduced in the early 1900s in response to waves of immigration from Europe. At that time, it was expected that immigrants would take on the values and behaviors of the host culture<sup>38</sup>. In other disciplines, acculturation theory has evolved to account for changes in the context of immigration and US culture<sup>39</sup>. However, acculturation theory as it has been used in the health literature has not evolved.

This failure to evolve has resulted in criticism of acculturation theory in the health literature for the use of crude measures of acculturation and the multiple assumptions implicit in the theory<sup>40,41</sup>. The reductionist use of acculturation theory in health research is likely due to the difficulty related to measuring complex concepts. Due to the inability to adequately measure culture, it has been suggested that acculturation theory should not be used in health research<sup>40</sup>. Moreover, some argue as well that acculturation theory is a distraction from structural issues<sup>40</sup>. However, others argue that acculturation theory can be useful for understanding health disparities contingent on the adoption of new measures to capture the complex process involved in causing such disparities<sup>41</sup>. Therefore, an appropriate response to critics of acculturation theory

is to re-conceptualize acculturation theory in order to incorporate more meaningful concepts and measures.

Drawing on the work of Keefe and Padilla (1987), this study conceptualizes acculturation as an additive, bi-directional, multi-dimensional process<sup>39</sup>. The additive nature of acculturation is important to consider because immigrants who adopt new values and behaviors may still maintain traditional skills and the potential to revert back to traditional behaviors, explaining the bi-directional nature of acculturation<sup>39,42</sup>. Therefore, acculturation is multi-dimensional in the sense that it includes values, skills, and behaviors. However, in health research, acculturation is not considered multi-dimensional. Although this lack of acknowledgment of the multi-dimensionality of acculturation in the health literature is not stated explicitly, studies in the literature appear to assume that (a) time in the US and language measure exposure to US culture, (b) exposure to US culture leads to the acquisition of new skills and changes in attitudes, and (c) The acquisition of new skills and changes in attitudes lead to changes in behaviors. It is assumed that such changes take place in one step, with all values, skills, and behaviors changing at once. Recognizing that this is not the case, especially for complex behaviors such as dietary intake, this study conceptualized dietary acculturation as a multi-dimensional process, drawing on the life course perspective and the social–ecological model.

#### ***1.4 Life Course Perspective***

The life course perspective provides insight into the importance of life events on food and eating behaviors. Over time, individuals develop systems for interacting with the environment and, in the case of food and eating, individuals establish *food roots*<sup>43</sup>. Food roots are similar to food culture in the sense that both guide food and eating behaviors throughout the life course and create a starting point for food trajectories. Life course events or transition points are related to

adaptive strategies that may in turn be related to changes in food trajectories<sup>44</sup>. Immigration is one of these transition points, but acculturation theory assumes it is the only transition point and that it definitely leads to changes in food trajectories. According to the life course perspective, other life events such as marriage, divorce, or motherhood are also transition points that may be related to adaptive strategies. All of these changes take place within a given context that shapes adaptive strategies and food choice behaviors<sup>44</sup>. However, “context” is loosely defined in the life course perspective, so this study combines the life course perspective with the social–ecological model to clarify several important concepts.

### ***1.5 Social–Ecological Model***

Bronfenbrenner’s social–ecological model highlights the importance of the interaction between an individual and the environment. While the environment is often referred to as a single entity, the social–ecological model describes the environment as several layers nested within each other<sup>45</sup>. The environment, or ecology, is divided into a *micro-system*, a *meso-system*, an *exo-system*, a *macro-system*, and a *chromo-system*, which interact with each other and the individual. The micro-system, which is defined as the individual’s immediate environment, consists of persons, objects, and symbols that the individual encounters on a regular basis<sup>45</sup>. On the physical level, the micro-system includes the individual’s house, school, workplace, and neighborhood. On the social level, the micro-system includes family members, peers, and neighbors. The exo-system comprises the linkages and processes between an individual’s microsystem and an external system<sup>45</sup>. The exo-system or external system contains individuals who influence the micro-system of the focal person and therefore indirectly influences the micro-system. An example of an exo-system would be a family member’s place of work. The macro-system, which includes the most distal social and physical environmental factors, plays a role in

creating the other systems. Husen likens the macro-system to a societal blueprint for a particular culture or subculture<sup>45</sup>. Immigrants are embedded in two cultures and behaviors represent how they balance those cultural influences. Therefore, multiple layers of the environment influence the acculturation experience and other life course events.

### ***1.6 Theoretical Perspective***

Incorporation of acculturation theory, the life course perspective, and the social–ecological model was used in this study to explore Dominican women’s experience with the interaction of food culture and environment. This project focused solely on Dominican women living in Santo Domingo and New York City as a means of gaining an in-depth understanding of how these women experience food culture and environment. Due to cultural and contextual differences between Latinos from many countries, it is not expected that the experiences of these women represent the experiences of Latinos generally. However, the study’s findings can be utilized to contribute to theory and research pertaining to acculturation and health disparities. Using the case of Dominican women in Santo Domingo, this study explores potential avenues for worsening health that contributes to health disparities between Latinos and Non-Latino Whites. Therefore, this study is intended to contribute to the health literature, especially the literature on dietary acculturation, in order to better understand dietary acculturation and health disparities.

Taking a constructivist approach, this study aimed to gain a greater understanding of the participants’ experience with food culture and environment, based on the belief that reality is subjective and individuals act according to their own realities.<sup>46</sup> This is an alternative to the post-positivist approach traditionally used in nutrition research. Qualitative interviews using semi-structured interview guides were used to gain a greater understanding of the participants’

experiences. Structured observations were conducted to provide the perspective of the researcher, which represented the perspective of a health professional. Observations included the researcher's assessment of the food environment and the built environment, participants' responses to informal interview questions pertaining to observations, and the researcher's thoughts pertaining to observations. Examining the issue from the perspective of the participants and the researcher provided the opportunity to identify, first, how the two experience the world differently and, second, assumptions that may be preventing the flow of knowledge in both directions. Failure to recognize and move beyond assumptions limits the capacity of the researcher to understand the issues involved and that of the participant to understand information provided by health professionals. Therefore, taking a constructivist approach helped create a greater understanding of the experience of participants.

Gaining a greater understanding of participants' experience may help to identify undiscovered contributors to health disparities. Current health research and practices are shaped by the experiences of health professionals and are based on assumptions that may limit the effectiveness of interventions and policies. A constructivist approach may uncover these assumptions and provide the opportunity to provide more effective interventions and policies.

While a constructivist approach provides the opportunity to look at food and eating behaviors at a deeper level, there are limitations to this approach. Working under the assumption that reality is subjective limits the ability to apply findings to other populations. In addition, relying on the participants' experience means that the researcher will not obtain data that support objective facts, such as the amount of calories consumed. In the absence of such objective data, it is not possible to determine relationships involving objective measures, such as

calorie consumption, and weight. Therefore, this approach is better suited to research that aims to understand social and cultural processes .

## CHAPTER 2

### “BECAUSE LIKE WE MISSED THE WAY THAT WE EAT AT THE MIDDLE OF THE DAY”: DIETARY ACCULTURATION AND FOOD ROUTINES AMONG DOMINICAN WOMEN

#### ***2.1 Introduction***

Latinos are at increased risk of nutrition-related diseases such as obesity, diabetes, and certain cancers, compared with Non-Latino Whites.<sup>7-10,47</sup> Examination of health disparities has revealed heterogeneity in health outcomes within the Latino population. The prevalence of nutrition-related diseases such as diabetes, hypertension, stroke, and obesity is greater in highly acculturated Latinos, which has been attributed to the adoption of poor dietary habits with acculturation.<sup>1,29,48</sup>

It is hypothesized that immigrants practice healthy dietary behaviors in their home countries, adopting the unhealthy US diet in response to prolonged exposure to the US food environment and culture. This assertion is supported by the positive associations observed between acculturation and decreased fruit and vegetable consumption and increased restaurant food consumption.<sup>3,29,49</sup> However, this logic is challenged by findings that some Latino populations are engaging in unhealthy behaviors, such as fast food consumption, in their home countries, and findings pertaining to fruit and vegetable consumption among Mexicans living in the US as compared with such consumption among those in Mexico.<sup>36,50,51</sup> Although there is no consistent evidence supporting the relationship between acculturation and dietary intake, an alternative hypothesis has yet to emerge. Research is needed in order to understand the mechanisms underlying dietary change after immigration. Given global trends in immigration, understanding immigrants' navigation of their new lives as it relates to food has global implications.



### ***2.1.1 Theoretical Perspective***

Dietary changes among immigrants to the US have been examined primarily through the lens of acculturation theory, which posits that generational increase, time in country, and use of English are positively associated with undesirable dietary changes. This association is often operationalized by using cross-sectional data to compare dietary intakes of Latinos at various acculturation levels. It has been noted, however, that in the absence of longitudinal data, beginning with pre-migration behavior, there is insufficient evidence to support the importation of healthy behavior and the adoption of unhealthy behavior after immigration.<sup>50,52,53</sup> In addition, crude proxy measures of acculturation and dietary assessment may not accurately characterize the relationship between diet and acculturation.<sup>54,55</sup> For these reasons, there has been a call to re-examine the relationship between immigration, acculturation, and food behaviors from a broader theoretical perspective.

According to Perez-Escamilla, “Acculturation is a complex dynamic process that is shaped by the cumulative experience of the interaction of individuals with their environment across the lifecycle.”<sup>52 p11638</sup> By incorporating concepts from the life course perspective<sup>43</sup> and the social ecological model,<sup>45</sup> the current study was designed to explore and contextualize the food and eating experiences of Dominican-born women.

### ***2.1.2 Purpose***

The purpose of this research was to gain a greater understanding of how Dominican-born women living in Santo Domingo (SD) in the Dominican Republic (DR) and New York City (NYC) interacted with their food culture and environments. Drawing on the social–ecological model, acculturation theory, and the life course perspective, this study investigated how participants in SD and NYC interacted with their food and eating environments.

## **2.2 Methods**

This study included women from both the DR, the sending country, and the US, the receiving country. Qualitative interviews conducted with women in both the sending and receiving countries provided a useful approach for investigating the relationship between acculturation, life course experiences, the environment, and food behaviors at a deeper level. The larger purpose of this research was to understand how Dominican-born women experienced the interaction of food culture and environment as it relates to their food behaviors. The emergent focus of the current analysis was Dominican women's construction of food routines.

### **2.2.1 Research Setting**

This study used a constructivist approach to gain a greater understanding of participating women's perspectives on the interaction of their culture and environment as it relates to their food and eating experiences. A constructivist approach assumes that reality is subjective and the goal is to gain an understanding of the experience of participants.<sup>46</sup> These study participants were Dominican-born women in Santo Domingo (SD) and New York City (NYC). Two sites were chosen because it allowed the researcher to compare and contrast experiences from sending and host countries, which assisted in determining whether the experiences of these women were unique to immigrants or related to global trends in food availability and behavior. Dominicans were chosen because they are a fast-growing population in NYC and have worse health outcomes compared with other Latino groups.<sup>56</sup> A focus on Dominicans also allowed the investigator to look more deeply at the interaction of culture and environment in a relatively homogeneous Latino population. Research with Latino populations indicates that women are responsible for food procurement and preparation; therefore, interviewing women rather than men provides better insight into food and eating.<sup>57,58</sup> Participants were recruited from a low-

income neighborhood in SD and from low-income neighborhoods in NYC in which the Latino population is the majority—specifically Washington Heights and the Bronx.<sup>12</sup>

### ***2.2.2 Participants and Recruitment***

Dominican-born women were recruited via community organizations and flyers in neighborhood stores in SD and in Washington Heights and the Bronx (NYC). A snowball recruitment technique was also employed. Women, aged 20–60 years who spent their childhood in the Dominican Republic, were purposively recruited to vary in employment and marital status. Women from NYC were recruited with a range of living experiences in the US (<2 years; 2-6 years; 7-10 years; >10 years) and a range of English-speaking ability. Recruitment for each category ended when theoretical saturation was reached. The final study included six Spanish-speaking women in SD, 14 Spanish-speaking women in NYC, and 9 bilingual women in NYC.

### ***2.2.3 Data Collection***

Participating women engaged in semi-structured qualitative interviews conducted by a team of trained interviewers between July 2012 and July 2013. In SD, a Dominican native Spanish speaker conducted the interviews. In NYC, a Dominican native Spanish speaker who lived in the Bronx conducted Spanish interviews. The principle investigator conducted the English interviews. Each woman was compensated \$20 for her participation in each of two interviews that lasted 20–90 minutes. Participant responses from the first interview, including open-ended questions about daily food and eating behaviors, life course experiences, and the social environment, were used in this analysis. With women's consent, interviews were audio-recorded. After each interview, the interviewer recorded field notes pertaining to the setting of the interview, nonverbal cues and information that was shared but not audio-recorded. In addition, observations of the broader environment were recorded. The research protocol was

approved by the Cornell University Institutional Review Board.

#### ***2.2.4 Analysis***

Data were analyzed iteratively using procedures taken from the constant comparative method.<sup>59</sup> English interviews were transcribed verbatim, verified, and coded using Atlas TI (version 7.0). Spanish interviews were transcribed verbatim and verified by native Spanish speakers. Spanish transcripts were then translated into English and coded using Atlas TI. The data analysis included: (a) open coding of the first 10 interviews and identification of emergent themes, (b) creation of a code list based on emergent themes, (c) iterative review and revision of the code list as needed, (d) identification of daily food and eating routine as an emergent theme, (e) coding with consideration of daily routines, (f) creation of daily routine case studies, (g) categorization of daily routines into emergent typologies, and (h) incorporation into relevant theory and empirical research. Peer-debriefing involved reviewing preliminary findings with community nutrition educators who worked with Dominican women in NYC and other researchers with expertise in community nutrition research.

### ***2.3 Findings***

#### ***2.3.1 Participant Characteristics***

Twenty-nine women participated in this study, including six women living in SD and 23 women who grew up in the DR and were living in NYC at the time of the study (see Table 1). All of the women spoke Spanish and nine were bilingual, speaking English and Spanish. The study participants ranged in age from 28 to 58 years. Eighteen women had children under 18 years of age, nine women had adult children, and two women had no children. Nine women were stay-at-home-mothers, five worked from home, nine worked part time, and six worked full time outside the home. All women lived in low-income neighborhoods and indicated that money was

tight in their households. The women from NYC had lived in the US between three months and 25 years.

**Table 1: Demographic Characteristics of Study Participants**

	English		Time in NYC			Married		Children <18 yr		Employment		
	Yes	No	<6yr	6-10yr	>10yr	Yes	No	Yes	No	Outside	Home	No
NYC (n=23)	9	14	11	4	8	12	11	13	8	13	3	7
SD (n=6)	0	6	---	---	---	2	4	3	3	2	3	1

### 2.3.2 Daily food routines

Women in the study described food routines that included shopping, cooking meals, and eating. When the women described all of the food-related activities that occurred during a day, the emphasis of their narratives was on the main meal of the day, to which study participants also referred as “*the heavy meal*” or “*la comida*” [the meal]. Henceforth, the main or heavy meal will be referred to as *la comida*, as it was by many of the participants. Food routines varied according to food shopping routines, preparation of *la comida*, time of day that it was consumed, and who was present for *la comida*.

Participating women described daily food routines that fell into one of four typologies: (a) Daily Shopping and Cooking, (b) Dominican Style, (3) US Style and (4) Crazy. The characteristics of each food routine typology are summarized in Table 2. Over the course of the remainder of this and the other studies that comprise this dissertation, I often refer to my respondents as “women” or “the woman” without further reference to their participation in the study, but it should be understood that all the responses reported hereafter are those of the women who participated in the study and all the women mentioned were participants in the study.

**Table 2: Characteristics of Food Routines Described by Study Participants**

	Daily Shopping and Cooking	Dominican Style	US Style	Crazy
Procurement & Preparation	Daily shopping Morning cooking	Weekly Shopping Morning cooking	Weekly Shopping Evening/weekend cooking	Weekly Shopping Evening/weekend cooking
Daily meal structure	Breakfast <i>La comida</i> Something small	Breakfast <i>La comida</i> Something small	Breakfast Lunch <i>La comida</i>	Something small Something small <i>La comida</i> OR nothing
Time of <i>La comida</i>	Noon	2:30-5:00 pm	4:30-9:30	Erratic
Employment	Work at home/ Part time	Work at home/ Part time	Full time	Part time/ Unemployed
Commensality	Eat as a family	Eat as a family	Eat as family Eat alone	Eat alone

### 2.3.3 The Daily Shopping and Cooking Routine “*That’s done daily because you eat daily*”-

All of the participants living in SD and none of the participants in NYC described the Daily Shopping and Cooking Routine. Women describing this routine reported eating breakfast, such as *avena* [oatmeal] or *pancake*, at home, then going to the *colmado* [corner store] for food, preparing *la comida*, consuming *la comida* with the family, and eating something small, such as *huevos* [eggs] or *platanos*, at night. For these women, the daily routine centered on shopping, cooking, and eating *la comida*. Daily shopping was necessary because “*se fue la luz*” [the light goes], meaning that there were frequent electricity blackouts and unreliable refrigeration. When asked about her shopping routine Maria, a single mother of three who worked part time, replied, “*That’s done daily because you eat daily.*” Maria went on to explain that daily shopping was also necessary due to financial constraints. She said, “*There are moments to eat well and then there are moments to cook what there is.*” This was echoed by Sulina who said, “*There are times that I want to cook something more but there isn’t enough money.*” Therefore, women would purchase only what they needed in order to prepare *la comida*, which often included half of an

onion or a quarter of a tomato if that was all the money that they had.

Due to the importance of *la comida*, women arranged their schedules so that they would be at home to cook for their families. Maria stayed home in the morning and left for the late shift at her job as an administrative assistant after eating *la comida* at home. After work, she went to school, where she was studying to be a medical technician. When she returned home at 11 p.m. she did her homework. While Maria admitted that it was more difficult to work the late shift and attend school at night than to work and attend school during the day, she chose to do this so that she could cook for her children. Maria's demanding family, work, and school routine was not typical, but it illustrated the importance of being home to cook for one's family and the ways in which the women structured their lives to do so. In the event that a woman was not able to cook, another female family member would "*cover*" for her. This allowed families to always have home-cooked meals.

For *la comida*, women reported preparing varying rice and bean combinations such as "*arroz con gandules*," "*arroz con coditos*, *habichuelas*," or "*arroz con frijoles*," accompanied by fish, meat or chicken, and salad. *La comida* was almost always eaten at noon. Since the day centered on the mid-day meal, family members returned home from work and school in order to enjoy a relaxing meal time together. Although family and friends ate at the same time, they did not necessarily eat together at the table because the homes were tiny and people often ate in separate rooms. Nevertheless, it was thought to be important for a family to come home to eat. After *la comida*, everyone returned to their afternoon activities. Later in the day, food routines were less structured and women reported eating something small, such as "*rice and eggs*, *plantains*, *eggplants*, or *whatever there is*."

