National Symposium on Family Issues

Lori A. Francis
Susan M. McHale
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Jennifer E. Glick
*Editors*

# Families, Food, and Parenting

## Integrating Research, Practice and Policy

Springer

# National Symposium on Family Issues

Volume 11

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*This volume is dedicated to Leann L. Birch, Ph.D. (1946–2019)*
*Scientist, mentor, colleague, wife, mother, and friend*

# Preface

Families play a crucial role in their members' eating behaviors and orientations toward food. For example, food preferences develop early, and mothers' dietary patterns in pregnancy are linked to their infants' food acceptance. Later in development, responsive parenting practices can promote the development of healthful eating behaviors, but controlling or coercive parenting practices are associated with the development of problematic, dysregulated eating behaviors in children and adolescents. More generally, the social and emotional climate of mealtimes can serve as a context for promoting healthful behaviors around food.

In the current obesogenic environment within the USA and elsewhere around the world, efforts to foster healthful eating behavior and dietary patterns are often at odds with the ubiquity of widely marketed energy-dense foods. Yet, there is a paradoxical relation between food insecurity and obesity, and many low-income communities with high rates of obesity are also considered food deserts—with little or no access to fresh produce and nutrient-dense foods. Indeed, overweight and obesity have reached epidemic levels in the USA, and low-income and minority individuals bear a disproportionate burden. The 2019 National Symposium on Family Issues brought together a group of experts who described the intertwined relations between families and food.

This volume considers the many roles of families in their members' food access, preferences, and consumption. The first section provides an overview of factors—from the micro- to the macro-levels—that have been linked to food insecurity and considers policy approaches to reducing food insecurity and hunger. The links between food insecurity and overweight and obesity also are addressed, along with a description of changes in the US food environment that may explain increases in obesity over past decades. The second section covers relations between parenting practices and the development of eating behaviors in children, highlighting the importance of family mealtimes in healthful eating and family functioning. Evidence from observational and survey-based studies is used to describe family members' roles in socializing youth eating behavior, and characteristics of mealtime environments that foster the development of healthy eating behaviors. The third section provides an overview of efforts to prevent or reduce obesity in children, with

attention to minority populations. Research findings on targets for obesity prevention are discussed, including a focus on fathers as change agents who play a crucial, yet understudied, role in food parenting. Guided by family and ecological systems frameworks, the concluding section features a synthesis of the research at the intersection of families and food. Interdisciplinary research and innovative methods are described as means of advancing theory and intervention efforts for eating and weight-related health concerns. Areas for future research that address the role of families in the development of eating behaviors and broader contextual factors that influence family dynamics, access to food, and risk for eating and weight-related health concerns are discussed.

Comprehensive, multi-level interventions and policy changes are needed to address inequities in food access and security, and increase families' capacity to promote healthy eating behaviors and dietary patterns in their members. This volume provides researchers from multiple disciplines, clinicians, students, and the general public with a broad range of information gleaned from the recent scientific literature on factors ranging from family resources to family relationships in members' eating behaviors and orientations toward food.

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The efforts of many individuals went into planning the 2019 symposium and producing this volume. Our internal advisory board, consisting of Mayra Bamaca, Sarah Damaske, Greg Fosco, Patricia Miranda-Hartsuff, Nancy Luke, Doug Teti, Kevin Thomas, and Dawn Witherspoon were helpful from the early stages of brainstorming for the 2019 symposium. In addition, we are very grateful to Brian Thiede, Jennifer Savage Williams, and Asher Rosinger for moderating symposium sessions. We also thank the staff in the Population Research Institute and the Social Science Research Institute at Penn State including Rachel Charney, Diane Diviney, Angela Jordan, Lidiya Kolonina, and Barbara Rigg. Finally, the Symposium and book would not have been possible without Carolyn Scott's organizational skills, commitment, and attention to the many details that go into developing an engaging conference and producing a scholarly volume.

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# Part I
# Family Ecologies of Food Insecurity

# Chapter 1
# Structural and Social Adversity and Food Insecurity in Families with Young Children: A Qualitative Metasynthesis

**Angela Odoms-Young**

**Abstract** Food insecurity (FI) is defined as a household-level economic and social condition of limited or uncertain access to adequate food. Approximately 14.3 million households in the U.S. are food insecure and FI is associated with numerous poor health and social outcomes, particularly in families with young children. There is growing recognition in research regarding the importance of understanding and addressing structural determinants of diet/nutrition more generally and FI specifically. Qualitative metasynthesis is a technique for generating new insights across qualitative studies and helps provide comprehensive interpretation of existing research. The purpose of this metasynthesis is to understand relations between social and structural adversity, specifically, incarceration, racism/discrimination, gender discrimination, and income/wage inequality and FI and its consequences for families with young children. The synthesis resulted in the identification of five themes: (1) FI is an indicator, consequence, and determinant of social and economic disadvantage; (2) multiple layers of disadvantage exist in FI families; (3) root causes of FI are poverty, unemployment, and lack of a living wage; (4) added burden of incarceration (a pathway to and consequence of FI); and (5) broken communities (racial/ethnic and economic segregation, FI, and food access). Findings highlight the need to consider structural factors in interventions addressing FI.

**Keywords** Food insecurity · Structural determinants of diet · Burden of incarceration · Economic disadvantage · Social determinants of health · Food insecure families · Families with young children · Social adversity

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## Introduction

According to the United States Department of Agriculture (USDA), food insecurity (FI) is defined as "a household-level economic and social condition of limited or uncertain access to adequate food" (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2019). In 2018, approximately 11.1% or 14.3 million households in the United States (U.S.) were food insecure at least some time during the year (Coleman-Jensen et al., 2019). The adverse social, physical, and psychological outcomes associated with FI are well documented, particularly in households with young children. These include higher rates of diabetes and hypertension, self-reported fair or poor health, maternal depression, behavioral problems/developmental delays in early life, and poor academic achievement (Abdurahman, Chaka, Nedjat, Dorosty, & Majdzadeh, 2019; Berkowitz, Basu, Meigs, & Seligman, 2018; Cook et al., 2006; Gundersen & Kreider, 2009; Venci & Lee, 2018). These outcomes are not only detrimental to the health and well-being of individual children and families but also negatively impact broader communities and society. Based on a combination of lower worker productivity, higher costs of public education, greater health care costs, and the cost associated with emergency food distribution, the economic burden associated with FI has been estimated to be over $167.5 billion annually (Cook & Poblacion, 2016; Shepard, Setren, & Cooper, 2011).

Although there has been a cumulative decline in FI since about 2011, disparities in FI by race/ethnicity, gender, and household structure continue to persist (Coleman-Jensen et al., 2019). Compared to the national average, rates of FI are higher in households with children overall (13.9%), households with children under the age of 6 years (14.3%), and households with children headed by single women (27.8%) and single men (15.9%). Race/ethnicity and income are also key determinants of FI with non-Hispanic black households (21.2%), Hispanic households (16.2%), and low-income households with incomes below 185 percent of the poverty threshold, (approximately $24,858 for a family of four; 29.1%) experiencing higher levels (Coleman-Jensen et al., 2019). Moreover, as expected, these racial/ethnic and socioeconomic disparities are consistent across both levels of FI including *low food security* (reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.) and *very low food security* (reports of multiple indications of disrupted eating patterns and reduced food intake; Coleman-Jensen et al., 2019). Consequently, identifying solutions to lower the prevalence of FI in high risk groups has the potential to reduce the associated health and social burden in the U.S. overall.

There is growing recognition in the literature regarding the importance of understanding and addressing social and structural determinants of diet/nutrition more generally, and FI specifically (Gadhoke, Pemberton, Foudeh, & Brenton, 2018; Mills et al., 2017; Veroneze de Mello et al., 2020). As defined by the World Health Organization, social determinants of health (SDOH) are the circumstances in which people are born, grow, live, learn, work, and age, and represent key social drivers including poor housing conditions, poverty, and unemployment that impact health (Marmot, 2009). Previous studies have classified FI as a SDOH and/or closely

aligned it with other SDOH to demonstrate how families with FI lack access to the supportive resources needed to make ends meet (Andermann, 2018; Marmot, 2009). Moving more *upstream*, social determinants are influenced by broader structural factors within society including how the governing process, economic and social policies affect family's wages/earnings; working conditions; and ability to access housing, education, and transportation. Structural determinants guide equity and fairness in the distribution of resources in society, for example, whether they are unjustly/justly distributed according to race, gender, social class, geography, sexual identity, or other socially defined group (Braveman & Gottlieb, 2014; Dean, Sharkey, & Johnson, 2011; Odoms-Young & Bruce, 2018).

The purpose of this chapter is to apply a qualitative metasynthesis approach to explore possible social and structural determinants, specifically: incarceration, racism/discrimination, gender discrimination, and income/wage inequality of FI and its consequences for families with young children. Previous studies have shown that qualitative research can provide in-depth insights about the conditions and experiences of food insecure families and elevate their voices in designing programmatic and policy solutions to improve health/social outcomes and quality of life (Arney et al., 2018; Carter-Edwards et al., 2015; Valentine, DeAngelo, Alegria, & Cook, 2014). Synthesis of qualitative studies is a promising approach that has received more attention as an important source of evidence, can provide information about a studied phenomenon, and can complement findings from systematic reviews and meta-analyses allowing for a better understanding of existing knowledge (Mohammed, Moles, & Chen, 2016). Although several approaches for summarizing qualitative findings exist, metasynthesis is a relatively recent technique that was developed by Sandelowski and colleagues in the late 1990's (Sandelowski & Barroso, 2007; Sandelowski, Docherty, & Emden, 1997). Metasynthesis allows for understanding the collective body of qualitative evidence in a selected field, which can help researchers and practitioners to more effectively move from knowledge generation to knowledge application (Sandelowski et al., 1997). Given the rise of shorter qualitative studies specifically in the areas of health and nutrition, metasynthesis may be particularly important in examining content and context as it relates to inequities in FI and the social and structural determinants that drive them.

## Qualitative Metasynthesis: Determinants of Food Insecurity

The current study applied the qualitative metasynthesis approach outlined by Sandelowski and Barroso (2007) and Noblit and Hare (1988). In contrast to a meta-analysis, where the focus is to yield a more precise estimate of the effect of a treatment or risk factor for disease, the goal of a metasynthesis is to provide an interpretation of findings across qualitative studies while maintaining each study's individual context and integrity (Zimmer, 2006). Consistent with this approach, the author completed these six steps (Erwin, Brotherson, & Summers, 2011):

- Step 1: Formulate a clear research problem and question.
- Step 2: Conduct a comprehensive search of the literature.
- Step 3: Conduct careful appraisal of research studies for possible inclusion.
- Step 4: Select and conduct metasynthesis techniques to integrate and analyze qualitative research findings including quality appraisal, in-depth data immersion, data analysis (i.e. application of inductive, deductive, and abductive reasoning), and exploration and thematic synthesis.
- Step 5: Present synthesis of findings across studies.
- Step 6: Reflect on the process.

## *Research Problem and Question*

As previously stated, the research question under consideration was to explore possible social and structural determinants, specifically: incarceration, racism/discrimination, gender discrimination, and income/wage inequality, of FI and its consequences for families with young children.

## *Comprehensive Search of the Literature*

Six databases including PubMed (National Library of Medicine), CINAHL (EBSCO), Academic Search Premier (EBSCO), Google Scholar, Sociological Abstracts (ProQuest), and PsycINFO (Ovid) were searched using a combination of relevant terms. The database searches were supplemented by hand searching and reviewing the references of relevant studies. To gain a more complete understanding of the issue overall, there were no date restrictions on the searches. Key search terms included terms related to *FI*, specifically: food insecurity, food insecure, food access, and hunger. Key search terms related to *qualitative research methods, approaches, and designs* included qualitative, grounded theory, ethnography, phenomenology, narrative analysis focus groups, interviews, observations, photovoice, and photo elicitation. These terms were combined with terms that reflect *incarceration,* including incarceration, incarcerated, arrest, prison, justice system, and jail; *racism*, including racism, discrimination, oppression; *gender*, including gender, male, female, transgender, women, and men; *income/wage inequity*, including socioeconomic status, income, wages, employment; *social determinants of health*, including social determinants of health, social structures, and structural determinants; and *children*, including children, child, and parenting. The inclusion criteria for articles included studies that were: (1) peer reviewed, (2) published in English, (3) conducted in the U.S. or Canada, (4) qualitative in research design (specifically, any qualitative tradition and/or data collection or analysis methodology), and (5) conducted in-person or via phone (no computer or written responses on completed surveys). Because the goal in a metasynthesis is to analyze data across original peer

review studies, editorials, review articles, and dissertation/theses were excluded from this analysis.