#### **2.3.4 Dominican Style “*We ate breakfast and we ate the meal and we also nibbled for dinner, like Dominican style*”-**

Participants describing the Dominican Style routine had lived in NYC between 6 months and 19 years. Eight of the ten women had lived in NYC for more than 10 years. These women reported varying breakfast routines (pancakes or times toast), followed by consuming *la comida* in the afternoon (before 5 p.m.) and nibbling on something such as *platanos* or toast at night. Daily food shopping was neither necessary nor convenient for women living in NYC. Instead, women shopped one or two times per week and cooked or nibbled on what they had in the house. For 9 of the 14 women following this routine, cooking was their primary responsibility and they were able to arrange their schedules so that they could maintain the routine of cooking in the morning. Juana, a married woman with adult children, reported: “*Always I am accustomed to cooking early, I have maintained, in the house I have maintained the custom of cooking always the Dominican Schedule.*” Juana worked part time providing after-school care, and had her mornings free to cook. However, she, like other participants who cooked in the morning, found it difficult to maintain the Dominican schedule of eating *la comida* at noon.

For most of the women following this routine, *la comida* was eaten between 2:30 and 3:00 in the afternoon. Lorena, who had lived in NYC for 19 years, had eaten at night when she first arrived in NYC, but working from home gave her the flexibility to eat in the afternoon. Lorena ate with her husband, mother, and two children every day.

*That’s when we have the rice and beans, the meat, the salad, the heavy, heavy stuff. We have it at the middle of the day. We don’t have it at the end of the night. And most of the time, it’s around that [2:30], rice and beans with meat or something like that. Dominican food. At 2-2:30. 2:45.*

Like many women who participated in the study, Lorena indicated that her family’s meal was scheduled around the school dismissal time and other family members’ work schedules because



they wanted to eat as a family. Giselle, who was married with young children and worked part time reported:

*The strong meal we are accustomed to eating at more or less three in the afternoon because the little girl [my daughter] arrives home from school at this hour and he [my husband] works and also he arrives at this hour; sometimes it varies, the hour can be four or five, but almost always it's three.*

As indicated by Giselle, meal time was flexible and might be postponed to as late as 5 p.m. due to the family work schedule. However, it remained the second and main meal of the day. Alma, a college student who lived with her mother and young son, ate breakfast in the morning and then waited until her mother returned from work at 5 p.m. to eat the next meal. When asked about eating lunch, she replied: *"I know later on I'm going to eat something later. And that's why I don't do that [not eat a meal in the afternoon]. . . . [5 p.m.] when she [my mother] comes home so then we eat together. So, I usually leave [eating] for later."* For Alma and most women following this routine, the emphasis was on eating the meal at home with their families as they had done in the DR. With the exception of four, all of the women who ate at home indicated that they ate at the table with families.

Four women following this routine described eating *la comida* at work because they had long or unpredictable work hours and were not home during their desired meal time. All of the women who ate at work had the desired conditions for *la comida* at their work place, including enough time to take a break, people at work to eat with, and flexible jobs that allowed them to have the appropriate food at work. Three participants brought food to work and the other participant was a home health aide who cooked at work. These women chose to eat at work because it was too late in the day to eat "*heavy food*" when they returned home. The aversion to eating a larger meal at night was shared by other women. The resulting routine was most clearly summarized by Indira, a stay-at-home mother of two young children, who said: *"We ate*

*breakfast and we ate la comida and we also nibbled for dinner, like Dominican style”*

### **2.3.5 US Style: “Over here they eat the big meal at night time”-**

Women who described the US Style routine had lived in NYC between 2 and 25 years. Four of the five women had lived in NYC for more than ten years. These women reported eating breakfast, such as cereal or toast; lunch, such as a sandwich or rice and beans and meat, in the middle of the day; and *la comida*, such as rice, beans and meat, in the evening. Daily shopping was not necessary, although many women reported that they often picked up food on the way home from work.

After working and commuting, women in the study reported that they often had little time or energy to cook at the end of the day. Women said they would “*prepare themselves ahead of time*” by preparing enough rice for several meals or cooking beans and freezing them. Although most women indicated that eating leftovers was not customary, Ramona reported that she “*taught*” her husband how to eat leftovers because she was not able to cook a full meal every day. Alternatively, women made dishes that were less time consuming. Several women reported preparing pasta dishes on a regular basis. Women’s narratives suggested that pasta dishes were less time consuming to prepare than Dominican dishes.

Women also managed time constraints by buying “*food they sell in the street.*” Esmeralda, a divorced woman living with her adult daughter, worked eight hours as a teacher and commuted one hour each way between home and work. When contrasting her meal patterns in NYC and the DR she replied: “*Because, uh, we eat more, um junk food here. Because we don’t have time to, sometimes, to, to cook because we came late to the house. So, we buy a hamburger, um, chicken, fried chicken. This is the different.*” While Esmeralda ate *la comida* at night, she still preferred to eat before 6 p.m. and, therefore, did not feel that she always had time

to cook when returning home at 4 p.m. Instead, she bought food, which was a practice reported by other women who did not have time to cook.

Xiomara, who had been in NYC for two years, was the only woman following the US Style who expressed dissatisfaction with eating at night. The other women had adapted because shifting the time of *la comida* to the evening allowed them to maintain the tradition of eating as a family, an important component of their food routines.

### **2.3.6 Crazy routine: “My life for eat is very crazy”-**

Women describing the Crazy routine had lived in NYC between 5 and 22 years. These women reported the most highly disrupted eating patterns. They reported having toast or coffee in the morning, fruit, yogurt, or *plantanos* in the afternoon, and *platanos* or rice and beans and meat in the evening. Women following this routine also reported skipping meals. These participants reported shopping weekly and picking up take-out food occasionally when they were out.

Cooking routines were disrupted by the women’s work schedules as well as the work and school schedules of family members. Marisol, who lived with her husband and young son, worked as a custodian on weekends and was at home on weekdays. Her husband did not have “a regular schedule” and often returned home after 5 p.m. Marisol did not want to wait for her husband to eat because she did not want to eat after 5 p.m. Since her young son often refused to eat “real food,” she was not cooking for others and chose not to cook when she was eating alone.

*It’s like a habit because always, you know, I’m with somebody because I know that if I live by myself all the time and I’m used to it, to make the right food for me and I enjoy eating by myself, it’s totally different. A different story. But I’m used to it to eat always with somebody else. And it’s like why would I make this by myself again? Its like, you know, you understand what I’m saying.*

Instead of cooking for herself, she often made non-traditional food, such as chicken nuggets, for her son and “*ate off the baby’s plate.*” Such a lack of desire to cook for oneself was expressed by other women. Bianca was an unemployed woman who lived alone and also felt that it was not worthwhile to cook if she was the only one who was eating the food. Therefore, women following this routine often skipped meals or ate take-out.

In addition to changing cooking routines, work-related time constraints also led to changes in when women ate. Luz, a single mother who lived with her two children, indicated that she ate “*like a crazy. [Without] any hours exactly for eat.*” Three days per week she worked nine-hour days as a health aide and commuted over an hour each way. She often did not feel comfortable enough or have time to eat at work. However, after returning home from work, she had to pick up her daughter from a sitter and help her get ready for bed and did not always have time to eat after work. Luz suggested that she had very little social support, which contributed to her crazy routine. While Luz had family in NYC, she said, “*They have their own life I don’t want to—you know. In this country you cannot bother people too much. You have to deal with it yourself.*” Her work schedule and lack of help was related to her self-defined crazy eating routine, which included skipping meals and snacking. A similar eating routine was also described by others. In the absence of a stable family work schedule, some women in the study struggled to create cooking and eating routines.

### ***2.3.7 Women’s thoughts on the relationship between disruptions in food routines and weight gain***

Many of the participants living in NYC volunteered that they had gained weight after immigrating. None of the women in SD mentioned weight gain, outside of weight gain during pregnancy. Women in NYC cited various reasons for weight gain, including eating times, the

amount of food they ate, and the kind of food they ate.

Many women, contrasting food routines between SD and NYC, attributed weight gain to changes in their eating schedules, specifically eating *la comida* later in the day, and the addition of snacks. While reflecting on why she gained weight in NYC, Bianca said, “*We eat fried stuff [in DR]; again, it all depends when you do it. Because, because mid-day the body will process that fat better.*” This was echoed by Ramona, a divorced woman living with her adult son. After thirty-seven years in the US, Ramona had adjusted. However, she felt that this change was to blame for weight gain after immigrating.

*And maybe also, in here you used to eat the big meal at night and then sit down and watch TV and you know, not exercising. And whatever you had leftover you take to work the next day and have lunch. . . . That was, um, um a very big adjustment. That was, um because we had to learn to eat something heated up in the middle of the day. That was not easy. We were not used to it so we, we had to adjust to it. And maybe that’s the reason that we gained that much weight. Because like we missed the way that we eat ate the middle of the day.*

Ramona’s narrative illustrates that she felt that time of day for eating *la comida* is important not only because it affects how food is processed by the body, but also because she often ate leftovers from *la comida*, leading to two large meals. Therefore there was an increase in the amount of food eaten.

Many women attributed weight gain in NYC to increased food consumption related to snacking between meals. Reina, a mother of two young children, indicated that she did not have to eat at set meal times in NYC. “*No, it’s not the same because over there I used to eat three times a day and that’s it. . . . I changed a lot because I ate differently. I got fat because of the change. It changes because you don’t have the same time anymore or the same schedule.*”

Marisol, a married mother of one, indicated that she ate more snacks in NYC, which were usually unhealthy snack foods because “*We have all them [snacks] there and we eat it because*

*it's there.*” Therefore, snacking changed when and how much women ate as well as what they ate.

Eating snacks that were bought for children changed the type of food women ate, as did eating “*food from outside.*” While Dominican food was the most common take-out food eaten, some women reported buying Chinese food, pizza, or other fast food as well. Women reported that they bought food instead of cooking because there is a “*different rhythm of life*” in NYC, meaning that participants spent more time outside of the house and had less time to cook. Work was the most common reason cited for lack of time. Xiomara, a single woman living with her adult daughter, often bought food from the street. She followed the US Style routine because she worked from 2:00 p.m. to 8:00 p.m., bought take-out food on the way home, and ate *la comida* when she returned home.

*It is the food that they sell in the street almost always. Eh, the, the week, honestly, I make almost nothing on the stove. I don't make it. . . . No, because the life here is different. The time, I don't know what happens. The difference is that one arrives in the night and like here the schedules are very . . . very random . . . and one has the necessity to work in what appears. Eh . . . when one arrives, one doesn't have the desire to cook really.”*

Like Xiomara, most women in the study had no assistance with their cooking responsibilities. Therefore, when they did not have time to cook they relied on take-out. Time constraints associated with work were not the only reason for eating food from outside. Several women reported that they had little desire to cook when they were eating alone due to the schedule of other family members. Marisol often did not cook because her husband was not home.

*When we're together and I make the food in the house for us. Like I know he [husband] have to eat the right way. Like eat the salad and everything good. I try to make it for us so eat together and it's a pleasure for me to make it. But when I'm by myself it's totally different. I don't want to make everything, you know, for me.*

Rather than cooking for themselves, women who were not cooking for others would eat food

they had in the house or buy take-out food.

The “*rhythm of life*” in NYC led to changes in food routines. As a result, women in NYC changed when they ate, how much they ate, and what they ate and they attributed weight gain to these changes.

## **2.4 Discussion**

An emergent finding of this study was the construction, disruption, and reconstruction of food routines in response to the economic, social, and physical environments of SD and NYC. Food routines, as described by participants, were value-laden food behaviors that occurred within a certain sequence, which is consistent with prior research on routines.<sup>60-63</sup> Food routines served as heuristic tools that allowed women to act without deliberating over every decision. Variations on this concept have been described by other researchers as food scripts, habitus, or food choices.<sup>64</sup> However, the concept of food routines is instructive for understanding the experience of these Dominican women because event sequencing, a characteristic of routines, was found to be important to their eating practices. Women in SD described food routines in which shopping, cooking, and eating were tightly linked and culminated with the main meal at home with the family. Based on the narratives of women in NYC, this routine was considered ideal. Although it was well suited for the economic, social, and physical environments in the DR, it was not well suited for the NYC environments. Therefore, women in NYC had to reconstruct new food routines based on their new environments. Women in this study reported a range of food routines that were best suited for their own economic, social, and physical environments.

This study’s findings of disrupted and reconstructed food routines contribute to the dietary acculturation literature. The food routines framework differs from acculturation theory as used in health research because it uses a more comprehensive definition of environment and food

behaviors. While acculturation is not clearly defined in the dietary acculturation literature, it is assumed that changes in the food environment lead to changes in the types of food eaten.<sup>51,65</sup> However, this study found that the food environment was not the only important environmental influence and that multiple aspects of the economic, physical, and social environments influenced food behaviors. In addition, the food routines perspective illustrates the multidimensional nature of food behavior by including shopping, cooking, and the multidimensional aspects of eating events, rather than focusing solely on the type of food eaten.

This study found that the various dimensions of food routines changed at varying rates. While most women indicated that they consumed a traditional Dominican diet, changes in other dimensions of food routines were related to changes in when and how much they ate as well as the incorporation of new foods into their diets, and women attributed weight gain in the US to these changes. Therefore, the focus solely on the type of food eaten may miss important changes in food behaviors after immigration. By using a constructivist approach, exploring reality as defined by the experience of Dominican-born women in SD and NYC, this study showed that environment and food behaviors are multi-faceted and that changes associated with immigration are extremely complex.

#### ***2.4.1 The Construction of Food Routines***

Women's reported food routines represented the tension between culturally bound food values and environmental constraints and facilitators.<sup>63,66</sup> The women in the study described an ideal routine that was established based on childhood experiences in the DR and served as a reference point for current food routines. Women in SD maintained the ideal food routines while most women in NYC were able to reconstruct new food routines by balancing values with environmental constraints. However, a few women in NYC did not reconstruct stable food



routines. These women described “crazy” eating routines, lacking cues to engage in shopping, cooking, or eating, resulting in irregular eating times, amounts of food eaten, and types of food eaten. These cases illustrate the importance of routines and the potential consequences when the conflict between food values and environmental influences is not resolved. Exploration of the economic, social, and physical environments illustrates how women’s food routines emerge from the tension between food values and environment.

#### ***2.4.2 The Economic Environment***

The economic environment shaped the food routines of study participants by influencing when the women shopped, cooked, and ate as well as how much and the types of food they ate. Drawing on the social–ecological model, this study concluded that the economic environment functions at the macro-, exo- and micro-levels.<sup>45</sup> In this study, at the macro-level, the economic environment influenced the availability of employment as well as the affordability of food. At the exo-level, the economic environment influenced the work schedules of family members. At the micro-level, the economic environment influenced the work schedules as well as financial resources of individual women. The economic environment that influenced a participant changed in response to life course events, which in turn influenced food routines, a concept borrowed from the life course perspective. For example, the birth of a child was a life course event that was related to leaving the work force for some women. Therefore, the economic environment functioned on multiple levels that interacted with each other as well as the social and physical environments and changed in response to life course events.

The ideal food routine was constructed based on the economic environment in the DR. The economic environment in the DR restricted food purchases and necessitated daily shopping. Women did not work or worked in the informal work sector due to limited employment

opportunities, and flexible work schedules allowed families to be home to eat at noon. In NYC, this food routine was disrupted in response to access to more affordable food, women entering the work force, and more rigid work schedules. In response to the new economic environment in NYC, women's routines included less frequent shopping, less frequent cooking, delayed consumption of meals, the incorporation of snacks into the diet, increased portion sizes, and the incorporation of new foods into the diet.

More affordable food provided the opportunity to consume larger amounts and a greater variety of food. It has been hypothesized that improved food affordability is related to poor health outcomes via increased consumption of unhealthy Western foods.<sup>51,65</sup> However, participants living in NYC reported a preference for their homemade traditional Dominican food and indicated that more affordable food in NYC translated into eating larger portions of the traditional foods. Although it is impossible to confirm such reports of increased portion sizes, since dietary intake was not quantified in this study, observations in SD revealed that consumption of meats, vegetables, and snack foods was severely restricted in SD, supporting women's reports. The only quantitative study examining dietary behavior in home and host countries revealed that Mexicans living in the US consumed more calories, coming from both unhealthy and healthy foods, compared with Mexicans in Mexico.<sup>36</sup> The increased consumption of fruits, vegetables, and low-fat meats among Mexicans living in the US is consistent with findings from the current study. While quantitative research on Mexican food habits found that the consumption of corn tortillas, a Mexican staple food, dropped significantly in the US, based on reports of participants in the current study and previous research on Mexican women, rice, the staple starch in Dominican cuisine, is much easier to prepare and consumption would not be expected to decrease.<sup>67</sup> In fact, women in NYC indicated that they prepared extra rice, eating

larger portions at *la comida* and storing some for later meals. Therefore, while dietary intake was not quantified, the limited body of research that includes home and host country supports participants' reports of increased portion sizes of traditional foods.

This is not to say that women did not consume unhealthy “American” food. Women reported purchasing snack foods for their children and eating them between meals. However, the consumption of these foods was not necessarily planned or desired, as eating larger portions of traditional food was. These findings highlight the importance of accounting for portion sizes in assessing dietary acculturation as well as filling the gap in the literature regarding the comparison of home and host-country diets. While the greater affordability of food in NYC provided some benefits, women in the study suggested that it contributed to weight gain via increasing portion sizes and the incorporation of new foods into their diets.

The work schedule was cited as a barrier to cooking and for some women resulted in consuming take-out food, which is consistent with previous research on Latino immigrants.<sup>50,58,67-69</sup> Based on the social–ecological model, this would mean that changes in the micro-level of the economic environment were related to changes in cooking routines.<sup>45</sup> As in previous research, women in this study cited lack of time and fatigue as deterrents to cooking after returning home from work. Buying take-out was viewed as a last resort and was not desirable. This differs from findings from research on Mexican immigrants that found that women viewed the loss of cooking routines in the US as inevitable, an part of becoming an American<sup>58</sup>. This suggests that women in this study had maintained their values while the Mexican women in the other had not. This highlights the importance of considering both values and behaviors when studying food habits. While women cited lack of time or fatigue, drawing on concepts from the routines literature, it is possible that loss of cooking behavior was due to the

disruption of event sequencing.<sup>63</sup>

Behaviors embedded in a routine are automatic, while behaviors outside of a routine require more decision making. In the ideal routine, cooking was done at the beginning of the day. Some women in NYC maintained the routine of cooking early even when eating was delayed, suggesting that this behavior was automatic and habitual. While most working women established new food routines, some did not reconstruct stable cooking routines and decided whether to cook or buy food at the end of each day. Making this decision on a daily basis required more thinking and may contribute to the consumption of take-out food. Therefore, disruption of routines may lead to additional decision making and contribute to decreased cooking frequency.

Work schedules were also related to changes in the times of day women ate, specifically eating *la comida* later in the day than they had in the DR. The timing of *la comida* was influenced by micro- and exo-level factors in the economic environment, specifically the family's work and school schedules. To the best of the principle researcher's knowledge, this is the first study to identify changes in eating times in response to work schedules. While changing the time at which a meal is eaten may seem a minor change, women in the study indicated that this was one of the most meaningful differences between DR and NYC eating routines. In addition, routines theory implies that such a disruption will have implications for dietary intake. In SD, family members were home to eat at noon, meaning there were two cues to eating *la comida*: the time of day and the presence of the family at home. In SD, these cues occurred at the same time every day, but in NYC they did not. Reconstructed routines were adopted by compromising on eating time (delaying *la comida* until 3 p.m. when the family was home), disregarding eating time (eating *la comida* at night when the family was home), responding to

both time and commensality (eating two large meals), or inaction in response to a lack of synchronized cues (skipping *la comida*). While all women experienced changes in when they ate *la comida*, the reconstructed food routine varied according to the family work schedule.

#### **2.4.3 The social environment**

The social environment, specifically commensality, roles/responsibilities, and social support, shaped food routines by influencing if and when women cooked and ate *la comida*. The social environment functioned at multiple levels, which is consistent with concepts from the social–ecological model. At the macro-level, the social environment encompassed a national food culture that influenced the daily structure of food routines, specifically when the main meal was eaten and the time available for that meal. At the micro-level, the social environment included women’s roles and responsibilities and social support as defined by the women. Throughout the life course, women’s social environments changed in response to immigration, marriage, divorce, motherhood, and entering the workforce. Therefore, the social environment functioned at multiple levels, changing in response to life course events and interacting with the economic and physical environments.

Commensality, which is defined as the meeting of people at a specific time and place with the purpose of eating or drinking together,<sup>70</sup> was an integral, if not necessary, component of *la comida* that influenced whether women cooked and when they ate. The influence of commensality on Latin America women is largely unexplored. This study found that commensality was an important influence on structuring food routines, specifically on cooking and eating times. The importance of commensality on cooking routines is supported by previous research on Latino women that has identified the cultural significance of providing food for families and by research identifying the nutritional benefits of family meals, specifically

increased consumption of fruits and vegetables.<sup>69,71,72</sup> However, the importance of commensality in cooking routines differs from findings in some previous research addressing family meals.<sup>73</sup> Researchers in Britain found that families that lack “synchronicity” due to conflicting work schedules adapted, with the mother always cooking, even if everyone ate separately. Therefore, the absence of commensality did not influence the cooking routines of these British mothers as it did for women in the current study. Synchronicity of schedules, which in this study is treated as equivalent to the availability of commensality, influenced meal time differently. While the British families ate separately, the Dominican families in this study reported delaying the main meal three to six hours and centering their reconstructed food routines on the availability of commensality. Interestingly, commensality did not mean that the family sat together at the same table. For some, families ate at the same time but in separate rooms. While women’s definition of commensality may not match the picture of family meals usually portrayed in the literature, commensality played an important role in cooking and eating routines.

Women’s roles and responsibilities influenced the type of food that was eaten. These women’s narratives indicated that cooking was one of their most important roles. This is confirmed by research on Latino women in Brooklyn that found that “mothers’ identities are deeply tied to providing for their families, and food is their focus.”<sup>72, p2184</sup> While the environment in SD and the environment of many women in NYC supported the maintenance of this role, many women experienced changing roles in NYC that interfered with this role. In NYC women reported that additional work-related roles posed a barrier to cooking, which is consistent with previous research on Latino women.<sup>74</sup>

In addition to experiencing conflicting roles, women experienced in particular the loss of cooking roles. Women indicated that if the family was not home together at a certain time,

family members fed themselves. This meant that women were no longer responsible for providing food and lost their cooking role. For these women, this resulted in the consumption of take-out food or snack food. The loss of family meals, which was previously identified as a contributor to implications beyond diet quality in Latino immigrants, has implications beyond dietary intake.<sup>50</sup> Meal time is an opportunity to enact culture, and therefore the loss of family meals may be related to the disrupted transmission of food culture to second-generation immigrants.<sup>75</sup> This may increase the second generation's susceptibility to US food culture, thereby leading to the replacement of traditional behaviors. The loss and addition of roles led to changes in cooking and eating behaviors, which are potential avenues for changes in diet and the disruption of cultural transmission.

Social support was important in determining the type of food that was eaten. While women in SD lived close to family and had strong support networks, this was not the case for most women in NYC. The women's narratives suggested that the social norms surrounding asking for help differed between NYC and the DR, which is supported by the assertion that the US is an individualistic society while Dominican culture is communal.<sup>76</sup> Since women in NYC spent all of their free time with family, they did not develop networks of friends to help in the absence of family. The lack of instrumental support (i.e., helping with cooking) is consistent with results of research on pregnant Mexican immigrants.<sup>77</sup> The Mexican women in the study reported a lack of instrumental support from friends and family members in maintaining healthy behaviors. In the absence of social support, women relied on take-out food and snack food. Having social support in SD allowed women to maintain routines, while the lack of social support in NYC influenced the consumption of home-cooked meals.

National food culture influenced women's food routines. In the DR, it is customary to

take a long lunch break, allowing individuals to return home from work to eat. In NYC, women indicated that they were given shorter lunch breaks that did not give them time to return home or even to eat a leisurely meal. This influenced when and potentially what they ate. Therefore, at the macro-level, the food culture influenced food routines.

#### ***2.4.4 The Physical Environment***

The physical environment, specifically food storage, the household food environment, and the neighborhood food environment led to changes in when and what women ate. In the context of nutrition research, the physical environment is usually conceptualized in part as a function of the types of food establishments that are available. While this was one component of the macro-level of the physical environment, the availability of electricity was a second important macro-level environmental influence. At the meso-level, women were influenced by food that was brought into the home by other family members or for the purpose of feeding others. At the micro-level, the household food environment influenced women's food and eating routines. Drawing on the life course perspective, this would mean that the multiple levels of the food environment changed in response to life course events. Drawing on the social–ecological model, it would mean that the various levels interacted with each other, the economic and social environments with the individual.

The macro-level of the physical environment supported shopping and cooking daily. In SD, women lacked reliable refrigeration, which meant that few foods could be kept at home. In addition, the *colmados* where women shopped had limited supplies of foods with little variety. In NYC, on the other hand, women could store food in the home and enjoyed a wider selection of foods, including prepared and convenience foods. Therefore, eating did not require daily shopping and cooking as it did in SD. The importance of electricity and refrigeration is largely



unexplored in the dietary acculturation literature, which is likely due to the absence of data from home countries. However, by unlinking shopping, cooking, and eating, refrigeration in NYC allowed women to eat whenever they wanted, consume larger quantities, and consume perishable goods that could not be stored in SD. In addition, the macro-level of the environment directly influenced the micro-level of the environment, the household food environment. That is, electricity and food availability both directly and indirectly influenced food routines.

The household food environment influenced women's immediate access to food and therefore influenced when, how much, and what women ate. The influence of the household food environment was illustrated by research findings that changes in the household food environment were related to snacking and eating "whatever".<sup>78</sup> Incorporating concepts from the routines literature, we can say that having food in the home serves as a cue to eat that food. Women in NYC may have been more susceptible to such cues in the absence of traditional cues. These women observed that the incorporation of snacks meant that they were eating more frequently and eating an increased quantity of food. Therefore, changes in the household food environment were related to changes in when, how much, and what women ate.

The neighborhood food environment influenced the type of food that was available to women and therefore influenced what they ate. In NYC neighborhood food environments provided multiple opportunities to eat, whereas the food environment in SD did not (paper 2). The relatively greater availability of restaurants and food stores in the US compared with food availability in home countries is consistent with results from previous research according to which increased access to restaurants leads to increased consumption of food from outside and weight gain in immigrants.<sup>69,74</sup> However, all women indicated that they preferred their homemade food and most women in NYC rarely bought take-out. These findings suggest that

first-generation immigrants are less susceptible to the neighborhood food environment, which is supported by previous research.<sup>27</sup> However, women portrayed the neighborhood food environment as an influence on what they ate.

While there is a complex connection between the economic, physical, and social environments, a simplified description would note that in NYC there was more money, less time to cook, and less time with family compared with what was reported in SD. As a result, in NYC shopping was done less frequently, food was easily accessible at home, commensality was delayed or unavailable, cooking was more difficult and often unnecessary, heavy food was eaten later in the day, and snacking was incorporated into food routines in NYC. Women in NYC indicated that these differences were responsible for weight gain.

#### ***2.4.5 Dietary Acculturation***

The food routines framework adds to the traditional acculturation model used in health research by providing a different theoretical perspective. Acculturation is traditionally conceptualized in the health literature as a unidimensional, unidirectional, zero-sum process.<sup>55</sup> However, the food routines framework approaches dietary acculturation in a manner similar to that of cognitive and evolutionary anthropology theory.<sup>40,55,79</sup> “Cultural models” that provide the guidelines for behavior represent cultural values surrounding specific “domains” or dimensions.<sup>55</sup> While immigrants may learn new behaviors, behavioral changes may represent not changes in values but rather environmental influences.<sup>41,55</sup> The adoption of new behavior in response to the environment provides the immigrant with additional options, but does not result in the loss of traditional behavior. This is consistent with the concept of biculturalism or situational ethnicity,<sup>38</sup> but it differs from the term “biculturalism” because the food routines framework accounts for the various dimensions of behavior, which are rarely acknowledged in

health research. Even when acculturation is measured in multiple dimensions, such as language and social networks, the scores are summed, disregarding the unique contribution of each measure.<sup>40,41</sup> Considering the multiple dimensions of culture, immigrants will not neatly fit into categories presented by previous acculturation theorists, such as Keefe and Padilla (1987) and Sam and Berry (2006).<sup>38,39</sup> Instead, there is a continuum with a range of dimensions along that continuum on which immigrants' behaviors fall.

According to the food routines framework, dietary acculturation is multidimensional because it acknowledges that culture and the process of acculturation include both observable behaviors and unobservable values.<sup>42,66</sup> While women were not asked directly about values, information pertaining to values emerged from their narratives. The women's reports revealed that behaviors were often not aligned with values, illustrating that values and behaviors do not change in unison. This suggests that acculturation should not be ascribed to individuals, but rather is a characteristic of behavior. Separating the individual from the behavior helps explain the additive and bidirectional nature of acculturation. The absence of values in acculturation may be related to the difficulty that is associated with measuring values. However, creating behavior-specific values is a more manageable way of assessing values and provides more narrowly targeted information.<sup>41</sup> The caveat is that these values cannot be applied to other behaviors. However, in order to truly understand dietary acculturation, researchers must incorporate values and behaviors.

The food routines framework accounts for the multidimensional aspect of behavior change. This differs from the uni-dimensional conceptualization of acculturation that is used in the health literature. The food routines framework includes the multiple dimensions of steps leading up to eating, specifically shopping and cooking (see paper 2). This study found that

changes in shopping and cooking routines played a large role in the dietary acculturation process. The food routines framework includes multiple linked dimensions of eating: food and drink, time, location, activities, social setting, mental process (emotion), physical condition (fatigue or hunger) and reoccurrence.<sup>61</sup> This was useful in identifying changes outside of modest differences in the type of food and drink. Women's narratives revealed that a change in one dimension of eating events did not necessitate a change in all dimensions and that behavior fluctuated over time. This highlights the fact that multiple behaviors do not change in unison and that change occurs in both directions. Accounting for the multiple dimensions of food behavior distinguishes the food routines framework from the acculturation model currently used in health research.

Accounting for the other dimensions of food and eating behaviors, the food routines framework does not rely on the dichotomy between the healthy traditional diet and the unhealthy Western diet in order to explain negative outcomes related to acculturation. This requires a paradigm shift in which "traditional" diets are not tied to specific health qualities or specific foods. Latino foods, which are characterized as healthy, often include frying and do not necessarily include a large quantity of fruits and vegetables.<sup>36,57</sup> US foods, which are characterized as unhealthy, also include fruits and vegetables and low-fat meats that are more readily available in the US.<sup>36</sup> These facts refute the assumption that the only option for immigrants is to move from a healthy diet to an unhealthy diet. This is further complicated by the transnational nature of food and the fact that immigrants may be eating specific foods in their home countries (paper 3).<sup>51</sup> In addition, it appears that non-traditional foods have been incorporated into traditional dishes. Several women reported eating pasta dishes. While pasta may be considered an Italian food, previous research on Dominican women in NYC found that they also incorporated pasta dishes, such as lasagna, in place of meat in *la bandera* (the flag—

represented by rice, beans, and meat).<sup>80</sup> The symbolic nature of the food takes precedence over nutritional content when constructing *la bandera* and illustrates how non-traditional eating behaviors may not reflect acculturation.<sup>80</sup> Therefore, foods do not fit neatly into categories as they are said to do in dietary acculturation. The food routines framework offers alternative to that hypothesis.

#### ***2.4.6 Weight Gain and New Routines***

Comparing the food routines of women in SD with women in NYC suggested that changes in the economic, social, and physical environments were related to behavioral and biological changes that promoted weight gain. Women in NYC indicated that they had experienced weight gain associated with when, how much, and what they ate, while women in SD did not mention weight at all. Despite the fact that weight was not directly introduced by the interviewer, women in NYC, regardless of time in country or language, brought up the issue of weight gain in response to these behavioral changes. Most women cited when they ate, specifically delayed meals or snacks, as the reason for weight gain in NYC. While there is not sufficient evidence to support the assertion that changes in meal time led to weight gain if calorie intake remained the same, the introduction of snacks and possible increases in calorie intake is an avenue for weight gain.<sup>9</sup>

Eating later in the day and snacking potentially led to changes in how much women ate, increasing calorie consumption and leading to weight gain. In addition, calorie consumption may have also changed in response to increased portion sizes. Women's reports and observations revealed that portion sizes were larger in NYC due to the relatively lower cost of food there, which is supported by research on other immigrant populations.<sup>69</sup> While the acculturation literature hypothesizes that changes in the type of food are responsible for weight gain, this study

did not find important differences in the type of food eaten based on traditional measures of acculturation. Instead, take-out or snack food was consumed in response to structural changes, such as altered work schedules. Women in the study indicated that structural changes changed eating events from relaxing events that occurred at the desired time into more stressful and rushed events occurring at less desirable times. Research indicates that stress is related to metabolic changes that promote weight gain; therefore, it is possible that increased stress was related to weight gain. Looking at weight gain from an emic perspective, this study found that women attributed weight gain to changes in food routines related to work and the pace of life.

#### ***2.4.7 Strengths and Limitations***

This qualitative study that engaged a small group of Dominican women revealed construction, disruption, and reconstruction of food routines. Grounding the findings in the women's experiences and their words introduced new findings that may not have been found otherwise. This study utilized Dominican natives for interviews with Spanish-speaking women, which was important because of regional variability in Spanish. The inclusion of women in SD was also a strength because it provided additional insights into likely pre-migration behavior and a comparison group. Including only Dominican women made it possible to assess behavior in the home country and decreased the variability that is typically associated with heterogeneity among the Latino population.

The truth value, applicability, consistency and neutrality of the qualitative data were evaluated using Lincoln and Guba's (1985) Assessment of Trustworthiness.<sup>81</sup> However, women were recruited from ethnic enclaves that provided the resources necessary to maintain traditional behavior, such as language and traditional foods. Therefore, these findings may not be applicable to immigrants living in more fully integrated neighborhoods. In addition, this was a cross-

sectional study and cannot confirm changes described by women.

#### **2.4.8 Conclusion**

This study contributes to the dietary acculturation literature by providing an in-depth understanding of the relationship between structural and cultural factors as it relates to food and eating in an immigrant population. The alignment of values with behaviors, such as eating *la comida* at night, were representative of acculturated behavior in response to structural factors, specifically work and school schedules. This suggests that structural factors mediate or moderate the relationship between culture and behavior. In order to account for structural factors, acculturation research should include measures of work hours, break times at work, work hours stability, family members' work schedules, commute times, and time at home with the family. In addition, cultural measures specific to food and eating, such as desired meal times and social components of meals, would provide useful insight. Longitudinal studies would be the best method for understanding how the individual's interaction with structure influences behavior. These findings change the conversation about dietary acculturation and make the case that more attention should be given to structural factors.<sup>40</sup>

This study also contributes to the dietary acculturation literature by highlighting the multidimensional nature of dietary acculturation. While dietary acculturation research has traditionally focused on dietary intake, there is a movement towards including food preparation in research, specifically to compare homemade with restaurant food.<sup>2,74</sup> This study builds on previous findings by introducing the importance of food procurement and the multiple dimensions of eating events. The shopping, cooking, and multiple dimensions of eating can easily be incorporated into both qualitative and quantitative research. Given that women identified multidimensional changes in food as a contributor to weight gain, these variables may

provide important details related to weight gain after immigration. By changing the way that dietary behavior is conceptualized, findings related to food routines help to describe the multidimensional nature of dietary acculturation and weight gain.

The study findings have implications for health professionals working with immigrant populations. While there is an effort within the medical community to provide culturally appropriate health care, the definition of “culturally appropriate” is not clear. The focus of culturally appropriate interventions has been on providing information about Latino foods, providing education in Spanish, and providing services in Latino neighborhoods.<sup>82</sup> However, this does not address all of the dimensions of food behaviors that may change in the US. Health professionals should consider time constraints and lack of social support within the context of routines and the potential impact of loss of cues on cooking and eating. Rather than focusing narrowly on the type of foods eaten, health professionals should address meal timing, portion sizes, snacking, and mindless eating. By addressing these issues, which were identified as contributors to weight gain by the women in this study, health professionals may be able to target food behaviors and provide more culturally appropriate care for Latino immigrants.

It is anticipated that Dominican-born women’s struggle to reconstruct food routines in NYC is not unique to this population. All people who emigrate from developing to developed countries are likely to experience similar struggles, which may help explain poor nutrition outcomes associated with acculturation with other ethnic groups in the US as well as those in Europe.<sup>83</sup> Additional research, utilizing the food routines perspective, is recommended to provide additional insight into this process.