## *Appraisal of Research Studies for Inclusion*

Studies were first screened on title and abstract and then followed by full-text screening. An initial quality appraisal was carried out using the Letts quality appraisal tool, a comprehensive guide for evaluating the rigor of qualitative research for metasynthesis. Consistent with the items and domains outlined in the *enhancing transparency in reporting the synthesis of qualitative research* (ENTREQ) statement, the Letts tool consists of 17 elements including: purpose, background/literature review, study design, sampling, data collection and analysis, and overall rigor (Letts et al., 2007; Tong, Flemming, McInnes, Oliver, & Craig, 2012). To capture congruency between methodology and methods, the congruency between analysis and conclusions, and the confirmability and credibility of the findings, a second review was conducted using the Joanna Briggs Institute Checklist for Qualitative Research (Joanna Briggs Institute (JBI), 2017).

## *Thematic Synthesis of Findings*

An iterative process of reading and interpretation was used to examine the complete text of each study. Thematic synthesis provides a novel interpretation of findings to go beyond mere aggregation (Thomas & Harden, 2008). The process initially involved reading and re-reading articles in their entirety to obtain a clearer understanding of the issues discussed within each paper. Articles were then input into Atlas.ti, a qualitative management software and classified into *families* based on their type of approach (e.g., phenomenology), methodology (e.g., focus groups), and topic (e.g., racism; Hwang, 2008; Friese, 2012). Methods, results, and discussion section text was then coded line by line to generate categories that reflected the intersection/relationships between FI and social/structural determinants of health. Using an inductive approach, this process consisted of identifying discrete ideas and concepts, breaking down article sections into smaller conceptual text units (e.g., sentences and paragraphs), and labeling or coding text units according to their meaning. Combining categories that pertained to the same phenomena and/or developing sub-categories was used to develop the final list of categories and begin the process of extracting metaphors or emerging themes (Lachal, Revah-Levy, Orri, & Moro, 2017; Sandelowski et al., 1997). The category system was then reviewed and compared/contrasted to determine relationships between constructs using reciprocal translation. This included examining the key concepts in relation to others in the original study and across studies, and analyzing the list abductively for similarities, differences, explanations, and emerging patterns. Translating findings into key con-

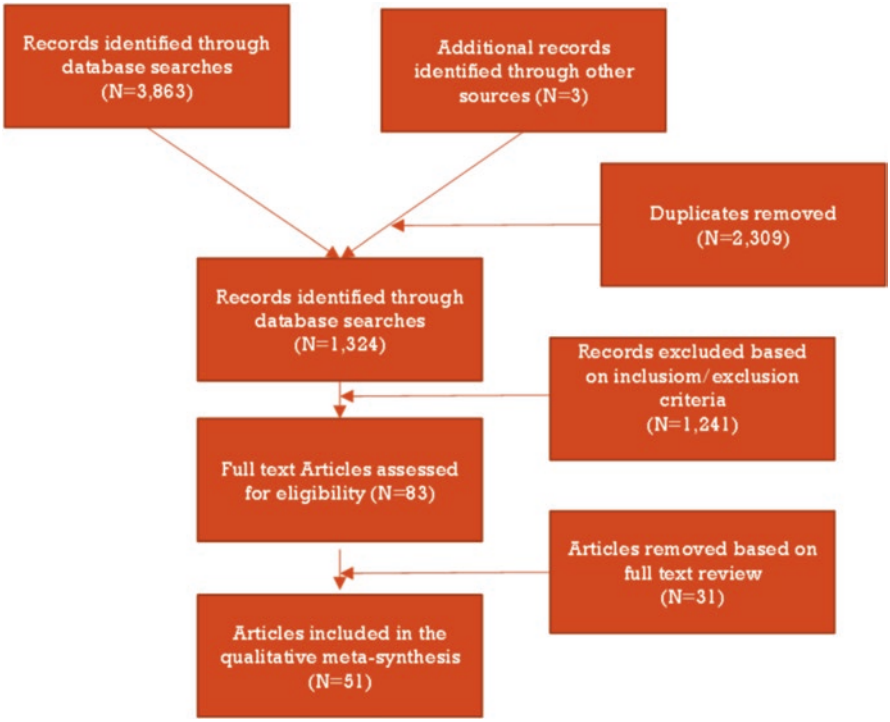


**Fig. 1.1** Flow of article identification and selection process

cepts or interpretive metaphors from one study to another is important to glean concepts across studies that apply different research designs, approaches, and methodologies (Sandelowski et al., 1997) (Fig. 1.1).

## *Metasynthesis Findings*

In total, the search method yielded 3863 citations. An additional three studies were identified through hand searches and reference lists. Approximately 2309 references were removed as duplicates with 1324 remaining. Abstracts and titles were assessed using inclusion/exclusion criteria leaving 83 articles. Subsequently, full-text articles were reviewed for quality and content. Thirty-two additional articles were excluded because the article were not relevant to families with children (e.g., homeless adults without children), targeted some other nutrition-related area with limited/no discussion of FI (e.g., childhood obesity, child feeding), focused on personal experiences of FI with limited/no discussion of determinants, did not provide any information on the sample or methodology, and/or reported limited results.

Fifty studies within 51 articles were included in the metasynthesis. Two of the articles included data from the same study but focused on different research questions. Articles were published in a diverse set of journals from a variety of disciplines including nutrition, sociology, public health, women and gender studies, social work, family studies, maternal and child health, medicine, and public policy.

The 50 studies included in the metasynthesis had a total sample of over 1600 participants with supplementary analyses of observations and policy documents that incorporated an unknown number of individuals, contexts, and experiences. As expected, the majority of the participants targeted were low income and/or participated in food assistance or similar programs such as the Supplemental Nutrition Assistance Program (SNAP) or Supplemental Nutrition Program for Women, Infants, and Children (WIC). Interviews (65%) and focus groups (27%) were the dominant data collection methodology used in the studies. For data analysis, most studies applied content analysis (39%), grounded theory/constant comparative analysis/modified ground theory (30%), or thematic analysis (18%). Studies largely targeted all or majority women and/or low income or unemployed adults, and about half targeted rural and/or African American, Latinx, or Native American populations.

**Themes of Food Insecurity in Families with Children** The synthesis resulted in the identification of five principal themes which highlight the relationships between structural and social adversity and FI in families with children. As captured by Beaumier and Ford (2010), overall, FI was influenced by "social, economic, political and environmental conditions and processes which interact over multiple spatial and temporal scales" (Beaumier & Ford, 2010, p. 200). Themes include: (1) FI as an indicator, consequence, and determinant of social and economic disadvantage; (2) Carrying the weight of the world on your shoulders: Multiple layers of disadvantage; (3) Root causes: Poverty, unemployment, and lack of a living wage; (4) The added burden of incarceration; and (5) Broken communities: Racial/ethnic and economic segregation, FI, and food access. A more detailed description of each of the themes is provided.

*FI: Indicator, Consequence, and Determinant of Social and Economic Disadvantage* Across studies, the experience of FI served as an indicator, a consequence, and in some discussions, a determinant of social and structural adversity across the life course. Consistent with the early descriptions of FI and hunger by Radimer and colleagues (Radimer, Olson, & Campbell, 1990), studies confirmed that the lived experience of being food insecure is multidimensional, including quantitative, qualitative, psychological, and social dimensions and serves as a key indicator of families' material and social deprivation and the stress connected to it:

> When you ain't got food, you get depressed, and you stressed. Because you stress yourself trying to figure out how you going to get it. How you going to get it, that's the biggest thing. Who I'm call, where I'm a go, what I'm get. (Participant in Chilton & Booth, 2007, p. 120).

The hardship associated with FI was further magnified by the responsibility of *caregiving*. As cited earlier, the prevalence of FI varies considerably among household types. Households with children, overall, and children under the age of 6 years disproportionately bear the burden of FI. Studies highlighted the strong emotional impact that parents/caregivers experienced when they were not consistently able to provide food for their family. A key theme that emerged in the metasynthesis was that participants' concern about adequately nourishing their children greatly exceeded the desire to feed themselves:

> You are thinking about how you will provide for your kids and what you will not be able to make and create a healthy meal for them because you are limited. A lot of people around here have that experience… I think that they are barely getting by. I'm watching the news, considering the situation that I am in. You feel angry, sad, and upset. When you follow all the rules…you feel upset, like "what now?" (Participant in Page-Reeves, Scott, Moffett, Apodaca, & Apodaca, 2014, p. 10).

> It's depressing because I'm okay with my kids going to sleep with a full stomach, or at least a satisfied stomach that they can go to sleep. But it's uncomfortable for me to wake up and my stomach's touching my back…'Cause now I'm upset 'cause there's nothing to eat here. [My kids are] looking at me like, "Okay we ate yesterday, what about today?" So, then I'm like, "Okay, now what do I do?" (Participant in Knowles, Rabinowich, Gaines-Turner, & Chilton, 2015, p. 27).

> It's a stress to have to think for tomorrow what you are going to eat when there is nothing in the refrigerator; Well, you have to feed your children first and you're pregnant and you don't have nothing else to feed yourself; if your kids ask for something, 'Oh, I want a snack for school' and you don't have the money to afford, Food Stamps or whatever. It is stressful. (Participant in Bermúdez-Millán et al., 2011, p. 7)

Moreover, the trade-offs parents/caregivers make to feed their families also emphasized the role of FI as an indicator of material deprivation. Across studies, participants reported needing to decide between food and covering other basic necessities, as well as the associated feelings of inadequacy and guilt:

> …if I paid the medical bills we wouldn't eat, and it's basically a choice between going into horrific debts and having people look at you horribly and have your credit score tank because you can't pay your medical bills or feed your child, you know. I'm sorry if that makes me a horrible person, I'll take that. I'm going to put food on the table first. (Sano, Garasky, Greder, Cook, & Browder, 2011, p. 119)

> I can't afford food. Just paying for rent and utilities is all. So, I just go as far as I can without food. (Dutta, Hingson, Anaele, Sen, & Jones, 2016, p. 652)

In addition, study findings also revealed that some families felt pressure to engage in activities that they viewed as socially unacceptable to access food. In depicting the hunger that she and her child experienced, a participant in Dutta et al. (2016) described being tempted to engage in illegal activity because she could not provide food for herself and son:

> This was just recently, actually before I moved out of my old apartment. This was last year. We didn't have no food. I was tempted to go to the store and steal, but I didn't because I have my son with me. And I was in the house trying to call people crying, praying to God,

> hoping that a miracle could come and we were in there with nothing but crackers, not even a whole bunch of crackers. And my son is looking at me and am looking at him and am like 'do you want the crackers?' and he is like 'yea.' I gave him some but I try to hide the rest. He was so hungry that he ate the four crackers. He was so hungry that he was still crying, rumpling and crying, won't go to sleep, and neither one of us went to sleep and that whole night was horrible and complicated. We couldn't find food. We couldn't find no friend (Dutta et al., 2016, p. 655).

The stigma associated with the experience of seeking and maintaining food assistance also demonstrated the ways in which social and economic adversity is embodied in experiences of FI. As reported by one participant, "You are ashamed because the system makes you feel ashamed," (Jablonski, McFadden, & Colpaart, 2016, p. 921).

The stigma and shame felt by some participants in accessing food assistance was further illustrated by their perceptions of the inadequacy of the benefit, compared to their need.

> Um. It don't meet the needs because [sighs] um, I have 2 kids and 1 on the way and it doesn't help. I get WIC. And WIC helps with the milk, the cheese, the eggs, the healthy stuff. The stuff that you need on a regular basis. The food stamps, you can get, you know, food with it, but how much can you get to feed a full-sized family? With that amount? So, it's just not enough" (Robbins, Ettinger, Keefe, Riley, & Surkan, 2017, p. 1546).

> That week before baby bonus [a child tax credit cheque] is always a struggle [referring to accessing milk]…The last couple of days we've been sitting there, no butter, no milk—nothing and I'm just sitting there waiting for cheque day…And my daughter says 'Mom, there's no butter' and I say 'I know. Cheque day is tomorrow (Williams, McIntyre, & Glanville, 2010, p. 147).

Study results also demonstrated that FI is a consequence of social and structural adversity. In a study of 25 migrant women originating from Mexico and Central America in Santa Barbara County, California, the intersection of poverty and migration status worked together to impact families' experiences of being food insecure (Carney, 2014). Consistent with the concept of trade-offs, many women in the study made significant sacrifices to feed their families and make ends meet. Similar to the phenomenon described by Sternberg (2010) as "mothering from a distance," to escape poverty and to improve the life of her children, Malena, a participant in Carney (2014) faced the difficult decision to emigrate from Mexico to the U.S., leaving some of her children behind with relatives:

> …her decision to migrate was informed by tensions with her husband that obstructed her ability to feed her children…'He left me with my child when he was only two months old; he came here. He has been coming here since 1984'…Yet after years of sending remittances home to his family, he suddenly stopped all forms of communication (p. 7).