## CHAPTER 3

### RECONCEPTUALIZING THE FOOD ENVIRONMENT: THE USE OF TIME AND SPACE IN DOMINICAN WOMEN'S FOOD ACTIVITY FOOTPRINTS

#### *3.1 Introduction*

Reduced availability of healthy foods, such as fruits and vegetables, and increased availability of less healthy foods has been reported in low-income, minority, urban neighborhoods.<sup>12,18,84-86</sup> It is hypothesized that decreased availability of healthy food translates into poor diet quality and therefore contributes to geographically based health disparities and increased risk of nutrition-related diseases among low-income, minority populations.<sup>12,84,87</sup> Findings that the residential neighborhood food environment is associated with diet quality supports this hypothesis.<sup>21,22</sup> However, more recent research has not consistently found an association between residential neighborhood food environment and diet.<sup>23-26,88</sup> It has been proposed that the relationship between food environment, diet, and health has been obscured by a focus on the residential neighborhood food environment and that a reconceptualization of the food environment is needed.<sup>88</sup>

Activity space, which is defined as “the geographic area within which individuals spend time and make decisions,” may provide a better measure of the food environment than residential neighborhood.<sup>25,88,89</sup> Since individuals are not uniformly exposed to the broader food environment, understanding the relationship between the food environment and diet and health extends beyond defining the boundaries of the food environment.<sup>90</sup> Exploration of how individuals interact with the food environment may provide insight into the influence of environment on health and avenues for addressing geographically based health disparities.

Understanding the interaction of the individual with the environment is particularly

important for understanding health disparities in low-income Latino neighborhoods, where partially acculturated Latinos have better health outcomes compared with their more fully acculturated neighbors. It has been suggested that the way in which Latinos interact with the food environment may vary according to acculturation.<sup>20,27</sup> However, the explanation for this relationship is not well understood and more research is needed. Given continuing growth in the Latino population in the US, interaction between culture and environment has significant public health implications.

### ***3.1.1 Purpose***

The purpose of this research was to gain a greater understanding of how Dominican-born women living in Santo Domingo (SD), Dominican Republic (DR) and New York City (NYC) interacted with their food culture and environments. Drawing on the social–ecological model, acculturation theory, and the life course perspective, this study investigated the way in which participants in SD and NYC interacted with their food and eating environments.

## ***3.2 Methods***

### ***3.2.1 Research Setting***

This study took place in a low-income neighborhood in SD, DR and two low-income neighborhoods in NYC, specifically the Bronx and Washington Heights. The Bronx and Washington Heights are predominantly Latino neighborhoods, ranging from 50% to more than 75% Latino.<sup>91</sup> As a result, food establishments in these areas cater to the needs of Latinos by selling traditional foods and providing services in Spanish. Although there were not dramatic differences in the availability of traditional Dominican ingredients between SD and NYC, there were large differences in the environment.

In SD, the women who participated in this study lived in small one-story single-family

homes in a residential neighborhood. This neighborhood experienced daily electricity blackouts and some homes had no running water. The food establishments located in this residential neighborhood included *colmados* (small corner stores), *carnecias* (butchers), and food carts, but not supermarkets or restaurants. The *colmados*, which were located on almost every corner, were very small and had a limited amount of space in which to store food, especially perishables. Reliant on daily deliveries, *colmados* had limited supplies of food that often ran short. The price of food was relatively high and food was measured out and sold in desired quantities rather than in packages. Rice and oil were sold by the tablespoon and tomatoes, peppers and lettuce were sold in quantities of as little as a quarter of a vegetable. While *colmados* sold meat, there were *carnecias* on some corners, which were reported to have better sanitation practices. Food carts, which had poor food safety practices and were known among study participants to cause food poisoning, traveled along the streets. Due to the poor quality of sidewalks, walking throughout the neighborhood was not convenient. With limited access to cars or public transportation, participating women reported that it was difficult to travel to the larger, less expensive, more distant supermarkets.

The study participants in NYC lived primarily in high-rise apartment buildings in the Bronx or Washington Heights. These neighborhoods contained supermarkets, bodegas, specialty stores, restaurants, bulk stores, and fruit carts. According to a NYC Department of Health and Hygiene 2010 survey, Washington Heights had on average 0.8 supermarkets per person and the Bronx had on average 0.7 supermarkets per person.<sup>92</sup> Data from the Bronx indicated that for every grocery store there were four fast food restaurants and ten bodegas. Most women reported living less than 10 blocks or .5 mile from at least one supermarket. Women defined the boundaries of accessibility as living within walking distance or within range by public

transportation (subway or bus) of multiple stores, and therefore had access to a larger geographic space than women in the DR.

### ***3.2.2 Participants and Recruitment***

Dominican-born women living in the DR, or in the Bronx or Washington Heights in NYC, were recruited. Dominican women were chosen because they are a fast-growing population in NYC and Dominicans have worse health outcomes compared with those of other Latino groups.<sup>56</sup> A focus on Dominicans also allowed the investigator to look more deeply at the interaction of culture and environment by comparing the home country and the host country, while avoiding confounding factors that would be associated with country of origin. Women were chosen because they are traditionally responsible for food procurement. The focus on the specific neighborhood provided was done in order to focus on neighborhoods with similar characteristics. Dominican women were recruited via community organizations working with Cornell Cooperative Extension and flyers in neighborhood stores in NYC. A snowball recruitment technique was also employed. NYC women of ages 20–60 years who spent their childhoods in the DR were purposively recruited to vary on time in the United States (US), English-speaking ability, employment, and marital status. Recruitment for each category ended when theoretical saturation was reached for that category.

### ***3.2.3 Data Collection***

Data were collected from July 2012–July 2013. All participating women engaged in two individual qualitative interviews conducted by a Dominican-native Spanish speaker for Spanish-speaking women and in English by the principle investigator for bilingual women. The first interview addressed food and eating behaviors, life experiences, and the social and food environments. During the first 60–90 minute interviews, women were asked to draw maps

including all of the places where they procured food and all of the places that they visited on a regular basis. “Regular basis” was defined as monthly. During the second interview, each woman completed a ‘go along’ interview in which she provided the interviewer with a guided tour of the food establishments she visited regularly. This method allowed the researcher to observe important places and how individuals interacted with their environments.<sup>93</sup> If the travel time between two stores was longer than one hour, the woman had the option of describing the area rather than bringing the interviewer to that store. Each woman was provided \$20 for her participation in each of two interviews that lasted 20–90 minutes. With participating women’s consent, interviews were audio-recorded. After each interview, the interviewer recorded field notes pertaining to the setting of the interview, nonverbal cues, and information that was shared but not audio-recorded. In addition, observations of the broader food and neighborhood environment were recorded. The research protocol was approved by the Cornell University Institutional Review Board.

### **3.2.4 Analysis**

Data were iteratively analyzed using procedures from the constant comparative method.<sup>59</sup> English interviews were transcribed verbatim, verified, and coded using Atlas TI (version 7.0). Spanish interviews were transcribed verbatim and verified by native Spanish speakers. Spanish transcripts were then translated into English and coded using Atlas TI. The data analysis included: (a) open coding of the first 10 interviews and identification of emergent themes, (b) creation of a code list based on emergent themes, (c) iterative review and revision of the code list as needed, (d) imputation and labeling of locations based on women’s hand-drawn maps and ‘go along’ interview transcripts into Google Maps™, (e) verification of imputed locations based on store websites and street-level views on Google Maps™ (google.com), (f) categorization of

locations based on proximity to anchor points defined by the woman, (g) creating case studies for each woman, including locations and quotes pertaining to each location, (h) creation of a conceptual framework depicting the creation of food activity space, and (i) peer-debriefing, which involved reviewing preliminary findings with community nutrition educators who worked with Dominican women in NYC and other researchers with expertise in community nutrition research.

### ***3.3 Findings***

#### ***3.3.1 Participant Characteristics***

Twenty-three Dominican-born women; six Spanish-speaking women in SD, nine Spanish-speaking women in NYC, and eight bilingual women in NYC participated in the study. The study participants ranged in age from 28 to 58 years. Women in NYC had been in the US between less than one year and 25 years. Twelve women had young children (<18 years), 10 women had adult children, and one woman had no children. Five women were stay-at-home mothers, four worked from home, one was unemployed, nine worked part time, and four worked full time outside the home. All women in SD and NYC lived in low-income neighborhoods and women in NYC lived in neighborhoods in which Spanish was the dominant language and there was access to Dominican foods and restaurants. All of the women described the construction of their food activity footprints, which included all of the places they visited on a regular basis for food-related activities.

#### ***3.3.2 Construction of food activity footprint***

The Dominican women who participated in this study described the construction of their food activity footprints, which included and was characterized by the use of time and space when procuring food. Differences in city characteristics influenced how frequently women bought food

and the distance they traveled. Characteristics of women's activity space (women's self-defined residential and work neighborhoods) was related to the number and type of stores at which women bought food as well as whether or not they traveled outside of their activity spaces to buy food. Individual characteristics influenced the spaces in which women spent time and the amount of time women dedicated to food shopping. Therefore, differences in city, activity space, and individual characteristics influenced differences in time and space use of women's food activity footprints.

The table below describes the way in which women use their environment in order to procure food. Women described spending variable amounts of time when shopping and traveling variable distances in order to reach specific stores. The table depicts the environmental influences and the practice related to a specific use of time and space.

**Table 3: Characteristics of Food Activity Footprints of Participants**

	<b>Time use: Small</b>	<b>Time use: Large</b>
<b>Space use: Small</b>	<b>City: Santo Domingo (n=6)</b> -inability to store food -inability to walk or travel to reach distant stores - <i>colmados</i> at the end of each block -flexible work schedule -no availability of take-out and fast food <b>Practices</b> -daily shopping at the corner -daily cooking	<b>City: New York City (n=6)</b> -ability to store food -ability to walk to multiple stores -multiple stores with competitive prices -part-time work or home with children -caring for children (walking to school, park) -hard to travel with children <b>Practices</b> -comparison shopping at multiple stores near home -cooking daily
<b>Space use: Large</b>	<b>City: New York City (n=3)</b> -ability to store food -ability to walk to multiple stores -full time work -long commute to work -availability of take-out and fast food <b>- Practices</b> -Irregular grocery shopping -Buying take-out food	<b>City: New York City (n=8)</b> -ability to store food -ability to walk to multiple stores -ability to travel by train or car to more distant stores -multiple stores with competitive prices -full-time, part-time work or home with children <b>- Practices</b> -comparison shopping at multiple stores near home or work -comparison shopping outside of activity space -cooking daily

### ***3.3.3 The use of a small amount of space and small amount of time***

All of the women in SD and none of the women in NYC described food activity footprints using a small amount of time and space. Women's narratives revealed that the use of time was driven by city and activity space characteristics, specifically the availability of electricity and the presence of *colmados* on almost every block. In SD, participating women reported "*se fue la luz*" daily, which meant there were daily electricity blackouts, and they were not able to store food at home. Since shopping was done daily, women reported that convenience was the highest priority. Ana was a married woman with two young children who ran a nail salon



from her home. She stated, *“I buy at the colmado because, imagine, you don’t always have time to go to [the supermarket] when you run out of food.”* As indicated by Ana, it was necessary to shop at the closest store because there was not enough time available to her to travel to the supermarket daily. Shopping at the *colmado* was also quicker than shopping at the supermarket because a person at the counter would sell specific amounts of food, such as half of a pepper and ¼ pound of chicken, and observations revealed that each trip to the *colmado* took less than five minutes. Therefore, the need to minimize the amount of time used for buying food was related to the use of a small amount of space. Women indicated that they were able to maintain small use of spaces because their activity spaces included *colmados* on almost every corner.

Women in SD were also restricted to smaller spaces due to city characteristics. Traveling to more distant stores was difficult because the sidewalks were not well maintained and it was difficult to access transportation, public or private. Such travel limitations were evident by women’s decisions to shop at *colmados* despite preferring supermarkets. Irasema, a mother of three adult children, stated, *“If there was [a supermarket] nearby, even if there was a corner store, I would go to the [supermarket]. Because in reality in the supermarket you find things much cheaper.”* Since women had few choices as to where they bought food or regarding food prices, they reported that they managed their budgets by eliminating such foods as meat and vegetables if they did not have enough money to buy them. Thus the use of a small amount of space left women with no time to compare prices, which saved overall shopping time.

The participants’ reports of small use of time and space related to city-level restrictions and activity space-level characteristics did not vary based on individual characteristics. While women caring for young children had limited ability to travel, the food activity footprint described by all women was conducive to balancing childcare roles. Women indicated that the

work day was structured around buying and cooking food; therefore, work roles did not influence where women bought food (see paper 1). While women working outside of the home had larger activity spaces, they indicated that food safety policies and food culture prevented them from eating outside of the house. Since eating such food could lead to illness, women did not eat outside of the home. One woman left the house at 2 p.m. and returned at 11 p.m., without eating that entire time. Therefore, the city-level and activity space-level characteristics limited women's use of time and space and individual choice.

#### ***3.3.4 The use of a small amount of time and a large amount of space***

Women in NYC who were working full time and had long commutes to and from work described the use of a small amount of time and a large amount of space to procure food. Working women's activity space was extended beyond their residential neighborhoods because they regularly spent time in their work neighborhoods. The larger space provided more options for buying food and for women to easily "*pass by the supermarket and take whatever [they] need.*" However, after work, participating women often used this space to buy "*food from outside.*" Due to long work commutes, these women indicated that they had less time to spend on food-related activities, such as shopping and cooking. Esmarelda, who worked full time and had an hour commute to and from work, said, "*[We buy take-out] because we don't have time to, sometimes, to, to cook because we came late to the house [after work]. So, we buy a hamburger, um, chicken, fried chicken.*" Buying "*food from outside*" was a time-saving technique, reported by women working full time and commuting approximately one hour each way, which was possible due to food safety practices and food culture that supported the practice. Women compared food safety practices in DR and NYC, indicating that more stringent food safety policies in NYC meant food was less likely to be contaminated. Narratives also indicated that it

was more common for people in NYC to eat out, which normalized the behavior for women in the study. While these women also shopped at supermarkets within their activity spaces, they spent less time shopping as compared with other women in NYC since they cooked less frequently.

### ***3.3.5 The use of a large amount of time and small amount of space***

Women in NYC describing large use of time and small use of space were those who were working part time or were at home with their children. While women who were working had larger activity spaces, they did not regularly use such spaces for buying food. Therefore, their food activity footprint covered a small amount of space close to home. These women reported that they needed to “*extend the peso*” and would “*stock up*” on groceries, which enabled them to cook daily without shopping daily. Reina, a mother who was home with her two young children, described how she decided where to buy food:

*I try to find what's on sale at every supermarket to economize my money. I look for, if I go to [the supermarket] I look for what will be cheapest. I select, I take the, they send those specials every week and I'll look at one and then the other and I compare them. And I go, here I'll buy this. There I'll buy that and this I'll buy over there.*

Reina indicated that by shopping at three or four supermarkets that were each within a ten-minute walk from her home in the Bronx, she could find what she needed in order to maintain her Dominican cooking practices. While Reina stressed the importance of price, Juana, who also shopped at multiple supermarkets, stressed the importance of finding the best quality of food. Overall, women indicated that shopping at multiple supermarkets, which was possible for these women because they lived in areas with multiple supermarkets, was a means of getting the best quality and price.

Women had access to a variety of food establishments but chose to shop at supermarkets because they had better quality and prices and better supplies, enabling them to buy “*the whole*

*list.*” Women occasionally bought food at bodegas, which were places to get “*small items*” or “*something quick,*” such as bread, milk, or soda, when they only needed one or two items. This was faster than going to the supermarket, but bodegas had higher prices and lower quality food. Therefore, these women shopped mostly at supermarkets close to home, which resulted in the large use of time and small use of space.

### ***3.3.6 The use of a large amount of time and a large amount of space***

Women who reported large use of time and space either worked part time or were home with children. As with the women using a large amount of time and a small amount of space, these women reported that they had to “*compare the prices to save*” and “*live[d] looking for specials.*” Women with young children (<10 years) reported restricted travel during the week due to childcaring roles. However, those living close to multiple supermarkets were able to comparison shop while taking care of children. Jamilla described how she took advantage of the food establishments in her activity space, which included home, her son’s school, and parks close to home. She said, “*These [two supermarkets], I would say during the week maybe once. Once or two. Cause they are right by. I’ll check here then maybe I’ll go to the other place, you know.*” This practice was reported by other women who would shop for sales at multiple supermarkets. Ramona described how she decided to shop at three supermarkets close to home and work. She said, “*I have all my supermarket flyers and then I circle whatever it is that I use and is on sale this week.*” As with women using a small amount of space, these women used bodegas for small or forgotten items. They differed from others in the study, however, because they also shopped outside of their activity spaces. This was necessary because, as indicated by Jamilla, “*the prices don’t meet my need.*” Women reported shopping at supermarkets with better prices and bulk stores outside of their activity spaces on a monthly basis. Buying food at bulk

stores allowed these women to save money on “*the things that I’m spending on more frequently*” such as rice and oil. However, this was time consuming. Luisa described how she spent a lot of time comparison shopping nine miles from home as well as in her residential neighborhood. “*Yeah, some time I can do [all my shopping] in one. But some time I need three. Three days. Three days to get everything that I want. [I shop] once a month. I can’t do that every day. I get tired. Then I go to the poultry and then ask for the chicken that I want. Then I go to another place. It’s crazy.*” In addition to the time Luisa spent traveling and shopping at these distant stores, she also shopped at food establishments close to home, a practice reported by other women. The process of comparison shopping inside and outside of the activity space was related to the large use of both time and space.

### ***3.3.7 Food activity footprint and food and eating***

Women’s narratives indicated that their use of time and space influenced their food and eating behaviors. The women in SD consistently described the use of a small amount of time and space that was related to consuming homemade meals. In NYC, on the other hand, maintaining food and eating behaviors appeared to be related to the large use of time. Women who described the use of a large amount of space but a small amount of time also reported long commutes and time constraints. Women minimized the amount of time spent on food procurement buying “*food from outside,*” which compensated for the large use of time for non-food-related activity. Therefore, increased use of time was related to regular cooking and the consumption of homemade Dominican food, while the small use of time was related to not shopping and eating “*food from outside.*”

While city characteristics, activity space characteristics, and individual and family characteristics each influenced food activity footprint, the three interacted to create women’s

food activity footprints. This interaction is best illustrated using case studies.

### 3.3.8 Case Studies

Ana was a single mother in SD with two young daughters. She described a food activity footprint that included small use of time and space (see Figure 1). Since her daughters were very young, she stayed home to care for them and rarely left the neighborhood. Ana was able to do this because she received financial assistance from her parents. The situation was also beneficial for her parents, because being home allowed her to “cover” for her mother who was working outside of the home. It was difficult to walk because of the uneven sidewalks and she was not able to travel to a larger, less expensive store; therefore, Ana shopped only at one *colmado* that was one block from home. She went to her parents’ home one block away for oil and rice, which they bought at a more distant bulk store. When she got to the *colmado*, Ana decided what to buy based on the prices. Therefore, Ana had limited options for buying food due to the small size of her food activity footprint, but she was not able to travel to other stores to increase her options. Staying close to home was less time consuming, which allowed Ana to shop daily. Therefore, Ana’s food activity footprint’s minimal use of time and space were driven primarily by the need to shop daily and the inability to travel.

Xiomara, who had been in NYC for two years, was a divorced woman living with her adult daughter in the Bronx. She described a food activity footprint that used a small amount of time and a large amount of space. Xiomara worked as a cashier in Washington Heights, one hour away by train, and was grateful for this expanded space because she was not satisfied with the quality of food in her residential neighborhood (see Figure 2). Xiomara said, “[fruits and vegetables] are missing from my neighborhood. But I am lucky that near my office there is a place that sells that stuff.” However, between work and her long commute, Xiomara said she ate

*“the food that they sell in the street almost always. Eh, the, the week, honestly, I make almost nothing on the stove.”* Buying take-out food was a time-saving technique that compensated for the hours she spent working and commuting. Not only did buying take-out food decrease the amount of time spent cooking, it also decreased the amount of time she spent shopping. When she did buy groceries, she bought them at the supermarket near work, but did not consider the price. She did not comparison shop, which also saved time when she bought groceries. Therefore, she used a small amount of time when buying food, but she used a large amount of space that included her work and home neighborhoods.

Juana arrived in NYC less than one year prior to the interview and described a food activity footprint that involved using a small amount of time and space. Living with her husband and adult daughter, Juana ran a business from home providing after-school care for children. Part of her responsibility in caring for the children was cooking for them and serving them a meal at 3 p.m. Since Juana grew up in the country, she was used to fresh eggs, meat, and milk. In NYC she reported that she had to shop at multiple supermarkets to find the best quality food. She lived close to two supermarkets that were located across the street from each other (see Figure 3). She said, *“I stay close to the two. When I don’t have a thing in one side, I go to look at the other.”* However, she did not like the quality of the produce at either store, so she went to another a store in another direction. This supermarket was close to a fish store where she bought fish. Since Juana was cooking for her own family as well as the children she cared for, she shopped daily. She said, *“I am always missing something in the house, almost daily I am missing something. I would say [I go shopping] frequently.”* Juana indicated that she shopped at these food establishments because they were convenient and she liked the quality of the food they stocked. She was able to stay close to home because she lived in an area with multiple supermarkets.

However, shopping at multiple stores multiple times per week took a large amount of time. Therefore, Juana described the use of a large amount of time and a small amount of space.

Jamilla, who had lived in NYC for over 20 years, stayed home to care for her three-year-old and five-year-old boys. She reported a food activity footprint that used a large amount of time and space. Jamilla lived in the Bronx close to her son's school and multiple supermarkets. Jamilla indicated that price was one of her biggest concerns: *"I tend to shop around. I find myself some things."* When she brought her older son to school every morning she would usually buy groceries at two of the three stores across the street from his school. She did not go to the third store because she had to *"spend \$25 to get [the sale] so it's not worth it. When you start checking it out, it's not worth it."* While she was not traveling far, she spent a lot of time planning and shopping at multiple stores. This was possible because she was not working and had time to spend on planning, shopping, and cooking. In addition, she lived in an area with multiple supermarkets. While her travel was restricted during the week because she was caring for her sons, Jamilla reported taking monthly weekend trips to a supermarket and bulk store in Washington Heights, all approximately two miles away. While traveling outside of her activity space increased her use of time, she chose to do this because *"all their produce is so fresh, more fresh I find, and more affordable [at the store in Washington Heights]."* She expanded her food activity footprint, using more time and space, in order to get better quality and prices. She was able to use more time and space because she had transportation, multiple stores at which to compare prices, and time to plan and shop around.

This study found that women constructed food activity footprints based on city characteristics, activity space characteristics, and individual characteristics. Differences in these characteristics were related to differences in the use of time and space. Women in SD reported



small use of time and space for shopping, while women in NYC reported large use time and small use of space or large use of both time and space. This use of time and space influenced where they bought food as well as other food and eating behaviors.

### ***3.4 Discussion***

This study found that women in SD and NYC described food activity footprints with differential use of time and space based on city, activity space, and individual characteristics. Women in NYC described the use of more time and space when procuring food as compared with women in SD. Women in NYC described a variety of uses of time and space. The differences between the women were explained by the interaction of city, activity space, and individual characteristics and were potential avenues for influencing food and eating behaviors. In NYC, women who reported maintaining traditional Dominican cooking routines described using a larger amount of time, as compared to women in SD, in procuring food, suggesting the importance of time in maintaining traditions.

#### ***3.4.1 Comparison of food activity footprints in SD and NYC***

A comparison of the food activity footprints of women in SD with those in NYC revealed notable differences in the use of time and space based on differences in city characteristics, specifically electricity, transportation, competitive prices, and food policies and culture. City-level characteristics are similar in concept to macro-level environmental factors from the social-ecological model because these characteristics were more distal influences on women's behaviors. City characteristics interacted with one another and were related to differences in the dynamics of food shopping. While women in SD considered only their immediate needs when buying food, women in NYC were thinking a week or possibly a month ahead in terms of their food needs and budgets. Advanced planning entailed planning shopping trips and buying food at

specific stores. Consistent with findings of previous research, women in this study indicated that they considered price and quality when planning their shopping trips.<sup>94</sup> The food environment in NYC enabled women to maximize their budgets through competitive prices at multiple supermarkets, which is a technique identified by previous research with Dominican immigrants in NYC as well as in other low-income populations.<sup>69,80,95,96</sup> Planning, traveling, and shopping at multiple stores was time consuming, and required the ability to travel. This process increased the number of decisions women had to make when buying food. Given findings that supermarket shoppers struggled with making healthy decisions when faced with the overwhelming amount of options and advertisement in supermarkets, comparison shopping may have challenged traditional Dominican cooking routines.<sup>97</sup> However, women reported that shopping at multiple supermarkets was related to regular preparation and consumption of traditional Dominican foods. This suggests that these women were less susceptible to food marketing, which was also found in previous research on Latino immigrants.<sup>27</sup> A key finding of this study was the increased use of time for shopping in order to maintain traditional Dominican food and eating routines, which is a potential barrier to or avenue for change.

Women in SD and NYC reported differences in the size and the composition of their food activity footprints. While women in SD reported few options for buying food, women in NYC had larger activity spaces and more options for food procurement. The focus of dietary acculturation has been on the increased availability of unhealthy food, such as fast food, in changes in food and eating behaviors.<sup>5</sup> However, few women reported eating fast food regularly and, instead, women used the expanded space to shop at multiple supermarkets and find better quality vegetables at better prices. This suggests that these women were less susceptible to the food environment, specifically the presence of fast food restaurants. For most women, the food

activity space was related to differences in food shopping practices, but not differences in food and eating behaviors. This supports the assertion that the dietary acculturation literature needs to be reexamined.

### ***3.4.2 Comparison of NYC food activity footprints***

The composition of women's activity space influenced their use of time for food procurement. The activity space of all of the women included multiple types of food establishments, including supermarkets, bodegas, and restaurants. The activity space is comparable to the micro-level of the environment in the social–ecological model, insofar as it is the environment with which the individual has direct contact.

Women's narratives indicated that supermarkets provided the best prices and quality and the preferred food establishments, which is supported by previous research.<sup>98</sup> All of the women reported buying food in supermarkets, but some women also reported buying food in bodegas, restaurants, and bulk stores. Consistent with previous research, bodegas and restaurants were described as food establishments that decreased the use of time.<sup>27</sup> The need to decreased time use in food procurement was related to individual characteristics. Therefore, the use of time was related to type of food establishment in terms of meeting women's individual needs and the ways in which individuals interact with the environment.

All of the women reported shopping and being satisfied with the quality of food available in their activity spaces. While previous research found that the food environment of low-income, minority, urban neighborhoods does not provide access to quality food, all of the women, with the exception of one, reported shopping at supermarkets in their residential neighborhoods.<sup>18,91,99</sup> In fact, many women reported shopping at several supermarkets within close proximity to home. While this was related to increases in purchasing power, as indicated in previous research, it was

also related to increased time use when shopping within the activity space.<sup>27,95,99</sup> Therefore, the number of supermarkets within each woman's activity space influenced her time use. Other women increased their use of time by shopping outside of their activity spaces when those spaces were not meeting all of their needs. The primary reason for leaving the activity space was to shop at bulk stores, which were absent from women's activity spaces. Women's narratives revealed that their price needs were not being met by the food establishments in their activity spaces, which highlights the importance of looking beyond food availability.<sup>94</sup> Leaving the activity space, despite the presence of supermarkets, is consistent with findings that proximity is not the most important factor in deciding where to buy food.<sup>23,24,100</sup> However, both the use of space and the use of time are important for these cases. While the availability of multiple stores in the activity space is a positive attribute, it was related to an undesirable consequence, increased time use. Therefore, the novel finding is not the identification of the influence of the presence or absence of specific food establishments in the activity space on the use of space, but the influence of multiple options for food procurement on the increased use of time.

While these additional food establishments could be classified as part of the activity space, identifying them as outside of regular activity addresses selectivity bias implicit in GPS data.<sup>101</sup> Indiscriminate use of activity space as a measure of environment does not differentiate between passive exposure and actively seeking out an establishment. In addition, women who shopped outside of their activity spaces reported making these trips monthly, and therefore they were not regularly interacting with this environment. The ways in which women used their activity spaces differentially affected individual interaction with the environment.<sup>23,24</sup> These findings indicate that merely measuring movement provides limited insight into how individuals use space in procuring food.<sup>102</sup> This is important because this study found that women's

interaction with the environment and use of space influenced food and eating behaviors.

Therefore, differentiating between food establishments within and outside of the activity space is important for understanding the ways in which women interacted with their environment and how environment influences food and eating behaviors.

Indiscriminate use of activity space also assumes that individuals are uniformly exposed to their environments, which was not the case in this study. Women in NYC described different food activity footprints that varied based on women's work roles, which influenced how and where they spent their time.

Women working full time bought food near work, while women working part time shopped at supermarkets close to home. The incorporation of the work neighborhood into the food activity footprint of women working full time is consistent with findings in previous research and highlights the importance of expanding the definition of the food environment beyond the residential neighborhood.<sup>25,91,98</sup> However, work- and commute-related time constraints influenced how women used space. In addition, findings make a case for considering time use when assessing activity space. Women identified buying prepared food as a time-saving technique used to compensate for their long commutes. This is consistent with findings that work-related time constraints are a barrier to cooking and related to the consumption of take-out food among Latino immigrants.<sup>27,74</sup> Drawing on concepts from temporal geography, we may say that women who worked part time may not have shopped close to work because they were less familiar with their work neighborhoods and therefore may interact differently with the work neighborhood space as compared with full-time workers.<sup>103</sup> This may also be related to the dual roles, worker and caretaker for children, that part-time workers played. Therefore, work hours and commute time influenced the use of time use in food procurement and food and eating

behaviors.

Most women indicated that they shopped alone or with young children when they shopped within their activity spaces, but were accompanied by others when they left their activity spaces. Staying close to home was easiest for women shopping with young children. Drawing on concepts from temporal geography, this may represent women's comfort levels with the space.<sup>103</sup> Women would be less familiar outside of their activity spaces and therefore may seek the assistance of others in navigating such spaces. For women with young children, this was complicated by the need to tend to children within unfamiliar spaces, increasing the importance of assistance. Alternatively, this may be explained by the fact that women were traveling primarily to bulk stores or making larger shopping trips. While not explicitly stated, it is likely that women needed assistance bringing groceries back from these larger trips. This is consistent with previous research findings indicating that larger shopping trips were treated differently than smaller trips.<sup>97</sup> Therefore, individual characteristics, such as support, influenced women's use of time and space.

### ***3.4.3 Food activity footprint and dietary acculturation***

Taking an emic perspective, this study identified influences on shopping and eating that are not explored extensively in the literature. Traditionally, the dietary acculturation approach characterizes the food environment based on food that is available and the quality of food, with the assumption that home countries provide better quality, healthier foods.<sup>104</sup> Previous research on first-generation immigrants in NYC found that immigrants did not maintain traditional eating practices due to the poor quality of food in NYC, which supports the dietary acculturation hypothesis.<sup>105</sup> However, this study found that women worked to maintain traditional food and eating practices by finding the best quality food. This practice required a large amount of time

for shopping, so a lack of time may be a barrier to maintaining traditions that leads to acculturated food behaviors. Findings indicate that such changes were not related to acculturation, as proxied by time in the US, and were related to time availability. Therefore, an emic perspective identified time and space use as drivers of food and eating behaviors and change.

#### ***3.4.4 Strengths and Limitations***

Qualitative interviews were conducted with women in SD and NYC in order to provide better insight into Dominican immigrants' interaction with the environment. Data collection in both SD and NYC is a strength because it provided a comparison group to help reveal whether behaviors were imported or adopted. Data from this research was triangulated using the women's hand-drawn maps, observations of the neighborhoods, and confirmation of addresses using Google Maps™.

A limitation of this study is its focus on Dominicans living in SD and ethnic enclaves in NYC. Previous researchers have suggested that travel between neighborhoods is restricted by ethnic boundaries.<sup>89,105</sup> Therefore, it is possible that women in this study may not have been able to interact with environments outside of their residential neighborhoods if these neighborhoods were composed of other ethnic populations.

#### ***3.4.5 Conclusion***

This study has important implications pertaining to the dietary acculturation literature as it relates to health disparities. Differences in food activity footprints of the participating women indicated that the use of time and space was greater in NYC and the shopping process was more complex. Immigrants who lack time or skill may be unable to replicate this use of time and space, which could potentially lead to the erosion of the traditional diet. It has been suggested

that the skill exhibited by the women in this study would be useful for low-income populations as a means of addressing health disparities.<sup>95,106</sup> However, such a conclusion falls short of understanding the experiences of low-income individuals who often lack time or do not control their time. Time has been considered a resource contributing to health; therefore, this time-intensive process may have negative implications.<sup>107</sup> Increased use of time for food shopping may not be the best solution for improving diet quality and highlights the importance of looking beyond availability when addressing health disparities.<sup>94</sup>

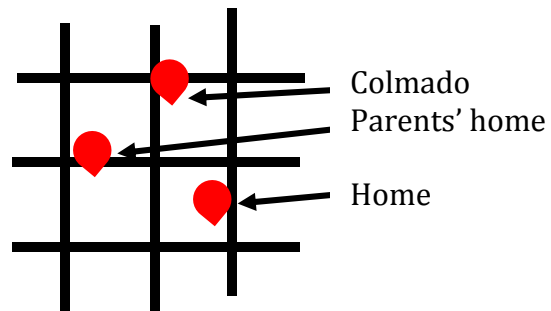
The study has implications for the dietary acculturation and food environment literatures. Incorporation of individuals from the country of origin provided valuable insight into how the context from which women came would influence their interaction with the environment in NYC. Further research should consider including participants from the country of origin or identifying individuals as early in the immigration process as possible. To understand how immigrants, or any individuals, interact with the environment, it is important for the environment to be self-defined, as is the case with activity space. However, data pertaining to geographic location should be qualified to help identify regular environmental exposures and well as the way in which each individual interacts with the environment. Neither of these methods is conducive to large quantitative studies, but they provide valuable insight into the way in which immigrants interact with the environment and provide potential avenues for intervention or future research.

Women's descriptions of the use of time and space in their food activity footprints identified important city, activity space, and individual characteristics that are potential influences on shopping, food, and eating behaviors. The maintenance of traditional Dominican food and eating behaviors in NYC was time intensive and required a notable amount of skill. Despite coming from a food activity space with a small use of time and space, women in NYC

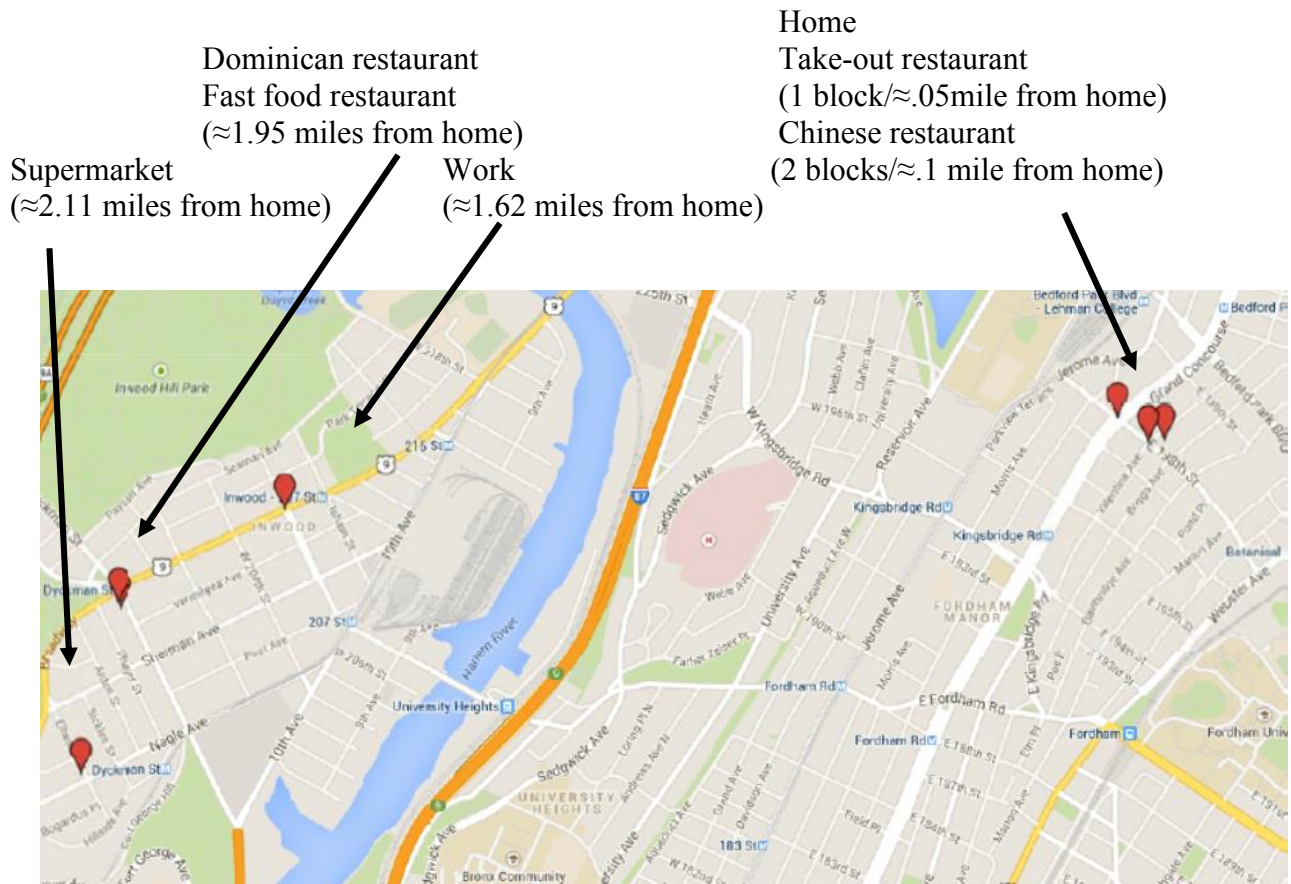


adapted and differences regarding NYC were related to time constraints. Longitudinal research with immigrant populations is necessary to determine if changes in the use of time are related to cultural factors, specifically acculturation measures, or structural factors, specifically work schedule and control of time.