> When I meet Malena, she is working 70 hours per week as a hotel housekeeper and living with her youngest daughter. Three of her children (ages 13, 14, and 18) are still living in Guerrero with their grandmother and she has since divorced her husband. Although Malena conveys tremendous grief in being far from her children, she rationalizes her decision to migrate to the United States by conveying that in Mexico she was no longer able to fulfil her responsibilities as a mother. Her husband had forfeited his obligations–both emotional and

> material–to the family, and she had accumulated a debt from needing to borrow money for food purchases (Carney, 2014, p. 7).

Lastly, study findings suggest that early life exposure to FI could potentially serve as a determinant of later social and structural adversity. Conversely, exposure to structural and social adversity in early childhood also could increase the risk of families current FI. Research has shown that disrupted eating patterns in early childhood are linked to an increased risk of adverse social, emotional, educational, and physical outcomes and contribute to poor health and well-being later in life (Cook & Frank, 2008; Johnson & Markowitz, 2018; Whitaker, Phillips, & Orzol, 2006). Grounded in a life course perspective, Chilton, Knowles, and Bloom (2017) examined intergenerational experiences of childhood adversity and FI in 21 food insecure caregivers in Philadelphia. FI and other adverse circumstances in childhood contributed to a participating caregiver's current condition of being food insecure:

> Karina identified childhood experiences of violence and hunger at the roots of her current circumstances. She described how her stepfather's drug use and violent behavior affected her as a child. She explained that he often stole from her mother and they consequently ran out of money for food. Although she described social support from other relatives who provided meals and emotional support, Karina recognized that the stress of financial hardship and threat of violence in her home accompanied her over the course of her life. Karina explained,
>
> 'It's like the tree. The tree: it will grow from the roots. So, if the roots is damaged, the tree is going to be damaged. You know? So that's my tree. Like, my home was rotted by a bad person. And now, it escalated in my life.'
>
> Karina's description of the roots suggests that current experiences among families reporting FI are related to how caregivers were treated by their own parents and grandparents (Chilton et al., 2017, p. 279–280).

*Weight of the World on Your Shoulders: Multiple Layers of Disadvantage* The majority of the studies considered in the metasynthesis reported that food insecure families navigate disadvantage across multiple systems and domains including: Transportation: limited reliable transportation or no money for gas; housing: unstable housing; social service, business, and government systems: hassles dealing with food and social service systems, and disconnected utilities; health: illness, exposure to sexual/physical violence, and lack of access to health supporting resources; education: limited/low-quality educational opportunities and resources for children; and social networks: burden of supporting other family members and lack of family support vs supporting each other by pooling resources.

Each of these domains existed across a continuum with intensity varying across families and time. For example, in a focus group study of Puerto Rican Latinas experiencing FI in Connecticut, participants described how FI coexists with other social and economic concerns including unsafe physical environments, lack of social support, and lack of access to quality education: "The elementary schools do

not offer a good education for our children. How are they going to even make it to, to middle school?" (Bermúdez-Millán et al., 2011, p. 6). Other studies also highlighted the theme of multiple layers of disadvantage. In contrast to experiencing FI in isolation, findings across studies indicate that the multiple challenges faced by food insecure families are complex and interconnected:

> You cannot ask a person, 'Why are you stressing? You cannot ask a person, 'Why is there so much violence here?' You cannot ask a person, 'Why are you hungry?' All three go together. No matter how you see it, all three go together. I could be here like, 'Okay, I'm stressing because I don't have no food, and it's violent because I'm fighting my husband because we need money.' (Chilton et al., 2017, p. 279).

The possible physical, social, economic, and psychological consequences associated with severe experiences of disadvantage were also described in policy studies examining the lived experience of food insecure families. These multiple layers of disadvantage were viewed as particularly concerning in the face of limited resources and assistance. A study that brought to light legislators' construction of household FI analyzed discussions of FI by members of the federal parliament and provincial legislatures in Canada (McIntyre, Patterson, Anderson, & Mah, 2016). These discussions stressed the consequences of FI and broader disadvantage on families without the appropriate government supports:

> Hungry people with no housing get sick, and they get sick more often. They have more encounters with the police and judicial system. It's obvious that people cannot survive on the kinds of supports that you are willing to provide. (Document excerpt in McIntyre et al., 2016)

*Root Causes: Poverty, Unemployment, and Lack of a Living Wage* The majority of studies included in the metasynthesis emphasized the important role of poverty as a root cause of food security among families with children. The impact of generational poverty was particularly salient when participants discussed how poverty shaped both their previous life chances and current opportunities. A participant described how for many families, poverty is a way of life:

> That's the hardest thing in life: to face reality. When you face reality then you goin' somewhere. When you in denial, then you at a standstill. And I don't want to be at a standstill. This is the way it is. We is poor and we is hungry (Knowles, Rabinowich, Ettinger de Cuba, Cutts, & Chilton, 2016, p. 27).

Studies also reported that poverty and FI were strongly related to participants' or their partners' employment status, specifically being unemployment or underemployment; difficulty finding a job, keeping a job, or being treated unfairly on a job; and the wages paid and the time wages are received. Several factors were associated with the ability to maintain stable employment including the broader economy, access to reliable transportation, legal residency status, discrimination, incarceration status, and health status/illness. Additionally, families experiencing FI described how long periods of unemployment were associated with stress and uncertainty:

> It has been six months now that we are without a job. I don't think that is going to change soon. He [referring to her husband] has been sending out his resume. No luck. As each day goes by, I am less certain (Participant in Dutta et al., 2016, p. 651).

Furthermore, the constant cycle of being employed then unemployed was described. One participant reported that when she had a job her situation was stable, but when she was unemployed it was difficult to cover her living expenses and provide for her family.

> 'When I had my other job, I used to work at a trucking company…and I got paid more. I was able to keep food consistent [in my house].' Tracy, whose household included her adult daughter, two grandchildren, and teen daughter, experienced a period of inadequate food supplies due to a medical crisis that led to job loss. She reported that unemployment income wasn't 'nearly enough' to cover food and living expenses (Jarrett, Sensoy Bahar, & Odoms-Young, 2014, p. 197).

A common theme among families (as well as among policy makers) with the lived experience of being food insecure was the inconsistency between the wages/earnings of low-income families, the costs of basic goods and services, and inadequacy of public benefits. Some families mentioned how the food assistance system can disadvantage low-income families by reducing benefits when they obtain employment:

> Because, you know, you figure if you get a job, if I get a minimum wage job, like, now, something that's just paying minimum wage, you know, and I may be working 30 hours a week, they're going to cut my Food Stamps. They're going to cut. So, then you figure, I'll be paying for, you know, I have to have transportation to get to and from that job. I have to. It's not enough to be able to be able to get by. You know what I mean. I think if you get a job, if you a, you know, get a small job and you're going to cut some of my benefits, don't take, you know what I mean, 75% of it, you know what I mean? Because I'm not going to be able to survive because I'm going to have to spend money on food. I'm going to have to spend money on…You know, that little pay check isn't not gonna, you know, I'm still not going to get ahead. And it's not like I'm making enough to really survive" (Robbins et al., 2017, p. 1547).

*Added Burden of Incarceration* Similar to the previous theme of root causes, incarceration impacted families with the lived experience of FI by limiting opportunities for employment and access to resources. Previous quantitative studies have shown that incarceration is associated with a higher prevalence of FI in households with children (Cox & Wallace, 2016; Davison et al., 2019; Turney, Lee, & Comfort, 2013). Additionally, higher rates of FI have been reported among formally incarcerated adults (Testa, 2019). However, only three studies included in the current metasynthesis specifically mentioned relationships between incarceration and FI. These studies suggest that FI can serve both as a pathway to incarceration based on engagement in crime to make ends meet (e.g., theft) and as a consequence of incarceration (e.g., difficulty finding employment post-incarceration). This theme was highlighted by De Marco, Thorburn, and Kue (2009):

> One subtheme that came up several times was that participants had made poor decisions in the past that were contributing to their experiences with FI. A rural female participant

> (food-insecure, non-low-income) had spent ten years in prison. She had experienced stigma in her small community because of her stint in prison and had a history of unstable employment. She attributed her FI to this lack of job stability (p. 1014).

Studies that considered relationships between FI and incarceration mainly focused on the impact of incarcerated fathers or partners on family life and resources. Most of these studies reported that prior to incarceration, fathers were contributing economically to the household and actively involved in parenting their children. Consequently, the loss of fathers from the household caused economic hardship which led to FI. Participants across these studies cited additional challenges associated with incarceration that exacerbated the negative impact of FI on families including maintaining housing security, loss of social relationships, loss of employment, and accumulation of legal and household debts.

> While in prison I had no real sources of income. You can do work while in jail but they pay less than minimum wage. So yeah…I had nothing to contribute to family finances…[Wife's name] was on her own…making sure the kids had a roof over their head and food on the table (Participant in Davison et al., 2019, p. 7).

Findings also indicated that the threat of FI in the context of incarceration of a male partner could correlate with the risk of other health issues including sexual risk. Similar to the theme of FI as an indicator of social and economic adversity, the lack of support from the incarcerated partner prompted some women to develop new romantic relationships to secure shelter and food. In some cases, participants described how their partner's incarceration left them destitute requiring them to establish other romantic partnerships to make ends meet:

> …. he offered to help put me and my kids somewhere and I took the help and I regretted it at the time but I was also thankful for it because…he put us somewhere and not just let me and my kids be out on the street (Participant in Cooper et al., 2015, p. 533).

*Broken Communities and Policies* Participants across studies highlighted the complex role of racial/ethnic and socioeconomic (particularly in rural communities) segregation and racism in shaping FI. Segregation and economic disinvestment in communities impacted employment opportunities and access to resources such as healthy food. For example, across several studies, families discussed the lack of availability of healthy food options in their neighborhood and high prevalence of low-quality foods:

> Nobody comes to my neighborhood and cares about what I eat. It's all economics. My corner man in the grocery store is charging me three times for a can of tomato sauce because he has got to get rich (Participant in Sealy, 2010, p. 572).

> You have to be careful with ground meat. It's real pretty pink on top. But when you break it, on the inside it is kind of white. They put the fresh meat on top, so you have to be very careful (Participant in Ramadurai, Sharf, & Sharkey, 2012, p. 6).

A study of Puerto Rican women highlighted the impact of racism in limiting employment opportunities for women of color.

> Like every time I go to . . . the mall to a store and you see that they are hiring because they have the paper outside but when you go in, they said to you they are not. They don't accept applications . . . there are people that are . . . racists and don't care. Do you understand me? (Participant in Bermúdez-Millán et al., 2011, p. 7).

This example aligns with the previous theme of how limited employment opportunities impact the risk of FI.

## *Reflecting on the Metasynthesis Process*

In this chapter, we used a qualitative metasynthesis methodology to conduct an in-depth exploration of the relationship between social and structural adversity and FI. Applying this approach allowed us to identify themes within and across studies employing a variety of data collection approaches (e.g., focus groups, in-depth individual interviews) and representing the perspective of over 1600 participants with diverse demographic and social characteristics (e.g., race/ethnicity, geographic, gender) within 50 studies. As expected, the majority of these studies included samples of low-income/unemployed, rural, African American, Latinx, and Native American populations, that are disproportionately at risk for FI. Similar to the qualitative methods used in the biomedical literature overall, interviews and focus groups (92%) were the dominant data collection methodologies used in the studies. For data analysis, the majority of the studies applied content analysis (39%), grounded theory/constant comparative analysis/modified grounded theory (30%), or thematic analysis (18%; Al-Busaidi, 2008; Green & Thorogood, 2009; Holloway & Wheeler, 2010; Meyer, 2000). In contrast to the current investigation, we found that few of the previous qualitative metasyntheses report a summary of the data collection and/or methodology used (Gerchow et al., 2014; Minges et al., 2015).

We believe that the current metasynthesis provides an important contribution to the literature on FI generally, and the link between social and structural adversity and FI, specifically. Overall, studies applying a qualitative research synthesis methodology to the issue of food and nutrition are limited. Our searches revealed only 15 studies using a qualitative research synthesis approach that focused on food and/or nutrition more generally, and only three examined or reported results related to FI (Gerchow et al., 2014; Jovanovski & Cook, 2019; Weiler et al., 2015). Similar to our analysis, metasyntheses by both Gerchow et al. (2014) and Jovanovski and Cook (2019) reported that low-income women/mothers face multiple barriers, including economic constraints, to access and provide food for their families. However, in contrast to the current investigation, neither study focused specifically on the impact of social and structural adversity. A meta-narrative approach was used by Weiler et al. (2015) to explore relationships between food sovereignty, food systems and health equity. Similarly, our study acknowledges the importance of social factors such as race/ethnicity, citizenship, and poverty in shaping experiences of FI by highlighting the voices and describing the experiences of these groups.