**Figure 1: Food activity footprint of Sulina in SD (small use of time and small use of space)**  
*Figure represents city blocks in one neighborhood in SD.*

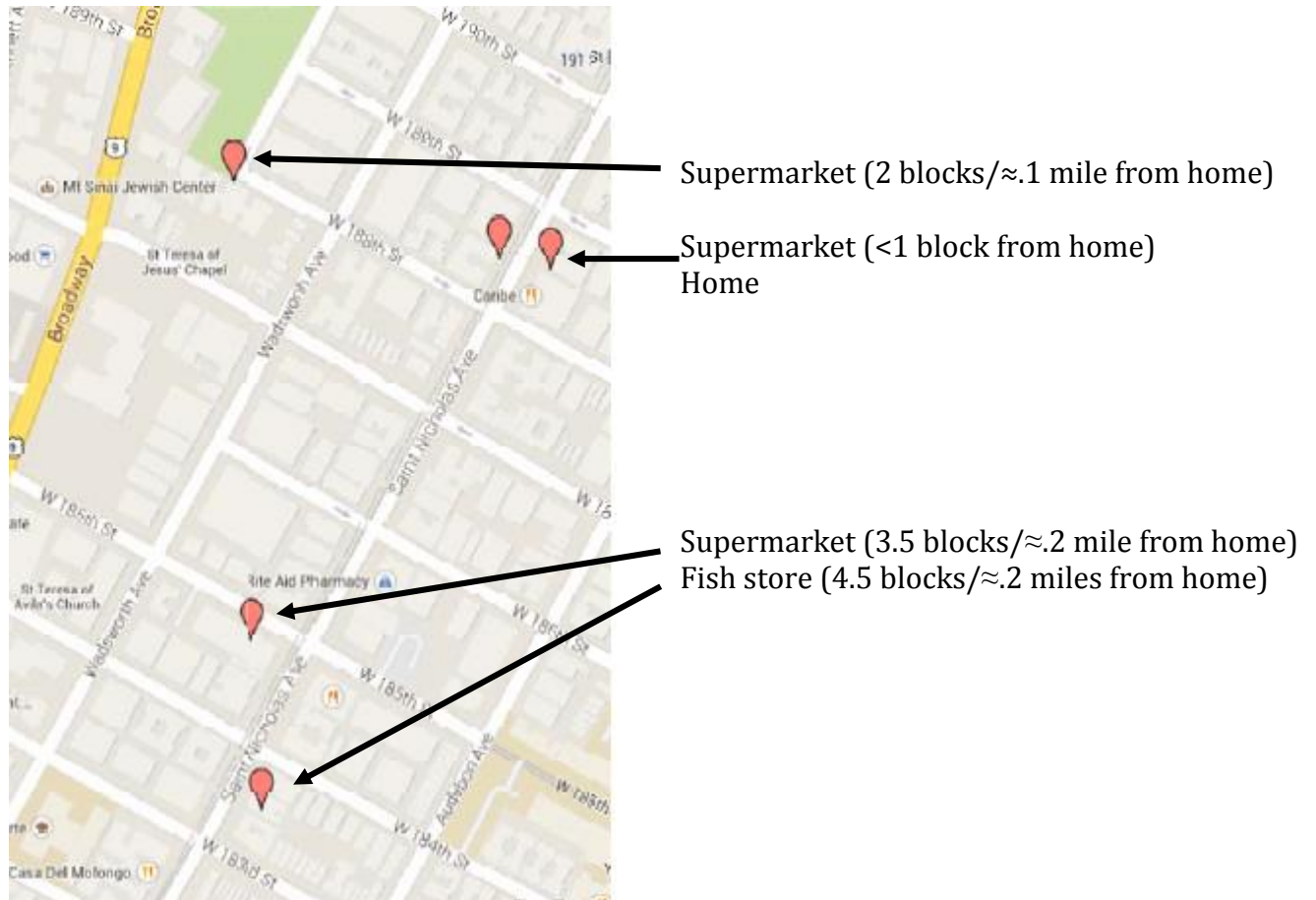


**Figure 2: Food activity footprint of Xiomara (small use of time and large use of space)**



\*maps created using googlemaps™

**Figure 3: Food activity footprint of Juana in NYC (large use of time and small use of space)**



\*maps created using googlemaps™

**Figure 4: Food activity footprint of Jamilla in NYC (large use of time and large use of space)**



Supermarket ( $\approx 1.25$  miles from home)

Home (2 blocks/ $\approx 0.1$  mile from home)  
2 Supermarkets (2 blocks/ $\approx 0.1$  mile from home)  
Son's school

Bulk store ( $\approx 1.65$  miles from home)

\*maps created using googlemaps™

## CHAPTER 4

### FOOD AND EATING TRAJECTORIES AND DIETARY ACCULTURATION

#### *4.1 Introduction*

Health disparities between the Latino and Non-Latino White populations have been attributed to differences in access to resources such as healthy food, places to exercise, and health care.<sup>12</sup> However, research indicates that newly arrived Latino immigrants have better health outcomes compared with second- or third-generation Latinos, despite lower socioeconomic status and decreased access to health care.<sup>41</sup> Better health outcomes in the face of greater structural issues have been called the Latino Paradox. While there are several theories explaining the Latino Paradox, the dietary acculturation theory appears to be the most widely used.<sup>41</sup> Health research using acculturation theory assumes that Latinos come to this country with healthy dietary behaviors that are replaced by less healthy US dietary behaviors as they acculturate.

Despite the plethora of health research using acculturation theory, the mechanism of dietary change among Latino immigrants is still not well understood. This has been attributed, in part, to deficiencies in acculturation theory.<sup>41,55</sup> Dietary acculturation research has been criticized for using proxy measures of acculturation, such as language and time in country, and for assuming that immigrants are uniformly influenced by US culture. Personal characteristics, such as age, education, income, and household composition, are also expected to influence the immigrant experience and dietary behaviors.<sup>31,42,108</sup> While it is not explicitly stated, these variables include life course experiences and indicate that life course events may be an important variable in dietary acculturation.<sup>109</sup> Life course events may influence the ways in which immigrants adapt to US food culture and dietary acculturation. Therefore, the investigation of

life course experiences, within the context of immigration and acculturation, may provide insight into the mechanisms of change in dietary behavior among immigrant populations.

#### ***4.1.1 Purpose***

The purpose of this research was to gain a greater understanding of how the life course experiences of Dominican-born women living in Santo Domingo (SD), Dominican Republic (DR) and New York City (NYC) influence how they interacted with their food culture and environments. Drawing on the social–ecological model, acculturation theory, and life course perspective, this study investigated the ways in which life course events change how women in SD and NYC interacted with their food and eating environments throughout the life course.

#### ***4.2 Methods***

##### ***4.2.1 Research Setting***

This study used a constructivist approach to gain a greater understanding of women's experience with the interaction of their culture and environments as it relates to their food and eating experiences. These study participants were Dominican-born women living in SD and NYC. Two sites were chosen because it allowed the researchers to compare and contrast experiences from both sending and host countries, which assisted in determining whether the experiences of Dominican women in NYC were unique to immigrants or reflected global changes in food access and availability. Dominicans were chosen because they are a fast-growing population in NYC and have worse health outcomes compared with other Latino groups.<sup>56</sup> A focus on Dominicans also allowed the investigators to look more deeply at the interaction of culture and environment in a relatively homogeneous Latino population. Participants were recruited from a low-income neighborhood in SD and from low-income neighborhoods in NYC with large Dominican populations, specifically Washington Heights and

the Bronx.

#### ***4.2.2 Participants and Recruitment***

Dominican-born women were recruited via community organizations and flyers in neighborhood stores in SD, DR and in Washington Heights and the Bronx (NYC). A snowball recruitment technique was also employed. Women ranging in age from 20 to 60 years who had spent their childhoods in the DR were purposively recruited in both SD and NYC so as to vary employment and marital status in the sample. Women in NYC were recruited to vary in time in the US and English-speaking ability. In particular, the women from NYC were grouped by time in the US: <2 years; 2–6 years; 7–10 years; >10 years. Recruitment for each category ended when theoretical saturation was reached. The final study included six Spanish-speaking women in SD, 14 Spanish-speaking women in NYC, and nine bilingual women in NYC.

#### ***4.2.3 Data Collection***

Participating women engaged in qualitative interviews conducted by a team of trained interviewers between July 2012 and July 2013. In SD, a Dominican native Spanish speaker conducted the interviews. In NYC, a Dominican-born Spanish speaker who lived in the Bronx conducted Spanish interviews. The principle investigator conducted the English interviews. Each woman was compensated \$20 for her participation in each of two interviews that lasted 20–90 minutes. The first interview included questions about daily food and eating behaviors, life experiences, and the social environment, and data from these interviews were used in this analysis. With the women's consent, interviews were audio-recorded. After each interview, the interviewer recorded field notes pertaining to the setting of the interview, nonverbal cues, and information that was shared but not audio-recorded. In addition, observations of the broader environment were recorded. The research protocol was approved by the Cornell University



Institutional Review Board.

#### ***4.2.4 Analysis***

Data were analyzed iteratively using procedures from the constant comparative method.<sup>59</sup> English interviews were transcribed verbatim, verified, and coded using Atlas TI (version 7.0). Spanish interviews were transcribed verbatim and verified by native Spanish speakers. Spanish transcripts were then translated into English and coded using Atlas TI. The data analysis included: (a) open coding of the first 10 interviews and identification of emergent themes, (b) creation of a code list based on emergent themes related to life course experiences, (c) iterative review and revision of the code list as needed, (d) emergence of four cohorts among participants related to food and eating changes with immigration experiences, (e) coding with consideration of cohort, and (f) incorporation into relevant theory and empirical research. Peer-debriefing involved reviewing preliminary findings with community nutrition educators who worked with Dominican women in NYC and other researchers with expertise in community nutrition research.

### ***4 Findings***

#### ***4.1 Participant Characteristics***

Twenty-nine women participated in this study, including six women living in SD and 23 women who grew up in the DR and were living in NYC at the time of the study. All of the women spoke Spanish and nine were bilingual, speaking English and Spanish. The study participants ranged in age from 28 to 58 years. Eighteen women had children under 18 years of age, nine women had adult children, and two women had no children. Nine women were stay-at-home-mothers, five worked from home, nine worked part time, and six worked full time outside the home. All women lived in low-income neighborhoods and indicated that money was tight in

their households. The women in NYC had been in the US between three months and 25 years.

Participants described childhood experiences with food and eating that shaped their current food and eating practices, forming trajectories over their lifetimes. Participants also described transitional life course events, points at which food trajectories were challenged or reified. Women described immigration experiences that differed by timing of immigration in their own lives and by period of history, specifically the economic and job situation in both the DR and NYC at the time of immigration. These immigration experiences and their links to food and eating behaviors revealed four distinct cohorts of participants whose food and eating practices were shaped by these factors (see Table 1). The table presents the cohorts based on years of immigration and important life course and contextual influences on the immigrant experience.

**Table 4: Characteristics and Context of Four Participant Cohorts**

*\*Economic conditions as described by participants*

Cohort	Year of immigration	Ages at immigration	Marital status at immigration	Work after immigration	Availability of “US” food in DR prior to immigration	Visit US before immigration	US economy at time of immigration *
1	1976–1999	19–25 yrs	single	Full time	No	No	Good
2	2003–2006	19–21 yrs	single	Full time	Yes	Yes	Fair
3	2009–2013	29–51 yrs	Married, divorced	Part time	Yes	Yes	Bad
4	Still living in SD	N/A	N/A	N/A	Yes	No	

#### **4.3.2 Cohort 1: “*I been working since [I came to NYC]*”—women who immigrated more than 15 years ago (1976–1999)**

The first cohort included eight women who came to the US between 1976 and 1999 as young adults (19–25 years old). Most of the women in this cohort had no exposure to US food culture before immigrating to the US. They came as single women to work with the expectation

that they would send home money to the DR. Most women reported marrying and having children in NYC.

The women described establishing food practices based on their childhood experiences with Dominican food culture. Based on their reports, the amount of food their families could buy was restricted due to the economic situation in DR during the time these women were children. Ramona, who immigrated 37 years prior to the study at the age of 21 compared the environment in DR before she left with the environment in NYC: *“And that is the thing also, in eh ah, over there people ah maybe they want to eat a lot, but they, they cannot afford it. It’s not like here that you have ah the fridge and pantry full of things. You have to go day by day buying what you need.”* Women reported observing their mothers buy food on a daily basis and cook traditional Dominican food, which they reported influenced their current cooking and eating practices. While they no longer shopped daily, when they cooked it was *“pretty much the same”* as when their mothers did. Jamilla, a 44-year-old woman, indicated that her mother shopped daily but had a schedule for meals, rotating through various Dominican dishes. She said, *“You know—Monday was spaghetti with chicken and rice and beans. Wednesdays and Fridays was always fish. So she always knew like what she was going to do.”* Having a schedule was a practice that Jamilla incorporated into her routine and she said it assisted her in maintaining her traditional Dominican food and eating practices.

Unlike the other women in this cohort who grew up eating only traditional Dominican dishes, Bianca reported eating a range of foods as a child. She said, *“My mom, she used to kind of cook—my dad was of Lebanese descent so she used to cook some stuff for him where, kind of Lebanese mixed with Dominican and all that. But my mom also worked with an American who showed her how to cook other stuff.”* As Bianca indicated, her mother first exposed her to non-

traditional foods. When Bianca's mother moved to NYC to work, she stayed behind with her grandmother who would make her "*something else*" if she did not want the food her grandmother prepared. As a teenager, Bianca said she and her friends "*may stop, like a fried chicken place, pizza place, that's what I used to eat with people, when I was there. Maybe something . . . fast on the streets.*" Based on Bianca's narrative, she had more resources and a more diverse background that allowed her to be exposed to diverse food types before immigrating to NYC.

When this cohort of women immigrated to NYC they entered the labor force because jobs were available and they were expected to send money home to the DR. Ramona, who immigrated 37 years prior to the study, reported that she never finished school because she started working. "*No, when I came here [my mother] didn't want me to work, she wanted me to go to school. But I saw the need that was here and that was in my country—with my sister and my family there. So after a month, less than a month I decide to work. . . . I been working um since then.*" Taking on a full-time job, Ramona was not able to eat the main meal, *la comida*, in the middle of the day at home with her family as she had done in the DR. She indicated that she would take leftovers for lunch and then eat *la comida* at night when she returned home. Ramona as well as other women in this cohort indicated that the change to eating the mid-day meal at work and the main meal at home in the evening was the most salient change. Since the women continued to work, most in this cohort eventually adapted to a similar schedule.

Women in this cohort experienced the transition of moving out of their parents' homes at different points in their lives. Some of the women in this cohort experienced the transition of leaving their parents' homes when they immigrated to NYC. Jamilla and Lorena reported that they left their parents' homes and lived alone when they came to NYC. Therefore, these women were simultaneously experiencing three transitions, moving out of their parents' homes and

living alone, entering the work force, and immigrating. They reported that this was related to changes in their food behaviors, specifically eating lighter meals, such as a sandwich or take-out, instead of cooking rice and beans at night. Jamilla and Lorena attributed their new food behaviors to working and living alone.

Women in this cohort all married in NYC and indicated that this transition influenced food and eating behaviors. Jamilla, who had lived alone in NYC for several years said, *“I would say [my eating changed] because you know men like to eat more rice and beans and things like that. We, we, we’re like, let’s say you make a sandwich and you’re okay.”* The importance of considering their husbands’ preferences for traditional Dominican food was confirmed by other women in this cohort. However, when the women married, they assumed responsibility for cooking, which was related to the incorporation of non-traditional foods. Esmarelda recounted her experience involved in assuming responsibility for cooking after immigrating:

*When I came here to this country I don’t know—I just married, but I don’t know to cook. I don’t—you know what I did? I asked some people ‘how do you prepare this?’ and then I was going to the library and buy the, buy the book. And I study and I say ‘let me practice and let me see and mix this together.’ And tell me now, I can prepare any food you want.*

Despite learning to cook various types of cuisine, the women in this cohort reported cooking and eating primarily Dominican food, which they had learned to do as children and which was preferred by husbands.

The women’s narratives indicated that food and eating practices changed in response to divorce. Ramona, who lived with her adult son, said, *“[After my divorce] I didn’t have the responsibility to cook the rice, the beans every day, to make, ah you know, a different type of meat or to be ah, to have like this type of food. I could experiment more.”* Esmarelda compared how she ate when she was married with how she currently eats:

*Okay, we feel more free to eat because when I had my husband, you know the man, they like to eat rice and beans. If they don't eat that, they feel like they don't eat. So, I had cook every day rice and beans . . . and heavy food and meat, every day. But now, we can do cassava at night, with eggs, um or make a sandwich like yesterday. You know, easy, or light food. Or maybe soup, mashed potato.*

In addition to eating lighter food, women reported that after divorcing they may buy take-out food because they no longer had the responsibility for cooking daily. Bianca, who liked to experiment with cooking said, *“If I didn't have to cook for someone, I didn't want to do it. I don't know really how to cook for one.”* She reported buying a variety of cuisines, including Indian and Greek, because she said that she always liked to try different foods. While other divorced women bought take-out, they ate more traditional Dominican foods.

All of the women in this cohort, with the exception of one, reported importing traditional Dominican food behaviors to NYC. The most salient change described by the women was the change in the time of *la comida* from noon to evening. As indicated by women who lived alone after immigrating as well as those who divorced, living alone without the responsibility of cooking for others was related to the consumption of less traditional foods. However, with strong food roots, the addition of foods was not related to the abandonment of traditional cooking and eating practices. Therefore, food trajectories changed in response to entering the work force, living alone, marriage, and divorce, and adaptive strategies included changes in meal time and the addition of less traditional foods.