Findings from the current metasynthesis illustrate that social and structural disadvantage has a complex relationship with FI. Results revealed that FI was a key indicator of social and economic deprivation. The level of this deprivation was particularly salient in discussions of parent's/caregiver's difficulty in providing food for their children. The stress associated with this experience has been found in previous quantitative studies (Allen, Becerra, & Becerra, 2018; Laraia, Vinikoor-Imler, & Siega-Riz, 2015). For example, in their study of low-income pregnant women, Laraia et al. (2015) reported that perceived stress was higher for pregnant women from marginally food secure and food insecure households compared to those from food secure households.

Additionally, consistent with findings from quantitative studies, the current investigation highlights the impact of the cumulative layering of disadvantage, whereby food insecure families face multiple hardships including lack of transportation, lack of social support, and ill health. Although the current analysis only includes studies conducted in the U.S. and Canada, we are aware of one study from Australia with consistent findings on the impact of layers of disadvantage. A recent study examining FI and stressful life events using a nationally representative sample of individuals in Australia, found that participants who witnessed violence, had trouble with the police, and/or experienced abuse or violent crime were approximately three or more times more likely to report FI compared to participants who did not (Temple, 2018).

Lastly this investigation underscores the need to expand the focus on the impact of incarceration as well as broader community level processes in work on FI. The studies within the current metasynthesis suggests that FI can serve both as a pathway to incarceration based on engagement in crime to make ends meet and implications of incarceration for accessing employment and income. Moreover, similar to the impact of cumulative disadvantage at the individual/family level, disadvantage in communities also impacts food insecure families by shaping their access to resources and limiting the quality of local amenities including food. However, although studies included in this metasynthesis underscored the role of income in FI, few focused on or reported results related to racial/ethnic discrimination, racism, and/or gender inequality. Given the demographic, economic, and social characteristics associated with an increased risk for FI and findings from quantitative studies stressing the importance of these factors, more studies are needed in these areas (Burke et al., 2018; Phojanakong, Brown Weida, Grimaldi, Lê-Scherban, & Chilton, 2019).

Although this metasynthesis provides important insights to the literature, it is not without limitations. First, although studies were selected using a comprehensive search of scientific literature databases, there may be more relevant work in the gray literature and unpublished reports that were not included in this analysis. Second, evidence suggests that the addition of a second reviewer could have provided additional eligible studies for consideration in the metasynthesis (Stoll et al., 2019). Nevertheless, although searches (with the assistance with a graduate student), data extraction, and coding were performed by the first author, we used systematic approaches that have been widely cited elsewhere for literature reviews, meta-

analysis, and metasynthesis (Sandelowski & Barroso, 2003; Sandelowski et al., 1997). Third, although we used a previously published instrument to evaluate the quality of research studies, the tool could still be viewed as somewhat subjective and based on the interpretation of the author (Letts et al., 2007). Lastly, while we found relevant studies conducted in Africa and Australia/New Zealand, this metasynthesis was limited to studies published in the U.S. and Canada. Consequently, the findings from this investigation cannot be generalized to other countries which may have different social/political contexts.

## Conclusion

Building on previous studies, this investigation contributes to the literature examining relationships between FI and social and structural adversity. Findings from this analysis suggest that to meet this goal, it is important to not only focus on individual families but improve the systems and structures that shape family's circumstances and promote equity. Additionally, findings from this metasynthesis emphasize the importance of looking at FI through a broader contextual lens to consider other adverse circumstances that co-occur with FI in low-income and marginalized families. As indicated by the United Nations Human Rights Council-Committee on Economic, Social and Cultural Rights, "The right to adequate food is realized when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement" (Ayala & Meier, 2017; Rasanathan, Norenhag, & Valentine, 2010). Consistent with the findings from this study, effective policies and structures have a strong effect on population health and well-being and evidence suggests that removing barriers that limit self-efficacy and opportunities for individuals and communities likely have important implications for improving FI (Ayala & Meier, 2017; Chilton & Rose, 2009) (Table 1.1).

**Table 1.1** Brief overview of included studies

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Al-Bayan, Islam, Edwards, and Duncan (2016) | U.S. (New York, NY) | Semi-structured interviews ($n = 17$) | Thematic analysis | $N = 17$<br>100% female<br>100% African American<br>Mean age 47 years<br>Residing in public housing |
| Alkon and Norgaard (2009) | U.S. (Oakland, CA) | Semi-structured interviews ($n = 18$) | No specific method indicated | $N = 18$<br>West Oakland food members collaborative and farmers market vendors |
| Andress and Fitch (2016) | U.S. (Marion, Harrison, Preston, Taylor, Doddridge, and Monongalia counties, WV) | Focus groups ($n = 6$) | Thematic analysis | $N = 30$<br>100% women enrolled in SNAP<br>100% ≥ 21 years old |
| Beaumier and Ford (2010) | Canada (Igloolik, Nunavut) | Semi-structured interviews ($n = 36$); focus groups ($n = 5$); key informants interviews ($n = 13$) | Content analysis | $N = 55$<br>100% female<br>100% Inuit<br>64% 21–40 years<br>72% unemployed<br>$N = 13$ key informant health professionals |
| Bermúdez-Millán et al. (2011) | U.S. (CT) | Focus group ($n = 5$) | Content analysis | $N = 29$<br>100% female<br>100% Puerto Rican<br>Mean age 25<br>72.4% single<br>44.8% Spanish speaking<br>79% ≤ high school/GED<br>85.7% unemployed<br>69% monthly household income < $999<br>90% Medicaid |

(continued)

**Table 1.1** (continued)

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Bhawra, Cooke, Hanning, Wilk, and Gonneville (2015) | Canada (Midland-Penetanguishene and London Ontario) | Focus groups ($n = 4$) | Thematic analysis | $n = 32$<br>Caregivers of Metis and off reservation first nations children<br>81% female |
| Borre, Ertle, & Graff (2010) | U.S. (eastern NC) | Open-ended interviews ($n = 36$). Supplemented with observations and dietary histories | Content analysis | $N = 36$<br>100% migrant and seasonal farmworkers<br>98% from Mexico<br>Mean age 29 years<br>Mean household size 4.5<br>Mean household income $396<br>Mean age of children 4 years |
| Bove and Olson (2006) | U.S. (Upstate NY) | In-depth interviews 9$n = 28$) | Constant comparative analysis | $N = 28$<br>100% female<br>78% 20–39 years old<br>68% ≤ High school/GED<br>89% White<br>82% living with partner<br>54% employed<br>57% food insecure |
| Carney (2012) | U.S. (Santa Barbara County, CA) | Observations and unstructured interviews | No specific method indicated | $N = 3$<br>Food centered venues including weekend markets and swap meets, locally owned retail food outlets, corporate supermarkets, community gardens, and food assistance program offices in low-income neighborhoods |

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Carney (2014) | U.S. (Santa Barbara County, CA) | Life history interviews, dietary surveys, focus groups, and participant observation ($n = 25$) | No specific method indicated | $N = 25$<br>Migrant women<br>Mean age 38 years<br>98% from Mexico<br>56% unemployed/underemployed |
| Cherry-Chandler (2009) | U.S. | Personal narrative ($n = 1$) | Qualitative case study | $N = 1$<br>100% African American<br>100% public housing |
| Chilton and Booth (2007) | U.S. (Philadelphia, PA) | Focus groups ($n = 4$) and semi-structured interviews ($n = 12$) | Constant comparative analysis | $N = 34$<br>Mean age 45<br>100% female<br>100% African American<br>85% unemployed<br>47% < high school<br>65% SNAP<br>79% food insecure |
| Chilton, Rabinowich, and Woolf (2014) | U.S. (Philadelphia, PA) | Semi-structured interviews ($n = 31$) | Grounded theory | $N = 31$<br>Food insecure women with children <4 years old<br>Mean age 26<br>55% Black/African American<br>39% Hispanic/Latinx<br>64% unemployed<br>62% high school/GED or lower<br>90% SNAP<br>48% low/very low food insecure |

(continued)

**Table 1.1** (continued)

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Chilton et al. (2017) | U.S. (Philadelphia, PA) | Semi-structured interviews ($n = 31$) | Grounded theory | $n = 31$<br>Food insecure women with children <4 years old<br>Mean age 26<br>55% Black/African American<br>39% Hispanic/Latinx<br>64% unemployed<br>62% high school/GED or lower<br>90% SNAP<br>48% low/very low food insecure |
| Christaldi and Cuy Castellanos (2014) | U.S. (Lackawanna County, PA) | Focus groups ($n = 10$) | Combination | $n = 89$<br>76% male<br>Mean age: 48 years<br>51% Hispanic/Latino<br>23% White<br>58% college graduate<br>85% single/divorced/windowed<br>20% unemployed<br>28% SNAP benefits<br>27% SNAP benefits and food pantry user |
| Cooper et al. (2015) | U.S. (Atlanta, GA) | Four waves of semi-structured interviews ($n = 120$) | Grounded theory | $N = 30$<br>Mean age 33<br>African-American women with a primary male partner who had been incarcerated in the past 12 months |
| Davison et al. (2019) | Canada (Fraser Valley, British Columbia) | 570 hours of naturalistic observation; in-depth individual interviews ($n = 47$); focus groups ($n = 3$) | Interpretive thematic analysis | $N = 40$ key informant stakeholders<br>$N = 16$ families with a father Who is currently or formerly incarcerated in a Canadian federal correctional facility<br>$N = 7$ partners of fathers |

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| De Marco et al. (2009) | U.S. (Benton County, OR) | Semi-structured interviews ($n$ = 25) | Content analysis | $N$ = 25<br>Mean age = 47.75 years<br>72% female<br>80% White<br>56% rural<br>80% food insecure |
| Dong, Must, Tang, Stopka, and Beckwith (2018) | U.S. (RI) | In-depth interviews ($n$ = 22) | Thematic analysis | $N$ = 22<br>Adults under active probation supervision<br>Mean age 31<br>68% male<br>23% Hispanic/Latinx<br>77% White<br>23% Black<br>73% SNAP |
| Dutta et al. (2016) | U.S. (Tippecanoe County, IN) | In-depth interviews ($n$ = 18) | Grounded theory | $N$ = 18 |
| Haynes-Maslow, Auvergne, Mark, Ammerman, and Weiner (2015) | U.S. (NC) | Focus groups ($n$ = 13) | Content analysis | $N$ = 105<br>71% African American<br>74% female<br>53% ≤ high school/GED<br>71% annual household income <$20,000<br>56.2% SNAP benefits<br>59% single/divorced |

(continued)

**Table 1.1** (continued)

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Hecht, Biehl, Buzogany, and Neff (2018) | U.S. (Baltimore, MD) | Semi-structured interviews ($n = 25$) | Phrenetic iterative approach | $N = 13$<br>Baltimore food system stakeholders/key informants<br>Food access organizations including governmental offices, non-profits<br>$N = 12$<br>Baltimore food system stakeholders/key informants community leaders from predominantly low-income and African-American neighborhood, including leaders of neighborhood associations, churches, etc. |
| Hege et al. (2018) | U.S. (Rural NC) | Focus group ($n = 3$) | Constant comparative analysis | $N = 24$<br>Individuals using food pantries and community meals<br>County characteristics<br>91% White<br>7% unemployment<br>13.7% ≥ Bachelor's degree<br>Median household income $35,763<br>19% below poverty |
| Heinrich et al. (2008) | U.S. (HI) | Focus group ($n = 10$) | Content analysis | $N = 86$<br>73.5% female<br>61.6% native Hawaiian/Pacific islander<br>62.7% ages 18–39<br>80.5% high school<br>50.6% income <$10,000<br>73.5% SNAP |

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Jarrett et al. (2014) | U.S. (unknown inner city) | Semi-structured interviews | Interpretive approach | *N* = 12<br>Mean age 31.9<br>83% single/divorced/widowed |
| Jernigan, Salvatore, Styne, and Winkleby (2012) | U.S. | Focus groups (*n* = 5) | Content analysis | *N* = 40<br>100% native American |
| Johnson, Williams, and Gillis (2015) | Canada (Nova Scotia) | In-depth interviews (*n* = 12) | Thematic analysis | *N* = 12<br>100% female<br>Women who participated in Nova Scotia participatory food security project, a program focused on gathering data about the affordability of a nutritious food basket through province-wide participatory food costing |
| Kato (2013) | U.S. (New Orleans, LA) | Ethnographic observations over 19 months (*n* = 4–6 weekly) ethnographic interviews (*n* = 30) | No specific method indicated | *N* = 30<br>Staff, volunteers, customers, gardeners, and residents in garden program |
| Knezevic, Hunter, Watt, Williams, and Anderson (2014) | Canada (Nova Scotia) | PFC reports, project newsletters, publications, meeting minutes and other documents | Content analysis | N/A |