#### **4.3.3 Cohort 2: “One can't come to sit down” women who immigrated 7 years–10 years ago (2003–2006)**

This cohort consisted of three women, who reported immigrating between seven and ten years ago, immigrated to NYC as young adults (at 19–21 years of age) to join family members who were already living in NYC. As with the earlier cohort, these women came as single, young

adults in order to find work. The main difference regarding this group was that the food environment in DR had changed and women were potentially exposed to US food culture in DR.

Women in this cohort described creating food roots based on their childhood experiences with food, which was influenced by the food environment in DR and economic status. Two of the three women in this cohort indicated that they grew up in a food environment that similar to that of the previous cohort, which involved eating smaller amounts of traditional Dominican food. Reina, a 29-year-old women, recalled, *“If I ate, I ate one piece of meat or one thigh, and a little bit of something else, but not three or four pieces of meat. The economy was never like it is here. So my mother had to divide the food for six, plus her and my father.”* These women indicated that, since money was tight, they ate only the traditional Dominican dishes prepared by their mothers.

Alma, the third woman in this cohort, however, reported that her grandmother would “*spoil*” her and buy her “*food from outside*” since she did not like many traditional Dominican dishes. Alma was also exposed to US fast food restaurants as a teenager.

*It was like, really exciting, we went on weekends just go, like they ah a mall, and they have, they used to, at that time, they used to have a like [fast food restaurants] all together and arcades and things like that. So we would go there on the weekends and do that. They used to have McDonalds, KFC and I don’t remember what else, I think Wendy’s. Yeah we did [eat at restaurants], we did get that pizza hut, that was another—that we used to go to.”*

Alma was able to eat US fast food because it was available and she had the resources to buy the food. Alma’s exposure to US fast food set the stage for her current eating practices.

Women in this cohort immigrated as young adults, joining a parent who was already living in NYC. Moving to NYC coincided with their entering the work force. Reina began working right away because her mother said *“that here one can’t come to sit down. That we need to pay bills.”* As young adults beginning to work, the transition to working and the face pace of

life was stressful. Giselle said, “*Okay, like I said, the stress in this country changed the way I eat because I was sick to my stomach from the speed and the way that they live here one eats and has to go or do other things.*” Due to this stress, Giselle reported working all day and skipping meals. The other two women reported that work was related to changes in the eating schedule. However, unlike the previous cohort that maintained full-time work, this cohort of women indicated that their work schedules had changed. Alma and Reina stopped working after having children and Giselle changed her hours of work. In response to such changes in the work schedule, this cohort of women reported transitioning back to a more traditional schedule, eating the main meal in the afternoon. With the exception of Alma, who ate fast food, the meal was homemade Dominican food.

Giselle and Reina reported leaving their parents’ homes and marrying several years after arriving in NYC. During the transition to taking on the responsibility of cooking, Reina, a married woman with two young children, recalled that “*I ate a lot because . . . now I eat what I want. I cook what I want. I don’t have to wait for someone else to cook. I cook.*” Reina indicated that she could cook and eat all that she wanted because in NYC “*there’s no limit,*” which was unique to the environment in NYC. Although Reina reported occasionally eating some non-traditional foods, she ate primarily Dominican food. The same was true for Giselle, who stressed the importance of cooking for the family. Giselle said, “*I like [to cook] because it is important part of raising a family and I was taught that it is my obligation.*” Based on these reports, moving from their parents’ homes to their husbands’ homes, the women maintained traditional Dominican cooking and eating practices.

Alma continued to live with her mother and her son’s father lived with them part of the time. Alma indicated that her mother worked and she did not want her mother to cook after



coming home from work. However, Alma did not assume responsibility for cooking because she was not confident in her cooking skills. She said, *“I learned over here, so it doesn’t taste the same. Somebody who was from DR who came to my house said the same. ‘You cook like an American.’”* Alma contributed by purchasing *“food from outside”* at fast food restaurants that she reported first eating in the DR. While Alma never experienced the transition of moving out of her parents’ home or marriage, she took on some of the responsibility of cooking. This was related to the consumption of fast food, which was already familiar to Alma, who had eaten fast food as a child in the DR.

Two of the three women in this cohort reported importing traditional food behaviors to NYC. While the women reported changes in their eating schedules in response to working, changes in their work schedules allowed them to return to a more traditional schedule. The women reported that moving from their parents’ homes to their husbands’ homes was a seamless transition and traditional food trajectories were maintained.

#### **4. 3.4 Cohort 3: *“there isn’t a lot of work”*: women who immigrated five years ago or less (2008–2013)**

The third cohort included thirteen women who had moved to NYC within the last five years at varying points in their lives (between 29 and 51 years of age), which influenced their immigrant experiences. Depending on their ages, the women had different childhood food experiences. In addition, they had different experiences with moving out of their parents’ homes, marriage, and divorce depending on when these events occurred within reference to immigration.

The women in this cohort reported a range of experiences as children due to their wider age range. Most reported childhood food experiences that were similar to those reported by previous cohorts, specifically eating smaller portions of traditional Dominican food. However,

immigrating at a later age, these women indicated that their pre-immigration food practices were influenced by their adult experiences as well. With the exception of one, all of the women had left their parents' homes and married in the DR. While one woman reported having limited cooking skills before this transition, she added that she turned to her co-workers in the DR, who gave her cooking instructions. Therefore, marriage was not related to changes in food trajectories for most women in this cohort. Based on the women's narratives, divorce, which was experienced in the DR, was also not related to changes. Therefore, all of the women, with the exception of one, established traditional Dominican food roots based on childhood experiences that were reified by other life course experiences prior to immigration.

The one exception was Marisol, who indicated that her food practices were influenced by her experiences visiting family in NYC over a period of 14 years before immigrating at 29 years of age. In the DR, Marisol lived with her parents and she reported that she would travel 45 minutes in order to be home to eat her mother's food at noon. However, her food experiences were not limited to the DR. She said, *"I like the pizza—you know, I'm a woman that like fast food, I like it, but it's not healthy. Since the time I've been coming here I know here's a country that people love the fast food. And I just try to not be in love to the fast food."* Visiting NYC and having this experience with fast food did not change her food practices in the DR, but it influenced her experiences after immigrating. Having fewer life course experiences in the DR and exposure to fast food prior to immigrating, Marisol had less stringent food practices.

Marisol experienced moving out of her parents' house and marriage in NYC. Moving in with her aunt, Marisol had a difficult time adjusting to the meal schedule. She said, *"The lunch (main meal), they ate at eight, my aunt. I say 'why you cook so late?' We eat and then we go to, go to sleep. So I usually don't eat in the house."* Instead, Marisol ate fast food, with which she

was already familiar from her experience visiting family. A few months after immigrating, she married a US-born Dominican man who also ate a lot of fast food. However, after he had a heart attack, the couple tried to change their diets. Marisol indicated that this resulted in eating less fast food and more homemade Dominican food. However, Marisol reported that she often did not cook because her husband was not home for dinner, which led to skipping meals. This differs from the experience of women in other cohorts, who reported that their Dominican-born husbands expected them to cook daily.

Unlike those in other cohorts, the women in this cohort did not find full-time work. Most reported working part time or being in informal work situations, such as providing in-home after-school care, working at a beauty salon, or cooking for family members. Rita, a woman working part time as a home health aide said, *“I wasn’t able to work until I was here for eight months and I studied English. Now I am working part time because there isn’t a lot of work but when there is work I work full time and when there is work, I work.”* Not working, however, meant that work schedules did not disrupt traditional Dominican cooking or eating practices. Women were either home or had flexible schedules at work that allowed them to eat in the afternoon. The one exception was Xiomara, a 53-year-old woman who had immigrated two years earlier. Xiomara worked a 2 p.m.–8 p.m. shift, commuting one hour each way, and did not have time to cook or eat in the afternoon. Instead, she bought take-out food on her way home from work and ate at 9 p.m. She reported that she did not like this schedule but that *“one has to work at whatever job is available.”*

All of the women in this cohort, with the exception of one, reported importing traditional food behaviors to NYC, having immigrated at an older age, gotten married, started families, and divorced in the DR. Since it was difficult to find work, the women worked part time, which

allowed them to maintain a more traditional Dominican cooking and eating schedule. The one exception was Xiomara, who worked full time. Marisol, who reported eating US fast food prior to immigrating, changed her food practices in NYC. Her food practices fluctuated, but she never returned to her traditional food practices.

#### **4.3.5 Cohort 4: Women living in SD**

The six participants in SD reported establishing and maintaining traditional Dominican food practices throughout the life course. The women in this cohort were between the ages of 33 and 45 years and reported childhood food experiences that were similar to those of women in other cohorts. Over the course of their lives, the food environment in DR changed and non-traditional foods, such as sugary cereals, chips, and desserts, became available at supermarkets or in care packages from family in the US. However, this did not influence the food and eating practices of women in this cohort.

Moving out of their parents' houses, which occurred when they married or had children, was a transition point. Most women reported that they *“mostly learned by watching [mothers and grandmothers] cook,”* making this an easy transition. Ana's experience, however, was different.

*[My eating] did not change at all [after I married] because I did not know how to cook so my mom would cook and we would go over and eat here [her mother's house]. Then when my mom left to the United States that's when everything changed. Because imagine—I didn't know how to cook. . . . One time, I made locrio and left the meat uncooked . . . and when I cooked I oversalted the food. But [my husband] ate it. With two cups of water but he ate it.”*

Ana reported that she and her husband ate *“food from outside,”* meaning take-out food, for several days after she served him raw meat. However, eating food from outside is expensive and not part of Dominican culture, so they did not do this for long. Ana reported that when she began cooking again her mother in the US walked her through recipes over the phone. This allowed her to maintain her traditional Dominican food practices.

Unlike women in the first two cohorts, the work schedule allowed the women in this cohort to cook and eat at noon. The economic situation in SD was bad and the women either worked from home or worked part time. This allowed them to maintain a schedule of cooking and eating at noon.

The women in this non-immigrant cohort established traditional food and eating practices that were not challenged in response to life course events. Therefore, despite changes in the food environment in the DR, these women maintained traditional Dominican food practices.

#### ***4.4 Discussion***

A novel finding of this study involves the timing of life course events with reference to immigration and economic context. For the women in this study, life course events affected their food and eating practices. Drawing on concepts from the life course perspective, this study found that these women in SD and NYC developed food and eating food roots based on childhood experiences with food.<sup>44,109</sup> While most women reported traditional Dominican food and eating trajectories, several women reported adopting non-traditional Dominican food and eating practices prior to immigration. Non-traditional eating practices were related to a mother's absence, economic resources, and the food environment in the DR. The food trajectories that were formed during childhood influenced the women's food and eating experiences in NYC. Life course events, such as entering the work force, leaving parents' homes, marriage, and divorce were transition points that were related to revaluation of food trajectories.<sup>44</sup> The timing of these events with reference to immigration influenced the women's adaptive strategies. While most women who brought traditional food trajectories to the US maintained these trajectories, adaptive strategies in NYC included the incorporation of US foods, which may be considered acculturated dietary behaviors.

#### ***4.4.1 Context of food and eating in DR and developing food and eating trajectories***

The context in which food trajectories were developed was related to the environment in the DR when the women were children. The women who participated in this study ranged in age from 28 years to 55 years and were therefore born between 1958 and 1985. Over the years, there were changes in the food environment in the DR that were related to immigration to the US. Mass immigration to the US began in the 1960s for political reasons and was linked to changes in farming practices which were related to the loss of jobs and industrialization of the food supply.<sup>110</sup> As a result, the next wave of Dominican immigrants who moved to the US to find work started in the 1970s. This led to increased remittances sent to families in the DR and the emergence of a middle class in the DR. In response, the food environment changed to capitalize on the increased buying power.<sup>111</sup>

Consistent with this history, women born in the 1950s and 1960s described growing up in an agrarian or restricted food environment, with limited availability of non-traditional foods in the DR at this time, and some of the women born in the 1970s and 1980s mentioned restaurants serving non-traditional foods in the DR. However, the ways in which changes in the food environment in the DR influenced the women's food and eating trajectories was related to economic resources and family structure. Women reported various experiences regarding the type and amount of food their families could afford as well as changes in family dynamics. These experiences were important because they were related to current food and eating behaviors. Therefore, women's food trajectories were influenced by the interaction of the context of the environment in the DR while they were children as well as individual experiences.

The context of women's childhood experiences was important because it was related to the type of food that was available and the dynamics of the eating environment in the home.

Although the food environment determines the types of foods that are available to eat, food culture, which includes food norms that are transmitted from one generation to the next, remains salient in the face of the environment.<sup>54</sup> The interaction of the food environment and family dynamics was illustrated by various pre-migration food and eating practices described by the women in the study. Two women who had immigrated 15 and 7 years prior to the study, respectively, reported less traditional food trajectories that were established in childhood. One of these women attributed her food preference to her mixed heritage and being raised primarily by her Dominican grandmother. This report and the presence of immigrant populations, such as Lebanese, Palestinians, Asians and European Jews in the DR, highlights the importance of considering the incorporation of non-traditional foods prior to immigration.<sup>112</sup> This also highlights the potential for the disruption of the transmission of food culture, which was described by the other woman reporting non-traditional food behaviors prior to immigration. Meal time is an ideal time for transmitting culturally bound food and eating behaviors and by serving them alternative foods, their grandmothers may have interfered with transmission of Dominican food culture.<sup>55</sup> The impact of missing mothers has also been observed in China where the absence of a mother was associated with decreased vegetable consumption and increased sugar-sweetened beverage consumption.<sup>113</sup> Researchers hypothesized that these patterns were related to increased financial resources from remittances or emotional compensation for the absence of the mother. While this may explain why the grandmothers of the women in the current study were able to afford additional food or felt a need to provide special foods, the impact on food trajectories appears to be related to the disrupted transmission of Dominican food culture. It is important to note that other women who described the absence of their mothers did not describe similar experiences, which may have been related to the lack of availability or

affordability of non-traditional foods. Therefore, it is the interaction of the context in the DR and the home environment that influenced childhood food experiences.

Childhood food experiences were important because women in the study indicated that food and eating behaviors after immigration were based on pre-migration food and eating behaviors. Food and eating practices established prior to immigration could be considered food roots that set the stage for changes in food trajectories and eating identities.<sup>114</sup> One of the ways in which individuals establish food identities is by associating themselves with a specific group, which in this case would be Dominicans. Although it is not explicitly stated in acculturation research, it is assumed that changes in identity are related to changes in food and eating behaviors. Interestingly, women in this study made reference to their diets as Dominican, illustrating a food identity, but when they were asked to identify with a certain race or ethnicity, the women did not automatically identify as Dominican. They also identified as Latino, Hispanic, Black or White. Researchers have suggested that Latinos who live in their home countries do not necessarily have an identity related to nationality. Coming to the US, Latino immigrants are categorized as Latino or as based on their country of origin in order to distinguish them from the general population. It is possible that living in an ethnic enclave meant that their ethnic identity was not challenged and there was no need to establish a new identity. However, food roots established during childhood remained salient in guiding food and eating behaviors. This introduces the question as to the relationship between identity and food and eating within the context of dietary acculturation. In addition, this highlights the persistence of food roots in current food and eating practices.

#### ***4.4.2 Context of immigration to the US***

The time in history during which women immigrated influenced the environment in



which they were received. All of these women immigrated to Latino ethnic enclaves that had been first established by the Puerto Rican community and began receiving Dominicans starting the 1960s.<sup>111,115</sup> Acculturation theory suggests that an established community of co-ethnics provides an “ethnic supply” and allows immigrants to interact with others without learning new behaviors.<sup>115</sup> This can also be described as the creation of a transnational space transcending national borders resulting from mass migration of Dominicans to the US and circular migration between the two countries.<sup>117</sup> Women who reported visiting family in the DR or visiting NYC prior to immigrating illustrate how this transnational space was created. A transnational space has a culture of its own and decreases the influence of the national culture, as illustrated by the dominance of Spanish over English and the maintenance of a traditional diet. This was facilitated by the commodification of food and globalization of the food supply, which has removed boundaries of access to traditional cuisines. However, the maintenance of values pertaining to food and eating was likely attributed to the presence of such a transnational space. Therefore, this context provided a space in which acculturation was not desirable and in some instances not necessary. Sixty-five percent of the current Dominican population arrived prior to the year 2000, which coincides with the immigration of the first cohort of women in this study, who immigrated to NYC within the context of this transnational space.<sup>116</sup> However, immigration and the presence of the Dominican population in NYC continued to grow and the point in history when women immigrated was still important.

The women’s narratives revealed that the year of immigration was important for economic reasons. Women immigrating after 2000 reported employment patterns that differed from those of women arriving before 2000, who typically found jobs immediately and had remained employed since arriving. Women arriving between 2003 and 2006 found work, but did

not maintain the same jobs and those arriving after 2006 had difficulty finding jobs.

The context into which women immigrated had important implications for food and eating practices. Immigrating into an ethnic enclave meant that women had access to traditional ingredients as well as prepared Dominican food. Therefore, the food environment would not necessitate change, which is supported by the women's reports. The economic environment and women's work status influenced when women ate and, for some women, what they ate (see paper 1). Women arriving in the first cohort adapted to eating the main meal at night out of necessity. More recent immigrants did not have the same environmental constraints and therefore could maintain a more traditional schedule. Women with the most severe time constraints reported eating take-out food, which has been reported by previous research on Latino immigrants.<sup>74</sup> Therefore, the economic environment appeared to have influenced these women's food and eating practices to a greater extent than the food environment.

#### ***4.4.3 Transition points and adaptive strategies***

These women's narratives revealed that life course events were transition points at which they employed adaptive strategies, making them vulnerable to their surrounding food culture. For this reason, the effect of life course events was influenced by when they occurred with reference to immigration.

Women indicated that moving out of the family house, which occurred for most women when they married, was a transition point because at this point they took on the responsibility of cooking and had the option of changing what they ate. With few exceptions, all of the women learned to cook from watching their mothers or grandmothers cook, which is consistent with previous findings about how young Latino women in the US learned to cook.<sup>117</sup> This allowed them to maintain traditional Dominican cooking practices. For women experiencing this

transition in the DR, there were no changes, even for those with weak cooking skills. For some of the women who experienced this transition in NYC, food and eating practices were altered. This included the incorporation of various types of cuisine or buying take-out food rather than cooking, which were strategies used by Mexican immigrants lacking skills.<sup>118</sup> This did not, however, result in the elimination of Dominican food. For this reason, dietary acculturation, which posits that traditional food behaviors are replaced by new food behaviors, does not capture this experience. Therefore, women experiencing the transition out of their parents' homes in the DR did not experience changes, while women experiencing the transition in NYC added acculturated food behaviors.