(continued)

**Table 1.1** (continued)

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Knowles et al. (2015) | U.S. (Philadelphia, PA) | Semi-structured interview and photo elicitation/photovoice ($n = 69$) | Content analysis | $N = 69$<br>98% female<br>37% Black/African American<br>26% Hispanic<br>6% White<br>31% employed<br>66% ≥ high school/GED<br>81% food insecure<br>50% housing insecure |
| Knowles et al. (2016) | U.S. (Minneapolis, MN and Philadelphia, PA) | Interviews | Content analysis | $n = 51$<br>Parents/caregivers children <4 years<br>96% female<br>76% African American<br>12% Latino<br>18% other<br>45% single<br>80% ≤ high school/GED<br>86% unemployed |
| Leung et al. (2013) | U.S. (national) | Semi-structured key informant interviews ($n = 27$) | Thematic analysis | $N = 27$<br>Experts from advocacy, government, industry, and research organizations |
| Loth, Uy, Neumark-Sztainer, Fisher, and Berge (2018) | U.S. | Semi-structured interviews ($n = 40$) | Content analysis | $N = 40$<br>72.5 female<br>80% White<br>6.75% full time employment<br>45% Bachelor's degree<br>82.5% married<br>25% income <$50,000 |

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Mayfield, Carolan, Weatherspoon, Chung, and Hoerr (2017) | U.S. (Flint, MI) | Focus group ($n = 8$) | Content analysis | $N = 30$<br>100% African American<br>100% female<br>56% mothers age 21–50 years<br>With children aged <18 years in the Household |
| McClain, Dickin, and Dollahite (2019) | U.S. (upstate NY) | Semi-structured interviews ($n = 27$) | Content analysis | $N = 27$<br>Mean age 30<br>24% married or living with partner<br>14% unemployed<br>24% from southern Mexico<br>19% food insecure in childhood<br>Median monthly income $1000<br>51% SNAP |
| McIntyre, Patterson, and Mah (2019) | Canada | Policy documents, debates, historical sources including government-commission scientific report (110 extracts), committee evidence (123 extracts), legislators' statements and policy entrepreneur interviews | Conventional qualitative content analysis | $N = 84$ legislators<br>$N = 17$ advocates, and policy |
| McIntyre et al. (2016) | Canada (Ontario, British Columbia, and Nova Scotia) | Debate texts of legislative argumentation about household FI from Hansard records at the federal level and in three provincial jurisdictions | Conventional qualitative content analysis | Legislators |

(continued)

**Table 1.1** (continued)

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Munger, Lloyd, Speirs, Riera, and Grutzmacher (2015) | U.S. (MD) | In-depth, semi-structured interviews ($n = 42$) | Modified grounded theory | $N = 42$<br>Mean age 44.3<br>100% Latino adults<br>57.1% undocumented<br>50% male<br>75% < High school/GED<br>54.2% single, divorced, or separated<br>97.5% income 0-$10,000 |
| Page-Reeves et al. (2014) | U.S. (Albuquerque, NM) | Ethnographic interviews ($n = 16$) | Modified grounded theory | $n = 16$<br>93% Hispanic women/Latina from neighborhood with high FI and low food access |
| Quandt, Grzywacz, Trejo, and Arcury (2014) | U.S. (NC) | Interviews ($n = 33$) | Thematic analysis | $N = 33$<br>Migrant and seasonal farmworkers<br>Child 2–5 years of age |
| Quintanilha, Mayan, Jarman, and Bell (2019) | Canada (Edmonton, Alberta) | Interviews ($n = 17$) | Qualitative content analysis | $N = 17$<br>100% Somali refugees<br>100% female<br>41% at least one adult in the household employed<br>59% social assistance |
| Ramadurai et al. (2012) | U.S. (Central TX) | Focus groups ($n = 12$) | Constructivist grounded theory | $N = 86$<br>Mean age 53 years<br>72% female<br>31.4% White/Caucasian<br>47.7% African American<br>20.9% Latinx/Hispanic |

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Robbins et al. (2017) | U.S. (Baltimore, MD) | In-depth interviews ($n$ = 33) | Phenomenological approach. | $N$ = 33<br>100% mothers<br>100% SNAP<br>93.9% African American |
| Rosemond et al. (2019) | U.S. (SC) | Semi-structured interviews ($n$-60) | Grounded theory | $N$ = 40 (caregiver and child participants)<br>$N$ = 20 caregivers<br>Mean age: Caregiver 41.19<br>90% female<br>75% non-Hispanic black<br>85% mothers<br>50% very low FI<br>50% low FI<br>75% annual income <$35,000<br>65% receives SNAP<br>$N$ = 20 children<br>Mean age: Child 12.7 years<br>50% female<br>75% non-Hispanic black |
| Sano, Garasky, Greder, Cook & Browder (2011) | U.S. (CA, MI, OR, and IA) | In-depth interviews ($n$ = 10) | Grounded theory | $N$ = 10<br>100% Latino immigrant mothers<br>Mean age 31.2 years<br>Mean monthly income $2157<br>40% SNAP |

(continued)

**Table 1.1** (continued)

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Sano, Routh, & Lanigan (2019) | U.S. (WA) | In-depth interviews (*n*=17) | No specific method indicated | *N* = 17<br>100% female<br>52.9% non-Hispanic White<br>29.4% Hispanic<br>17.7% Other or Unknown<br>35.3%>High School<br>52.9% Married/Cohabitation/Domestic Partnership |
| Savoie-Roskos, Durward, Jeweks, and LeBlanc (2016) | U.S. (Northern UT) | Semi-structured interviews (*n* = 14) | Inductive content analysis | *N* = 14<br>71% 18–39 years of age<br>71% female<br>93% income <$30,000<br>42% employed |
| Sealy (2010) | U.S. (New York, NY) | Focus groups (*n* = 3) | Constant comparative analysis | *N* = 34<br>Mean age 36.9<br>76.5% female<br>50% African American<br>29.4% Caribbean<br>20.5 5 Puerto Rican<br>85% employed<br>47% ≤ high school<br>72% ≤ $35,000 |

| Author | Country | Data collection approach /sources | Data analysis | Population |
|---|---|---|---|---|
| Webber and Rojhani (2010) | U.S. (Southwest MI) | Semi-structured interviews ($n = 77$) | Thematic analysis | $N = 69$<br>WIC participants<br>Mean age: 27 years<br>70% High school/GED or higher<br>60% White/Caucasian<br>33% Mexican/Mexican American<br>65% married/living with partner<br>$N = 8$ food retailers<br>1 big box superstore<br>2 limited assortment discount food store<br>2 Mexican bodega<br>3 grocery store franchises |
| Webber and Dollahite (2008) | U.S. | Interviews ($n = 28$) | Content analysis | $N = 28$<br>Mean age 36.5<br>89% female<br>78.5% White<br>39% rural<br>60% SNAP<br>42% WIC |
| Williams et al. (2010) | Canada (Nova Scotia) | Individual interviews ($n = 4$); focus groups ($n = 5$) | Conventional content analysis | $N = 34$<br>Mothers of children <14 years of age |
| Younginer, Blake, Draper, and Jones (2015) | U.S. (Columbia, SC) | Semi-structured interviews ($n = 14$) | Constant comparative analysis | $n = 14$<br>Adults over 25 years of age, with children, who used food pantries or lived in transitional housing<br>79% female |

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# Chapter 2
# How Families Cope with Food Insecurity in the Rural South


**Sarah Bowen, Annie Hardison-Moody, and Sinikka Elliott**

**Abstract** The counties with the highest rates of food insecurity are disproportionately rural and located in the South. However, few studies have examined why food insecurity rates are higher in rural areas or looked at the lived experiences of food-insecure rural residents. In this chapter, drawing on a mixed-methods study of poor and working-class families in two rural North Carolina counties, we offer a qualitative analysis of the ways poor rural families access food and their experiences coping with and preventing food shortages. We find that place shapes people's access to food and the resources they draw on during food shortages. Rural residents confront specific barriers, including higher travel costs and fewer emergency food resources, but they also draw on place-specific resources, including gardens and farms and strong social support networks. Latino/a/x immigrants in rural areas experience distinct challenges related to accessing culturally appropriate food, especially in contexts of intensifying anti-immigrant rhetoric and surveillance.

**Keywords** Food insecurity · Rural food insecurity · Food access · Food environments · Local food · Social support · Culturally relevant food · Immigrants in rural areas · Rural residents

In 2018, 11.1% of American households experienced food insecurity, meaning they did not have adequate resources to provide sufficient food for everyone in the household (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2019). Since the U.S. Department of Agriculture (USDA) began tracking rates of food insecurity in the USA in 1995, a large body of research has examined the household (and, to a smaller degree, community) characteristics that predict food insecurity. For the most part, however, this research has not considered how place influences experiences of food insecurity,

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even though there are large and well-documented spatial variations in the prevalence of food insecurity.

The counties with the highest rates of food insecurity are disproportionately rural and located in the South (Feeding America, 2019). However, few studies have examined why food insecurity rates are higher in rural areas or looked at the lived experiences of food-insecure rural residents. In this chapter, drawing on a mixed-methods study of poor and working-class families in North Carolina, we offer a qualitative analysis of the ways poor rural families access food and their experiences coping with and preventing food shortages.

## Spatial Variation in Rates of Food Insecurity

In general, rates of food insecurity are higher in rural (nonmetropolitan) areas and city cores than in suburban areas; 12.7% of households in nonmetropolitan counties and 13.2% in city cores are classified as food insecure, compared to 8.9% in suburbs (Coleman-Jensen et al., 2019). However, these designations are relatively coarse. When counties are categorized according to nine Rural-Urban Continuum codes, relatively similar rates of food insecurity are found across urban and rural areas, but there is also considerable regional variation (Gundersen, Dewey, Hake, Engelhard, & Crumbaugh, 2017). Across the USA, county-level food insecurity rates range from a low of 3% (in Steele County, North Dakota) to a high of almost 36% (in Jefferson County, Mississippi; Feeding America, 2019). Rates of food insecurity are higher in the South, followed by the West, compared to the Midwest and Northeast (Gundersen et al., 2017), and a majority of the most food-insecure counties (the top 10%) are in the rural (nonmetropolitan) South (Feeding America, 2019). While rural counties make up 63% of all counties, they represent 78% of counties with the highest rates of food insecurity. Nearly nine out of ten (87%) of the most food-insecure counties are in the South. When the more precise Rural-Urban Continuum codes are used, the highest rates of food insecurity are still found in counties in the South, but in those in the middle of the continuum (i.e., in counties with relatively small towns and that are not adjacent to major cities, rather than counties in the most isolated rural areas; Gundersen et al., 2017).

Although only a few studies have explicitly investigated why rates of food insecurity are high in the rural USA, existing research offers insight into the processes that likely contribute to rural food insecurity. First, geography shapes access to food retail outlets. Compared to people in urban areas, people who live in rural areas travel farther to get to supermarkets and spend more time traveling to go food shopping (U.S. Department of Agriculture (USDA), Economic Research Service (ERS), 2009). “Rural food deserts” or counties where residents have to travel more than 10 miles to access a large supermarket are found throughout the USA. There is a high concentration of food desert counties stretching from the Rocky Mountains east into the Great Plains, along with concentrated areas of food deserts in persistently poor parts of the southeastern USA (Morton & Blanchard, 2007). Food desert

residents in Iowa and Minnesota perceive that they have lower access to food, higher food costs, and lower food quality because of the lack of supermarkets in their communities (Smith & Morton, 2009). As large food retailers have consolidated, the number of grocery stores has declined (Bailey, 2010; Piontak & Schulman, 2014). As supermarkets close in rural areas, dollar stores have moved in; between 2011 and 2018, the number of dollar stores nationwide increased from about 20,000 to nearly 30,000 (Donahue & Mitchell, 2018). Researchers find that dollar stores intentionally target low-income rural areas with low food access; they provide rural residents with needed food staples, but also disrupt rural economies and generally offer no fresh produce (Wolfrath, Ryan, & Nehring, 2018).

Secondly, spatial patterns of food insecurity track closely with the spatial distribution of poverty. Existing research demonstrates strong correlations between food insecurity and poverty (Coleman-Jensen et al., 2019). Poverty rates in rural (nonmetropolitan) counties are higher than in urban (metropolitan) counties, and the gap is highest in the South (U.S. Department of Agriculture (USDA), Economic Research Service (ERS), 2019a). Although the rural poor comprise about 17% of America's poor population, they remain largely invisible to many researchers and policymakers (Burton, Lichter, Baker, & Eason, 2013). Unemployment and underemployment, key predictors of household food insecurity, are also higher in rural counties (Piontak & Schulman, 2014). Moreover, although the employment index in urban areas had bounced back to pre-recession levels by 2013, a recent report suggested that the rural employment index still had not recovered by 2017 (U.S. Department of Agriculture (USDA), Economic Research Service (ERS), 2019b).