Consistent with findings in previous life course research, marriage was identified as a transition point for women in this study.<sup>43</sup> However, the influence of marriage was related to when it occurred with reference to immigration and previous life experience. Marriage is a transition point at which individuals make concessions in order to accommodate each other's preferences.<sup>119</sup> In previous life course research, a Puerto Rican born woman reported adapting to her NYC-born Puerto Rican husband's food preferences.<sup>43</sup> However, all women in this study who married in the DR and many who married in NYC had food and eating trajectories that were similar to those of their Dominican husbands and negotiation may not have been necessary. The exceptions involved two women who adopted less traditional practices, such as eating light meals instead of rice and beans, while living alone in NYC, and resuming traditional practices after marrying. The changes made after marriage, however, were not a convergence of the couples' food preferences as described in previous research, but rather a return to their original food and eating trajectories.<sup>119</sup> Given these findings and other reports that husbands expected traditional food, it is surprising that women marrying in NYC, who had not lived alone, reported

incorporating less traditional foods. It is possible that this outcome was related to the desire to experiment when taking on the responsibility of cooking for the first time. Therefore, the influence of marriage is related to food and eating trajectories of both the husband and the wife prior to marriage.

The women's narratives indicated that divorce was related to being "*free*" to eat less traditional food, but this change was reported only by women who divorced while living in NYC. Women reported eating lighter meals or eating take-out food after getting divorced. The consumption of take-out food is consistent with findings that divorce was associated with higher body mass index in women.<sup>120</sup> However, women who experienced divorce prior to immigrating did not report any changes in food or eating practices. Therefore, it is important to consider when a divorce took place with reference to immigration.

#### ***4.4.4 Strengths and Limitations***

This qualitative study engaging a small group of Dominican-born women revealed the importance of life course events with reference to immigration in women's food and eating behaviors. This study utilized Dominicans to interview Spanish-speaking women, which was important because of the regional variability of Spanish. The inclusion of women in SD was also a strength because it provided additional insights into likely pre-migration behavior and a comparison group. Including only Dominican women allowed for the assessment of behavior in the home country and decreased variability associated with heterogeneity among the Latino population.

Truth value, applicability, consistency, and neutrality were evaluated using Lincoln and Guba's (1985) Assessment of Trustworthiness.<sup>81</sup> However, the women in the study were recruited from ethnic enclaves that provided the resources necessary to maintain traditional

behavior, such as language and traditional foods. Therefore, these findings may not be applicable to immigrants living in more fully integrated neighborhoods. In addition, this was a cross-sectional study and cannot confirm past changes described by women retrospectively or follow women as they encountered new situations.

#### ***4.4.5 Conclusion***

This study found that women established food and eating practices during childhood that had a strong influence on current food and eating practices. Most women in this study reported traditional food and eating practices prior to immigration, which was reflected in current practices. Women reporting non-traditional practices prior to immigration reported more frequently eating non-traditional foods in NYC. Although women who experienced the transition of entering the work force, moving out of parents' homes, and taking on the responsibility for cooking and divorce in NYC reported alterations in food trajectories, these changes did not result in the abandonment of Dominican food traditions. It was an additive process and therefore did not conform to dietary acculturation as conceptualized in the health literature. Therefore, key findings include the importation of less traditional food and eating practices as well as the addition of less traditional foods, not the replacement of traditional foods.

These findings highlight the importance of accounting for pre-migration behavior as well as other life course events as well as the timing of events when assessing dietary acculturation. Measuring pre-migration behavior can help establish whether acculturated behavior is imported or adopted. Accounting for life course events can help determine the impetus for change. Currently, it is assumed that dietary change is a response to acculturation. However, this research found that food and eating trajectories and adaptive strategies were also related to context and life course events. Future research should consider a longitudinal design, measuring dietary

intake and life course events, such as entering the work force, marriage, or divorce. However, measures of life course events can be incorporated into research retrospectively by including information about age at immigration, duration of marriage, age when moving out of parents' homes, or age at divorce. While changes in food and eating trajectories do not result in the complete loss of traditional food behaviors for all women, they lead to the incorporation of new foods and new routines and may be potential avenues of intervention.

## CHAPTER 5

### CONCLUSION

#### *5.1 Introduction*

Health disparities between Latinos and Non-Latino Whites have remained prevalent, despite efforts to improve health equity.<sup>121,122</sup> While the prevalence of obesity and diabetes have increased over the past decade for both populations, it has increased to a greater extent for Latinos.<sup>121,122</sup> The literature suggests that the root causes of health disparities are inadequate access to healthy food—which is inferred from differences in residential neighborhood food environments—and culture—which is inferred from differences in health outcomes based on acculturation level.<sup>12,28</sup> Therefore, dietary acculturation of Latino immigrants may contribute to persistent health disparities between Latinos and Non-Latino Whites. Based on the way in which dietary acculturation is framed in the health literature, dietary acculturation is inevitable and therefore an intractable contributor to health disparities. However, research on dietary acculturation has been limited by its reductionist use of acculturation theory. Other disciplines do not acknowledge that acculturation is inevitable, accepting that behaviors may represent values and preferences.<sup>123,124</sup> This study suggests, indeed, that behaviors represent the ways in which immigrants balance values and environmental constraints. Drawing on this conceptualization, identification of the environmental constraints shaping Latino immigrants' behaviors is an important part of understanding the process of change and finding possible avenues for intervention. Addressing this process assists reducing health disparities between Latinos and Non-Latino Whites. Therefore, a more comprehensive theoretical approach to dietary acculturation may provide insight into addressing health disparities.

## ***5.2 Summary of findings***

This study explored Dominican women's experiences with the interaction between food culture and environment, identifying concepts and measures related to health disparities and dietary acculturation. One of the important aspects of reconceptualization of acculturation theory is increasing the attention given to pre-migration behavior. Homogenization of the Latino population is related to the assumption that all Latinos come to the US with a healthy diet consisting primarily of rice and beans. Incorporating pre-migration context and dietary behaviors helps to identify important differences between Latino groups that may influence behaviors in the US. Reconceptualization also requires expanding the definition beyond food environment and the outcome of interest beyond dietary intake.

Findings from this study indicate that differences in the economic, social, and physical environments in SD and NYC were related to differences in women's use of time and space. The most salient differences described by women involved the time available for food procurement, preparation, and consumption, which were related to differences in when, how much, and what they ate. While dietary intake was not quantified, potential avenues for deteriorating health, specifically weight gain, were increased calorie consumption related to larger portions, increased frequency of eating events and the consumption of more energy-dense foods, metabolic changes in response to general stress levels, and stressful eating events that promote weight gain. Therefore, it is possible that immigrants experience not only behavioral but also biological changes that are related to weight gain. Weight gain after immigration is associated with other chronic diseases. These findings have implications for acculturation as well as health disparities. Identifying differences beyond food availability and dietary intake between SD and NYC illustrates the need to expand measures in acculturation research. The influence of structure



illustrates that worsening health in immigrants could be addressed by larger structural changes that influence immigrant and non-immigrant populations.

These findings were explored in greater detail in regard to the construction of food routines (paper 1), the construction of food activity footprints (paper 2), and the influence of life course on dietary acculturation (paper 3). The construction of food routines, which was explored in *“Because like we missed the way that we eat at the middle of the day.”: Dietary Acculturation and Food Routines among Dominican Women*, highlighted the bi-directional, multidimensional nature of dietary acculturation and the role of structure in food and eating changes. The paper outlined four food routine categories that were related to economic, social, and physical environments. A comparison of food routines from SD and NYC helped identify the environmental influences on the traditional routine, which was considered to be the ideal routine, and the way in which women in NYC drew on the traditional ideal food routine to reconstruct food routines in NYC. Differences in food routines were related to structural differences in the women’s economic, social, and physical environments. Key findings include the identification of differences beyond dietary intake, specifically the timing of the main meal, as well as identification of influences beyond food availability, specifically family work schedule. Further examination of the multiple dimensions of these differences can provide insight into changes experienced by immigrants and potential avenues for preventing undesirable health consequences.

*Reconceptualizing the food environment: The use of time and space in Dominican women’s food activity footprint* explored the construction of women’s food activity footprints, which represented women’s use of time and space. A comparison of women in SD and NYC revealed that women in SD used a small amount of time and space when procuring food, while

women in NYC used varying amounts of time and space, but consistently used more time and space than women in SD. Women who reported regularly cooking and eating Dominican food used a larger amount of time when procuring food, compared with women in SD and women in NYC who bought take-out food. These findings highlight the limitations of the use of residential food environment as a measure of the broader food environment and highlight the importance of considering time use when assessing the adequacy of the food environment. These findings provide insight into issues related to dietary acculturation as well as those related to geographically based health disparities.

The influence of life course events within the context of immigration was illustrated in *Food trajectories and dietary acculturation*. This study found that food trajectories, which were established based on childhood experiences with food, influenced food and eating behaviors after immigration. While most women established traditional Dominican food trajectories, women who experienced the disruption of the transmission of Dominican food culture in their mothers' absence or exposure to US food culture prior to immigration reported less traditional food trajectories before immigration. These food trajectories were influenced by life course events, but women's adaptive strategies were related to their place of residence at these transition points. These findings contribute to the dietary acculturation literature by identifying the importation of less traditional Dominican food trajectories, which refutes the assumption that immigrants adopt US food behaviors only after immigrating, as well as identifying life course events that were related to changes in food trajectories. The incorporation of measures of life course events into dietary acculturation may provide insight into the motivators for change in food and eating.

### ***5.3 Conceptual framework***

This study identified a temporal environment that was shaped by the economic, social,

and physical environment and influenced the way in which food was procured, prepared, and consumed. This conceptual framework draws on concepts from acculturation theory, the life course perspective, and the social–ecological model, by acknowledging the role of life course events, including immigration, on the way in which individuals come to inhabit a given environment and the multiple levels of the environments that interact with each other and the individual, as discussed in Chapter 4. Within the confines of the temporal environment, individuals constructed food routines that were characterized by the timing of food preparation and consumption, and food activity footprints, that were characterized by the time and space used in food procurement.

Individuals learn to function within a given temporal environment and ideals and values are shaped by this experience. With life course events, the economic, social, and economic environments change and result in changes in the temporal environment. At these transition points, individuals employ adaptive strategies that balance ideals and environmental constraints. Transition points and changes in the temporal environment may also be related to changes in values. However, observed food and eating behaviors, specifically food routines and food activity footprints, represent the tension between values and environmental constraints.

Immigration is a salient life course event and adaptive strategies are influenced by when immigration occurs with reference to other life course events. Immigrants continue to experience life course events that may influence the temporal environment and therefore may be related to changes in food routines and food activity footprints. Observed food routines are related to when, how much, and what is eaten. Food routines are linked to food activity footprints that include all the places at which food is procured. Individuals with more time or more control over time had greater freedom in constructing food routines and food activity footprints and increased ability to

maintain ideal behaviors.

A comparison of the temporal and spatial environments of women in this study revealed that women in SD experienced constraints on their spatial environments, while women in NYC experienced constraints on their temporal environments. Navigating a larger spatial environment with a restricted temporal environment appears to have potential negative consequences. This was the case for women experiencing work-related time constraints and lack of control over time, which were related to the consumption of take-out food. Drawing on research pertaining to time use, the experience described by women is a structural issue.<sup>107</sup> This is not to say that culture does not play a role in the way in which women navigate their temporal and spatial environments. However, findings from this study confirm the role of structure in the immigrant experience.<sup>40</sup> The concepts of the temporal and spatial environments can be used to incorporate structural factors into acculturation research.

#### ***5.4 Acculturation theory in health research—should it stay or should it go?***

It has been suggested that acculturation theory is flawed and a distraction from structural issues and therefore should no longer be used in health research.<sup>40</sup> Findings from this study confirm the assertion that acculturation theory, as used in health research, is flawed due to the failure of health researchers to account for the bi-directional, multi-dimensional processes involved in food culture and behavior.<sup>38,42</sup> This study found that dietary behaviors extend beyond nutrients and food consumed and include multiple dimensions of preparation and consumption that are influenced by the economic, social, and physical environments. Corresponding to the multiple dimensions of food and eating behaviors there are multiple dimensions of values. While acculturation in health research assumes that behaviors represent values, this research did not support this assumption. Behaviors represented the ways in which women balanced values and

structurally bound environmental constraints.<sup>66</sup> At some level, this supports the assertion that culture is a distraction from more fundamental issues of inequity.<sup>40</sup> However, findings that reconceptualize dietary acculturation as a bi-directional, multi-dimensional process help create behavior-specific variables that can provide a deeper understanding of dietary acculturation. In addition, findings suggest that categorizing behaviors, rather than individuals, as acculturated may be useful in finding key values and behaviors related to poor health outcomes. While acculturation theory, as it is currently used in health research, does not adequately address a complex issue, reconceptualization of acculturation theory may provide useful insight into worsening health and health disparities.

### ***5.5 Capturing the individual's interaction with the environment***

Bronfenbrenner's social–ecological model acknowledges that individuals cannot be separated from their environments and that the environment does not exist independently of the individuals within that space.<sup>45</sup> In health research, this is operationalized as multi-level modeling, in which both individual and environmental influences are included in one statistical analysis. However, this relies on the researcher's definition of the environment and the assumption that individuals are uniformly exposed to the environment. Findings from this study indicate that individuals define their own environments and that they interact with their environments based on individual characteristics. These individual characteristics are related to structural factors that shape time and financial resources and constraints. This, along with findings from other studies on low-income individuals, suggests that low-income individuals navigate the environment differently than higher-income individuals with increased use of time and space for food procurement in response to issues of access, such as quality and price. This different use of time and space represents a culture of poverty that has a positive influence on the

way in which individuals interact with the environment, unlike the earlier conceptualization of the culture of poverty.

This conceptualization of the culture of poverty is based on the definition of culture, which is loosely defined as a set of shared values and behaviors of a group of individuals sharing specific characteristics, and findings that women in this study created a system for functioning in their environments. In this case, the environmental influence shaping this culture was disadvantage, in virtue of which low-income individuals need to work harder to achieve similar health outcomes. This culture, which emerges from structural issues, is proxied by measures of socio-economic status (SES). However, just as proxy measures used in acculturation research do not capture the complexity of national culture, SES measures in health research do not adequately capture differences in the way in which individuals interact with the environment. This suggests that longitudinal research including qualitative data about use of time and space is needed to better understand this interaction of culture and environment. This would help identify how individuals define and use their environments and how it changes throughout the life course and may potentially help provide better interventions and policies that extend beyond providing additional supermarkets in low-income neighborhoods, which does not appear to solve the issue of access. Identification of patterns related to the culture of poverty helps identify the way in which the interaction between the individual and the environment influences health.

The interaction of the individual with the environment is important because the environment has been cited as a contributor to health disparities. Recent findings have suggested that individuals living in low-income neighborhoods do not lack access to healthy food since they have the ability to travel outside of their residential neighborhoods. Although findings from this study found that women traveled outside of the residential neighborhood in order to find

better quality food and better prices, the time commitment involved in such travel may be prohibitive for some. This makes a case for incorporating the concept of time when examining the food environment. Consideration of time in studying the environment may provide insight into additional ways in which the food environment influences health.

### ***5.6 Strengths and Weaknesses***

Taking a constructivist approach, this study identified potential barriers to healthy eating. Qualitative interviews using semi-structured interview guides provided a greater understanding of the participants' experiences and identified the importance of time in the immigrant experience. This helped uncover the assumption framing health policies and interventions that time and control of time is not important, which would not have been possible using a more positivist approach.

While a constructivist approach provided the opportunity to examine food and eating behaviors at a deeper level, there are limitations to this approach. The study did not include objective data, such as calorie intake and weight. Therefore, while this approach provided a deeper understanding of the experience of these participants, it provides little insight into the objective relationship between behavior and health.

### ***5.7 Research Contributions***

Taking a constructivist approach, allowing women to define their own reality, this study identified important concepts and measures related to dietary acculturation and the food environment. The primary contributions of this study are theoretical in nature, contributing to acculturation theory and the social–ecological model as used in health and place research. Theoretical contributions are important in moving the field forward because they provide new ways of examining old problems. Reconceptualization of dietary acculturation and the food

environment, using food routines and food activity footprints, introduces new variables that could be incorporated into future research (see table 1). It is important to consider both values and behaviors when considering the influence of culture and it is important to consider structural constraints on time and time use as well as metabolic changes in response to stress.

Recommendations for future research include longitudinal research addressing values, behaviors, and the metabolic profiles of immigrants as well as an age-matched cohort in the sending and host country.

The ideal study design would include bi-annual collection of three 24-hour recalls. A 24-hour recall provides an advantage over a Food Frequency Questionnaire because it does not classify foods by researcher-defined categories or mislead participants with examples. In addition, 24-hour recalls provide the opportunity to determine the portions, timing, and frequency of eating events and contextual factors influencing dietary intake at each eating event. This is based on findings that portion sizes, eating frequency, and meal time differed between SD and NYC. Having longitudinal data provides the opportunity to identify trends in dietary intake that may contribute to weight gain. Given that weight gain and nutrition-related diseases occur over time, dietary data from previous years provides greater insight into current weight and health. It is difficult to determine the lag time between dietary intake and weight status, but it is anticipated that trends in dietary intake will occur and provide insight into this issue.

The ideal study would also include bi-annual tracking of movement for a period of one month using GPS technology. Tracking movement would help identify environmental exposures that currently influence food and eating behaviors. However, this interaction with environmental exposures is influenced by previous life course events. Therefore, longitudinal qualitative data is needed to provide details about this interaction.



In order to capture structural issues, time use and control, and stress triggers, roles and responsibilities should be measured bi-annually. This could be done using weekly time logs, culturally appropriate measures of stress, and social networks.

The findings of this study were based on the case of Dominican-born women living in SD and NYC. However, these concepts and measures can be utilized with other populations, specifically other immigrant and low-income populations. Identification of commonalities between groups would be useful in creating larger public health efforts targeting health disparities.

**Table 5: Concepts and Measures to be Incorporated into Research**

<b>Concepts</b>	<b>Measures</b>
Food routine behaviors	Timing of eating events, timing of main meal, preparation for main meal, commensality
Food routine values	Desired timing of eating events, desired preparation for main meal, desired commensality
Food routine influences	Household work schedule, commute time, household composition, the amount of time available for shopping and cooking, control of time
Food activity footprint	Location of food establishments utilized, frequency of use, activity space, amount of time spent planning and shopping
Influences of food activity footprint	Work schedule, activity space (size and composition), control of time
Life course events	Age of immigration, age of marriage, age of divorce, age of children, age of entering work force, work schedule nutrition-related and lower access to healthy foods
Food roots	Childhood experiences with food, early food preferences, exposure to other food cultures
Biological changes	Serum insulin, glucose, cortisol Blood pressure

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