An important dimension of poverty is its persistence over time, and 85% of persistently poor counties are in rural areas (U.S. Department of Agriculture (USDA), Economic Research Service (ERS), 2019a, b). Two-thirds of high food-insecurity counties are characterized by persistent poverty (Feeding America, 2019). Moreover, since 2000, there has been an uptick in the number of poor communities (places with concentrated poverty or poverty rates exceeding 20% or 30%). In addition, the share of poor people living in areas of concentrated poverty has increased in rural areas in the last three decades, while staying the same in urban areas (Lichter, Parisi, & Taquino, 2012). As a report by Feeding America concludes (Feeding America, 2019), "[The] confluence of long-standing poverty and heightened food insecurity underscores [how] low-income people in these areas [face] a number of interrelated problems that require complex, long-term solutions" (p. 17).

Finally, rural food insecurity and rural poverty are tied to racial inequality. Although the rural USA is often viewed as comprised largely of industrious working-class white farmers and laborers descended from northern European immigrant families, rural America is in fact far more diverse (Burton et al., 2013). Racial and ethnic minorities make up 22% of the population in rural areas, and rural areas have become more diverse in recent decades. Given that people of color are much more likely to live in areas of concentrated poverty and with high food insecurity rates (Feeding America, 2019; Lichter et al., 2012), we cannot address food insecurity without acknowledging and confronting systemic racism and racial inequality.

Given these gaps in understanding rural food insecurity, there is a need for research exploring lived experiences of food-insecure families in diverse rural communities. In this chapter, drawing on a mixed-methods study of a group of Black, white, and Latino/a/x households in North Carolina, we offer a qualitative analysis of the ways poor rural families access food and their experiences coping with and preventing food shortages. The study took place in three North Carolina counties: one urban and two rural, according to the metropolitan-nonmetropolitan dichotomy set by the federal government. This chapter focuses on the narratives of people in the two rural counties. In line with our expectations, we find that place shapes people's access to food and the resources they draw on during food shortages. Rural residents confront specific barriers, including higher travel costs and fewer emergency food resources, but they also draw on place-specific resources, including gardens, farms, and strong social support networks. "Latino/a/x immigrants in rural areas experience distinct challenges related to accessing culturally appropriate food, especially in contexts of intensifying anti-immigrant rhetoric and surveillance.

## Methods for Studying Low-Income Women's Feeding Practices

The data come from a longitudinal, mixed-methods research project on family feeding practices among low-income women (see Bowen, Brenton, & Elliott, 2019; Elliott & Bowen, 2018). In 2012 and early 2013, we conducted semi-structured interviews, a survey, and 24-h dietary recalls with mothers and grandmothers of young children in three North Carolina counties. In total, 124 women completed all research components. Of these, 39 participants lived in an urban county (Wake County, home of Raleigh, the state capital) and 85 were in one of the two rural counties (Harnett and Lee). In this chapter, we focus on the 85 women living in the rural counties.

We recruited participants from a range of community settings, including churches, community events, daycares, and schools. In order to be included in the study, participants had to be the primary caretaker of at least one child between the ages of two and nine. Only those grandmothers who were primary caretakers were included; the sample in the rural counties included 8 grandmothers and 77 mothers. We restricted our sample to female caregivers because women are still disproportionately responsible for preparing meals in American households (Taillie, 2018) and play key roles in mitigating food insecurity (Martin & Lippert, 2012). Screening questions were used to exclude participants with household incomes in the previous year that were over 200% of the poverty line ($44,700 for a family of four in 2011). In each household, a focal child was randomly selected at the beginning of the project; all focal children were 2 to 9 years old at baseline.

## *Data Collection*

The project involved three waves of interview, food recall, and survey data collection in Years 1, 3, and 5. The study discussed here focuses on the interviews and surveys conducted in Year 1 in the two rural counties. (We also conducted interviews with the caregivers in Years 3 and 5 and with the focal children in Year 5. We conducted two waves of intensive ethnographic observations with 12 families from the larger study in Years 2 and 4. These are not analyzed here, but they inform our analysis).

Interviews were conducted by a research team of Black, white, Latina, and Asian American women from diverse class backgrounds. Interviews were conducted in English or Spanish, according to participant preference; a bicultural, native-Spanish speaker conducted interviews with Spanish-speaking participants. Interviews generally lasted between 1.5 and 2 h, and almost all took place in participants' homes. The interviews focused on beliefs, decisions, and practices related to food and feeding. We also asked questions about broader experiences related to food, including memories and traditions, and beliefs about health and nutrition. Interviews were audio recorded and transcribed verbatim.

Prior to the first interview, participants completed a survey. The survey was administered orally in English or Spanish and focused on basic demographic and household characteristics with some brief questions about food and health practices. The survey included questions about participants' access to a car or another source of reliable transportation, perceptions of their neighborhood, and gardening practices, all of which are analyzed in this chapter.

## *Data Analysis*

All interviews were professionally transcribed and pseudonyms applied to conceal participants' identities. Spanish-language interviews were first transcribed in Spanish and then translated into English and quality-controlled by a native-Spanish speaker. Transcripts were uploaded into NVivo software and analyzed by a team of researchers including all of the authors. We used a grounded theory approach to develop the codebook, focusing on understanding women's experiences and how their food and eating beliefs and practices were influenced by their food environments and by social, cultural, and economic factors (Charmaz, 2014). The research team held a series of workshops to discuss thematic codes, following an iterative process of coding, memoing, and discussing until the codebook was established. There were a total of 75 codes which were coded in two separate rounds. We purposefully kept the codes broad so that we could conduct focused coding of the more general concepts. During coding, we reviewed 10% of the transcripts, recoding or adjusting coding categories as necessary.

## *Description of Sample*

Table 2.1 highlights select descriptive characteristics of participants analyzed for this chapter, all of whom lived in the two rural counties. Participants' race and

**Table 2.1** Sample characteristics (for rural households)

| Race/ethnicity | *n* | % |
|---|---|---|
| White | 41 | 48.2 |
| Black | 24 | 28.2 |
| Latina | 20 | 23.5 |
| *Birthplace* | | |
| USA | 67 | 78.8 |
| Outside the USA[a] | 18 | 21.2 |
| *Education* | | |
| Less than 8th grade | 7 | 8.2 |
| Some high school | 11 | 12.9 |
| High school degree/GED | 25 | 29.4 |
| Trade/vocational or some college | 37 | 43.5 |
| Bachelor's degree[b] | 5 | 5.9 |
| *Employment status* | | |
| Full-time | 17 | 20.0 |
| Part-time | 12 | 14.1 |
| Homemaker | 25 | 29.4 |
| Unemployed | 21 | 24.7 |
| Disabled | 7 | 8.2 |
| Other[c] | 3 | 3.6 |
| *Married or living with partner* | | |
| No | 33 | 38.8 |
| Yes | 52 | 61.2 |
| *Food security status*[d] | | |
| High food security | 42 | 50.0 |
| Low food security | 24 | 28.6 |
| Very low food security | 18 | 21.4 |

All variables refer to caregiver unless otherwise specified
[a]This category includes U.S. territories such as Puerto Rico
[b]No participants had higher than a bachelor's degree
[c]Category included retired person or student
[d]Food security status is defined according to the USDA definition. People experiencing "high food security" are considered food secure; the category of "food insecure" includes both low and very low food security. One participant had missing data for this question

ethnicity roughly corresponded with the race and ethnicity of the low-income population in our study sites. The sample was comprised of 48.2% Black, 28.2% white, and 23.5% Latina participants. Almost one-quarter (21.2%) of participants had immigrated to the USA from another country or a U.S. territory, with a majority coming from Mexico. Slightly more than one-fifth (21.3%) of participants had less than a high school education, while 29.4% had a high school degree or GED. Approximately half of participants had an associate's degree or some college. Slightly more than one-third of participants were working at the time of the interview either full- or part-time. The majority (71.8%) of households had incomes under 100% of the poverty line. About 22% had incomes between 100% and 200% of the poverty line, and, due to a screening error, 5.9% had incomes between 200% and 252% of the poverty line. Half of the households in the study were classified as food insecure, according to the USDA's definition. The USDA defines food security as having "access at all times to enough food for an active, healthy life for all household members" (Coleman-Jensen et al., 2019). Households that do not meet this definition are considered food insecure. Within the category of food insecure, the USDA distinguishes between low and very low food insecurity. Of households in our sample, 28.6% experienced "low food insecurity," while 21.4% experienced "very low food insecurity."

## Rural Food Access: Barriers and Supports

The two rural counties in the study, Harnett and Lee, are adjacent to Wake County, home of the North Carolina state capital. Food insecurity rates in Harnett and Lee counties are 15% and 13.5%, respectively, close to the state average (14.6%; Feeding America, 2019). Poverty rates are also close to the state average; 14.4% of Harnett County households and 15.7% of Lee County households are under the poverty line (United States Census Bureau, 2018). Like North Carolina as a whole, the counties are diverse in terms of race and ethnicity. In Harnett County, 61% of the population is white, 22% Black, and 13% Hispanic or Latino. In Lee County, 58% of the population is white, 20% Black, and 20% Hispanic or Latino (United States Census Bureau, 2018).[1]

In this chapter, we discuss four place-specific factors that shaped how families in these two rural counties accessed foods. Importantly, these factors included both barriers and supports. For example, rural residents traveled farther to get to supermarkets, but were more likely to have access to produce from their own garden or from some else's garden or farm. Rural residents had fewer emergency food resources (e.g., food pantries), but many had longstanding support networks that

[1] Categories come from the Census, which distinguishes between race and ethnicity. Percentages for the white population are for white, non-Hispanic.

served as informal supports. Latina immigrant mothers faced distinct challenges accessing culturally relevant foods.

## *Longer Distances to Supermarkets*

First, geography shaped rural residents' interactions with their food environments. Although many women liked living in their rural communities because of the beautiful natural scenery and close-knit communities, the physical distance between food outlets introduced additional transportation costs that limited their access to food. As noted above, rural residents generally travel farther and spend more time shopping for food (U.S. Department of Agriculture (USDA), Economic Research Service (ERS), 2009). This was also true of the households in our study. Women living in rural counties spent more time and more money driving to supermarkets. In a separate analysis of the data, the shopping patterns of all of the women were traced (MacNell, 2018). Across the sample, very few women shopped at the store closest to their house. Instead, most traveled regularly to another preferred store, mainly because of the perceived lower prices at other stores. Women in the two rural counties lived farther from their closest stores and traveled farther to their preferred stores (2.7 and 2.9 miles to the nearest store in the rural counties compared to 1.1 miles in the urban county; 5.8 and 7.3 miles to the preferred store, compared to 2.9 in the urban county).

High gas prices made shopping trips costly and sometimes inaccessible for many rural residents. Gas prices consistently averaged over $3.50 a gallon during the period in which we conducted our first round of interviews (between February 2012 and March 2013). Rural residents discussed how they limited their shopping trips or avoided certain stores because of the costs. Jenny, a white mother of four, explained, "With the gas situation, we have to really tightly keep it so there's not a lot of running [around in the car]. So, we mainly do our grocery shopping for the whole month in one to two days. And hopefully we have everything, and then the only thing we have to run out for the rest of the month is basic, like milk, bread, eggs, you know."

Jenny seemed satisfied with her shopping arrangement, but other women talked about how long distances or high gas prices prevented them from shopping the way they wanted to. Maria, a white mother of three, said that she preferred to shop at Walmart because it was cheaper, but sometimes they went to Food Lion, which was "just down the street," because Walmart was in another town, 15 miles away. "It all just depends on what the funds look like for the gas," she explained.

Latina immigrants and women from Puerto Rico said they relied on very specific ingredients to make dishes that they remembered from their childhoods or home countries. For them, the lack of food retail stores in rural areas made it difficult to obtain culturally relevant foods, considered an important dimension of food security (see also MacNell, Elliott, Hardison-Moody, & Bowen, 2017). (Non-Latina women also talked about the importance of culturally relevant foods, but these foods were

more readily accessible). Larisa, a Latina mother of three, lived in a very rural area with few grocery stores nearby. She had previously shopped at a Latin American grocery store because it had the ingredients she and her husband needed to make the Puerto Rican dishes they liked. Eventually, though, she stopped because it was a 30-min drive. "We used to go, because they had a lot of Spanish stuff, but it really wasn't that humongous, so we just [go to] the Piggly Wiggly, or Food Lion [now]," she said. Although these stores were closer, they did not have all the ingredients she needed. "They just need more Spanish things in there," she explained. "Like vegetables, [Puerto Rican] vegetables that they have in New Jersey….We usually do something called *verduras con bacalao* [vegetables with salt cod, a Puerto Rican dish] and it has a lot of different vegetables in it. We do it with fish, with bacalao. And sometimes you can't really find the exact vegetables you need….We always have to drive to [the town 30 miles away] to get it."

Finally, families without access to reliable transportation found it particularly difficult to get to the store because the two rural counties had virtually no public transportation. The majority of rural residents in our sample had their own cars. Only 15.5% of women in the two rural counties reported *not* having their own car, compared to nearly half (48.7%) of women in the urban county. For those who did not have a car, living in rural areas could be extremely challenging. Kyla, a Black mother of three, had been without a car for 6 months when we met her. "I had [a car], and the motor went, so I just junked it," she said. "Now I'm trying to work on getting another car. I would like to have a job, but I can't depend on anybody to watch my children. I can't depend on a constant ride back and forth to work." Kyla felt lucky because she had a friend who would give her a ride to the grocery store whenever she needed to go, even though her friend lived "a good 15-20 minutes away." In contrast to many of the women in our study, who said they did one main shopping trip per month (MacNell et al., 2017), Kyla preferred to shop once a week. She allocated a certain portion of her food budget to each week because she felt that helped her stretch her SNAP benefits. "Before, when I get my food stamps, I would go and just like spend them all up," she explained. "So lately, I'm trying to go and spend like a week at a time, because it seems like at the end of the month I get so low, and so I've been trying to stretch it out. I've been thinking like if I just go and buy as I need, maybe I can stretch it a little bit farther." However, Kyla was not always able to shop this way because she could not plan in advance when she would be able to get to the store. Moreover, she hated having to depend on others. "I'm a set schedule type of person," she said. "I like knowing how my days are to go. I like to plan things out. And right now, everything is just like jumbled up and… I hate it."

As Kyla's narrative demonstrates, a lack of reliable transportation also influenced women's ability to get to work and medical appointments. For example, Tara, a white mother of two, did not have a car and relied on her mother and friends for rides. She drew a direct connection between the fact that she did not have a car, her difficulties getting a job, and her feelings of inadequacy as a mother. "I wish I could get a job, have a stable job, and then save up so I know I can—I wish I had a car, so I could get back and forth to help my children out," she said wistfully. "I gotta wish to be back on my feet for my children from where I am. 'Cause that's the main thing."

Overall, geographic distance and high gas prices prevented women in rural communities from shopping at the food stores with the lowest prices and best offerings. Those circumstances, coupled with higher food costs, made it difficult for the families to obtain affordable and culturally relevant food. These challenges were especially stark for families who did not have access to reliable transportation and for Latina immigrant mothers, who struggled to find specific ingredients in their rural communities.

## *Greater Access to Gardens*

Despite persistent barriers to accessing healthy, affordable food, rural residents were also able to draw on rural-specific resources, including gardens and farms offering fresh produce, to fill food gaps. Across our sample, many of the women who had grown up in rural areas had positive memories of eating produce from their own gardens or local farms. For example, Sherry, a Black grandmother raising her two grandchildren, lived in a small city in a rural county, but said she had grown up "in the country." She recalled, "Back then, the neighbors, they shared… And it was totally different because they had the [vegetables] that had to come out of the fields." Her husband interjected, "My grandma would call my mama and tell her, 'Sugar, I'm getting ready to put down some collards…I've got some string beans that I've put in my deep freezer and I have plenty—come over here and get you some… And Mama would put them in canning jars and can them throughout the summer." Sherry and her husband still had a garden in their yard, although it was not nearly as big as her grandmother's had been. They grew turnip greens, tomatoes, cucumbers, cantaloupes, peppers, squash, and okra. Even when women did not have access to land for a garden, they often still shared fond memories of farms or gardens from their childhood.

Rural residents reported greater access to produce from their own or someone else's garden, as compared to urban mothers. One-quarter of the women in the two rural counties (25.0%) said they grew their own produce (in their own garden, a friend or relative's garden, or a community garden), compared to just 7.7% of women in the urban county. Our findings support those from previous studies that find that compared to people living in urban areas, rural residents are more likely to share or receive produce from gardens and to hunt or fish (Morton, Bitto, Oakland, & Sand, 2008). Families in our study used gardens to obtain foods they could not otherwise afford or would not have access to. For example, Stephanie, a white mother of two, said they almost exclusively ate canned fruits and vegetables during most of the year. During the summer, however, they harvested produce from their garden. "Whatever fresh [produce] you see me eat, will be from a little 4 x 4-foot garden out there," she said, pointing outside. When asked why she never bought fresh produce, she said, "One, it's expensive and two—I wanted watermelon so bad, and I broke down and I bought one and it was not any good. But I've got watermelon and cantaloupe out there. I'm hoping it'll grow."

Stephanie's garden supplemented her families' food supply; it was not a central part of it. Other families, however, depended on gardening, raising chickens, or hunting as essential aspects of their food provisioning strategies. Annabelle, a white mother of three, reported an annual household income of less than $11,000. To get by, Annabelle and her husband hunted, raised chickens for eggs, grew vegetables in their own garden, and took donations from a farmer they knew. Annabelle described herself as a "scavenger for my family;" she did what it took to ensure her family had enough to eat. Of the farmer, she said, "He takes care of me, and whatever he doesn't sell that's been picked, that can go bad, he brings to our family so that we can feed [the kids] …. But it's been hard if we don't have meat. Like we don't have meat this week. So, we're eating vegetables, which is hard for the kids. But we do a lot of breakfast. Breakfast for supper; we do a lot of that because [of] the protein from the eggs."

Annabelle had access to larger quantities of produce and eggs than most people in our study. Still, many rural residents cited "reciprocal food practices" (see Morton et al., 2008), such as sharing garden produce or receiving occasional produce deliveries from neighbors or friends, as part of how they fed their families. Some families supplemented their diets with game that they or others had hunted. When we met Kitty, a white mother of three, her family was getting by on SNAP benefits and Kitty's $700 monthly disability check. Her husband had been a cook in a restaurant but was out of work. Hunting helped ensure they had enough meat, and Kitty felt that it was healthier than the meat she could buy in the store. "Until recently…my father was hunting every year and I also hunt every year, so we had plenty of deer meat," said Kitty. "All of our friends hunt. We had quite a few friends that hunted and didn't want the deer; they only wanted the antlers. So, they would give us the deer and we would clean them out and cut the meat up …. We grew up with that type of meat and we know for a fact that there's no chemicals in it that's going to kill us."

As noted above, immigrant families in rural areas had difficulty in obtaining culturally relevant foods. However, local food resources in rural communities often gave these families access to ingredients that they would not be able to get otherwise. Across the sample, immigrant women were more likely to garden; more than 40% (40.7%) of women born in Puerto Rico[2] or another country grew their own food, compared to 13.5% of the other women in our study. Latina immigrants talked about saving seeds or exchanging seeds with friends or relatives in order to grow particular herbs or chiles. Armonía, a Latina mother of three who had moved to the USA from Mexico 18 years earlier, said that even though she cooked the same dishes she had grown up eating in Mexico, they did not taste the same as her mom's had. In an attempt to reproduce some of the tastes she remembered, Armonía grew her own vegetables and raised about 16 chickens, for eggs and poultry. "The chickens [in the store in the United States] are small; they put them in the incubator. That's why food doesn't taste the same [here]," she said. "[My mom's food] was

[2] Although Puerto Rico is part of the USA and subjects born in Puerto Rico are not immigrants, they faced similar challenges in terms of accessing specific herbs, fruits, vegetables, and meats to make dishes from their childhood and so we include them here.

natural. Natural chicken…Over there, I have [chickens now] but it's hard to catch them…These are tastier than the chickens from [the store]—oh no!" Armonía also had a garden. "I love to have plants…My brother gave me seeds…and they're growing…tomatoes, chiles," she said, referring to a dish of brightly colored chile peppers drying on the roof of her car.

Importantly, when rural residents had access to local produce, fish, or game, it largely came from non-market channels. Few said they relied on alternative food market initiatives such as farmers' markets or Community Supported Agriculture programs. Although these initiatives tend to be more concentrated in urban areas or near the urban-rural fringe (Singleton, Sen, & Affuso, 2015), there were farmers' markets in both rural counties in our study. Some women said they were not aware of them, while others said farmers' markets were too inconvenient, far from their homes, or expensive. Melanie, a white mother of two, wished she could buy "things that were organic, with less hormones." She said that if they had more money, they would "definitely have more fresh food, more home-grown [food] where we knew where it came from." However, they could not afford to shop this way. Melanie explained, "We even went to the farmers' market. I spent $10, and you know what we got? I got [a] pound of red potatoes, a squash, and one other thing… maybe like two tomatoes. I mean, $10 for that? I thought, 'Well geez, I could shop at Walmart much cheaper than I can shop here." Consistent with other studies (e.g., Martin, Mycek, Elliott, & Bowen, 2019; McEntee, 2011; Morton et al., 2008), Melanie and other rural women in our study rejected the contemporary alternative food movement as expensive and elitist, while drawing on local food resources (e.g., gardens, farms, hunting) espoused by these movements to supplement their diets and obtain fresh and affordable foods.

## *Limited Emergency Food Resources*

As was the case with food retail outlets, compared to urban residents in our study, rural residents had fewer emergency food resources (e.g., soup kitchens, food pantries) from which to draw during food shortages.[3] Both rural counties did have some food pantries and soup kitchens, primarily tied to churches, although they had fewer than in the urban county. However, people's proximity to and awareness of these resources varied widely. Opal, a white mother of two who lived in an isolated rural area, said she was not aware of any food pantries in her county. "There is one in [a town 30 miles away]," she said. "You can go to it six times a year. But you have to be a resident of that town, to be able to go. And then they have one in [another] county, I think, but you have to go only on Saturdays and you had to go through the

[3] In contrast, rural counties were found to have more emergency food providers per capita in a 2017 study, but these county-level measures likely mask significant spatial variation within counties (Gundersen et al., 2017).

church. If you weren't a member of the church, then you can't get anything. That's crazy. So, I don't know."

Opal's information was not accurate; there are several food pantries in her county, and they do not require recipients to be members of a particular church. (The guidelines for Feeding America, a network of 200 food banks and 60,000 food pantries, specify that food pantries cannot discriminate on the basis of race, age, or religion (Echevarría, Santos, Waxman, Engelhard, & Del Vecchio, 2012). Regardless of the accuracy of her information, however, Opal's narrative shows how access is linked both to the physical presence of resources and to reliable information about where resources are and when they are open. Opal could not go to the food pantries in her county because she did not know they were there. Her narrative also illustrates how access is linked to explicit and implicit rules about who is and who is not welcome to use food pantries. Nearly every food pantry in the rural counties, and most in the urban county, are associated with a Christian church. Faith-based food pantries provide vital services, particularly in rural communities, where access to emergency food is often lacking (Johnson et al., 2018). However, these organizations are often at capacity in terms of their ability to meet persistent needs, and their faith-based mission can alienate or discourage clients who do not adhere to their beliefs from seeking out services (Coleman-Jensen, 2018; Johnson et al., 2018; Wuthnow, 2004).

In addition, with only a handful of food pantries or soup kitchens available in rural counties, even when rural residents were aware of existing resources, they had few options and had to "juggle" food pantries to meet eligibility requirements (which might allow people to come only once a month, for example). Becky, a white mother who supported her father and two children on her monthly disability checks and SNAP benefits, explained that when she came close to running out of food, she would "try to look for different food banks, to see if there's one that I missed. Count days and see if there's one maybe that I missed again that I didn't make it to and things like that." Access to emergency food resources was further limited by the fact that for many rural residents, the closest food pantry was in another county. This made some residents ineligible to use the food pantry closest to their home, since many required clients to prove they were residents of that county.

For some of the undocumented Latina immigrants in our study, access to emergency food resources was severely curtailed by their fear of deportation. Immigrant families in our study were less likely than non-immigrant families to receive SNAP. Some immigrant mothers reported being afraid to apply for SNAP and other forms of government assistance out of fear that this would expose their families to surveillance or deportation. Some Latina women said they also avoided certain food pantries because they had heard that the police targeted pantries as a means of finding undocumented immigrants. For example, Armonía, introduced above, said she went to one of the two food pantries in her community when they came close to running out of food. "They give me rice, beans, canned goods, little boxes of cookies, sometimes juice. Things like that." However, Armonía said she had recently stopped going. "I don't go, except once in a while, because over there they have checkpoints from the police. They might give us a ticket," she said. "There is one way to go to get to [the food pantry], and that's where they sit, to check people out –

to check their licenses." Although we were not able to verify whether the police set up checkpoints on the way to this food pantry, other women also mentioned their concern about checkpoints (on the route to this food pantry and others), suggesting that, whether true or not, the notion that police were monitoring roads to food pantries formed an important community belief that shaped rural families' access to food. Moreover, although the food pantries are private charities that are not connected to the government, many require clients to provide documentation of residence and/or photo identification, and previous research similarly finds that Latino/a/x immigrants avoid emergency food pantries because of fears of deportation (Mellon, 2011).

## *Strong Social Support Networks*

Finally, although rural residents had fewer emergency food resources than urban residents did, as discussed in the previous section, rural residents drew on informal social support networks, rooted in their long histories in their communities, when they needed food. Rural and urban residents responded similarly to survey questions about whether people in their neighborhood "helped each other out" and whether there were people they "could count on in this neighborhood." Compared to urban residents, the women in rural areas had lived in their homes for much longer: an average of almost 5 years (59 months), compared to just over 2 years (27 months). Many of the women in rural counties had grown up nearby and lived close to friends and relatives that they had known since childhood. Rural residents expressed a deep sense of attachment to place. In contrast, few of the women in the urban county had grown up in their neighborhood. Most talked about it as a temporary stop and said they planned to leave as soon as things got better. "It's not a neighborhood [where] I would say that I'd [be] here for 15 or 30 years," said Chaniqua, a Black mother of one in the urban county, "but it's an all right neighborhood until I can get on my feet and see myself do better."

Rural residents' strong attachment to place contributed to a sense of security. Ilana, a Black mother of two, lived with her mother in the same small rural town where she was born. "Everybody [around here] is family—everybody is close, everybody knows everybody. They're like, 'Oh, I know your grandma.' Like, 'Oh really?'" Ilana said. "But yes, everybody is good, everything is straight." She pointed to the houses down the road from her trailer. "My uncle lives there…over here is my aunt…And then my cousin, she owns this trailer park right here." Living so close to her family gave Ilana a sense of security. "I feel safe, very safe. Ain't nobody coming up in here; they know better," she laughed.

Attachment to place and the resulting social networks also provided a cushion during tough times. Ilana had recently gotten a relatively well-paying job in a factory. With the increased income, her SNAP benefits were cut to the minimum of $16 per month, but she would not receive a paycheck for a few weeks. "The state did not give you no time to get on your feet," Ilana said. "It was two weeks before

I got a paycheck, and it was not even a 40-hour paycheck. And I still had to have gas to go to work…. By the time I buy my boots [and] clothes to wear for work, and socks… I'm not going to have nothing left. And that's how it was. But the food was the hardest part." Ilana and her family struggled with food shortages for several months after she started working. "There were times when we didn't have nothing but bread and a piece of meat," she recalled. Once, they had their electricity turned off for an entire week, because they could not pay the bill. They got through it largely with the help of their friends and relatives. "Luckily, on Sundays, we'll go down [to my uncle's house] and eat Sunday dinner, or somebody might invite us to their house in the middle of the week. They go, 'Hey, do you want something to eat, I'm cooking this, and you're welcome to it—boom, there it is. So physically [we might] not have food here, but there were times when we would still have been able to eat," she said. "It just works out." Ilana's strong social network—in particular, the relatives who lived nearby—allowed her to sustain her sense of faith that things would "just work out." Similarly, a Robert Wood Johnson Foundation (RWJF) (2018) on economic and health issues in the rural USA finds that most rural Americans (81%) say they feel attached to their local communities, and a majority (67%) say they have received help from other community members.[4]

Other women in the rural counties emphasized how their social networks offered support during crises. Jenny, introduced above, said she never ran out of food because she lived close to her mother and brother. "The good thing about having my mom and my brother there is I don't never have to worry about [running out of food], you know, because they're always there," she said. "So, if I get low, I just go over there, you know. Or if they're low, they can come over here. We just all take care of each other so that helps out a lot. If we were by ourselves and didn't have that I'm pretty sure we probably would run out." Bridgette, a white grandmother raising one grandchild, similarly said that when she did not have enough food, she went to her brother's house. "That's happened quite a few times in the past," she said. "I just call my brother up and I say, 'Hey, what are you having for dinner?' And, you know, he says to come on over. And he'll—one time, he said, 'You got no food in your house?' And I might have had like a couple of cans of something, but I literally had no food, maybe a bag of rice but there was literally no food." Previous studies find that stronger social ties reduce people's chances of becoming food insecure (De Marco, Thorburn, & Kue, 2009; Martin, Rogers, Cook, & Joseph, 2004; Morton, Bitto, Oakland, & Sand, 2005).

Rural residents also expressed a sense of reciprocity, emphasizing their duty to help others when they had enough food to share. Beatrice, a Black grandmother caring for her granddaughter, explained, "My freezer is always blessed, and I always wonder how in the world I make it good, but God helps me with that, because I don't know how that much meat and things come out of that deep freezer, but I feed a lot

[4]The study found that 67% of rural adults said they had "ever received help from a neighbor or people in their local community, including help handling an emergency situation, finding a temporary place to live, or getting important work done" (Robert Wood Johnson Foundation (RWJF), 2018).

of people. A lot of people. They know where to come." Like Beatrice, most women in our study framed sharing food with others as a crucial resource and even a source of joy. Lisa, a white mother of two, said that it was a "joy to just watch [other people eat] … Just the joy of slapping the table full of food and then five minutes later it's like, 'Where did everything go?' That I enjoy." Being tightly embedded in a community came with costs, though. Although women felt that helping friends and relatives was part of their reciprocal duty, it sometimes caused stress and financial hardship. Tara, introduced above, depended on friends and relatives for rides and other favors. Cooking was one way she could express her appreciation, and she enjoyed having people over for dinner. "I always cook for an army," she told us proudly, but feeding extra people strained Tara's limited resources. After helping host Thanksgiving dinner, she wondered how she would have enough money to get through the next month.

While women almost always expressed a sense of deep gratitude that others were willing to share food with them, relying on food from others sometimes meant receiving unfamiliar or unappetizing foods. Elsa, a Latina mother of four and a Mexican immigrant, remembered going to one of her neighbors for help when her family was out of work. "I thank God, she filled my table with groceries, but only canned food," she said. "I said, 'I thank you for your gesture but…I don't know what to do with so many cans, canned soup and all that…' I don't buy them. If there's a hurricane or something…"

In short, as others have found (Alkon et al., 2013; Morton et al., 2008), mothers treated food as a social act. They shared food with others when they had enough and relied on friends and family during food shortages. This was not unique to rural communities; women in the urban county also talked about sharing food as a form of social support and a reciprocal relationship. However, women in rural communities had lived there longer, giving them time to establish longstanding networks that helped mitigate the impacts of food shortages.

## Conclusions

Rates of food insecurity are higher in rural areas, and the most food-insecure counties are disproportionately located in the South. However, few studies have looked at how people in rural areas experience and cope with food insecurity.

Analyzing semi-structured interviews with women in two rural counties in North Carolina, we show how rural residents cope with location-specific barriers and draw on resources tied to their rural communities to access food. Rural residents traveled farther to get to the store, which made it more difficult and more costly to get the foods they needed. At the same time, although rural residents had lower access to food retail outlets, they had greater access to local foods from non-market channels. Rural residents were also likely to grow their own food or regularly receive produce, meat, or fish from friends or neighbors.

When it came to access to emergency food resources, rural residents similarly experienced place-specific constraints and drew on specific resources. Rural residents had fewer formal emergency food resources (e.g., food pantries and soup kitchens). On average, however, they had lived in their neighborhoods for longer than urban residents had, and many rural residents described a longstanding network of friends and family members who helped each other out during tough times.

Latino/a/x immigrants in rural areas faced distinct challenges in obtaining food and responding to and preventing food shortages. The lack of food retail outlets in rural areas made it difficult for immigrant women in these areas to get culturally relevant foods. At the same time, immigrant women were more likely to grow some of their own food, and many grew herbs and chiles needed to make specific dishes. Latina immigrant families had fewer emergency food resources to draw on during shortages. They were less likely to receive SNAP, and some avoided food pantries because they were afraid that the police targeted them as a way of finding undocumented immigrants. Many Latina immigrant mothers also expressed a general fear of driving, likely because many were undocumented, which made it more difficult to shop for food in general.

In addition to the fact that the most food-insecure counties are disproportionately rural and located in the South, they also have larger shares of people of color. The prevalence of food insecurity for Black and Latinx populations in the USA is twice as high as the prevalence for white people (Coleman-Jensen et al., 2019). Our analysis identified particular challenges for Latino/a/x immigrants in rural communities. Future research should further examine how racial inequality and systemic racism influence experiences of food insecurity for diverse populations and how these processes differ between rural and urban areas. In addition, given previous research findings that rates of food insecurity (and poverty) vary widely between regions, future research should look at how rural residents' experiences vary across place.

Finally, although this chapter focuses on interviews conducted at one point on time, these interviews were part of a longitudinal research project conducted over 5 years. We observed households moving in and out of food insecurity over the course of the study as they experienced changes in employment, housing, health, family structure, and access to social assistance programs. Future research should trace and compare families' trajectories over time, in order to better understand how food insecurity is linked to other processes, how these vary across place, and how they are linked to inequalities tied to race, class, gender, and immigrant status.

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# Chapter 3
# How SNAP Reduces Food Insecurity


**Craig Gundersen**

**Abstract** Food insecurity has emerged as a central measure of well-being in the USA due to both its magnitude and its serious health and other consequences. Over 40 million people in the USA are food insecure. The number of food insecure persons would be far higher were it not for the Supplemental Nutrition Assistance Program or SNAP, formerly known as the Food Stamp Program. SNAP supplements a family's income, helping them to buy nutritious food. In this chapter, I provide a brief history of SNAP and discuss SNAP's eligibility and benefit structure. There would be no need for SNAP were it not for food insecurity. I discuss measurement of food insecurity, its determinants and health consequences, and the effect of SNAP on food insecurity. I conclude with a discussion of proposals that would enhance SNAP and proposals that would impede SNAP in meeting its goals.

**Keywords** Food insecurity · Food insecure · Food secure · SNAP · Food stamps · Supplemental Nutrition Assistance · Entitlement program · Work requirements for SNAP

Food insecurity has emerged as a central measure of well-being in the USA due to both its magnitude and its serious health and other consequences. Almost 40 million people in the USA are food insecure (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2019). Food insecure households lack access to adequate food due to insufficient funds (Gundersen & Ziliak, 2015). The number of food insecure persons would be far higher were it not for the Supplemental Nutrition Assistance Program or SNAP, formerly known as the Food Stamp Program. SNAP supplements a family's food budget so they can buy nutritious food.

SNAP is the most effective tool used to reduce food insecurity in the USA. The program has reached this stature for the following reasons. First, extensive resources are devoted to the program, allowing for the provision of assistance to millions of

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Americans. In 2018, almost 40 million persons received SNAP at a total cost of over $65 billion (Rosenbaum & Keith-Jennings, 2019). Second, SNAP is funded as an entitlement program which means that it is a mandatory expenditure in the U.S. federal budget. With this status, SNAP is not subject to regular appropriations or legislative mechanisms that could reduce its funding. Third, it is the only program available to individuals across all ages. Fourth, SNAP has been successful in achieving its central goal alleviating food insecurity. (This is discussed in a later section on SNAP's impact on food insecurity.) As such, the U.S. Department of Agriculture (USDA) can be confident that expenditures on this program are worthwhile.

I begin with a brief history of SNAP followed by the current eligibility criteria and benefit structure. Since the central goal of SNAP is to alleviate food insecurity, I then discuss measurement of food insecurity, its determinants and health consequences, and the effect of SNAP on food insecurity. I conclude with a discussion of proposals that would enhance SNAP and proposals that would impede SNAP in meeting its goals.

## Supplemental Nutrition Assistance Program (SNAP)

### *History of SNAP*

Food assistance programs in the USA emerged in the 1930s during the Great Depression. In 1939, a program was established wherein individuals receiving public relief (i.e., government assistance) could purchase stamps to obtain foods determined by the USDA to be in surplus. The Food Stamp Act of 1964 built on this program by allowing the use of food stamps in selected counties. By 1974, food stamps were available in all counties (see Almond, Hoynes, & Schanzenbach, 2011, for more on the expansion of SNAP by county over time). In 2008, the Food Stamp Program took on its current name of SNAP. (For more on the history of SNAP, see Bartfeld, Gundersen, Smeeding, & Ziliak, 2015.) The program is administered by the USDA through the Food and Nutrition Service (FNS), which works with partners at the state and local level in implementing the program.

SNAP has undergone numerous changes, but its basic structure (described in the next section) has stayed the same. The size of the program is seen in Fig. 3.1 which shows the number of people enrolled and total expenditures on SNAP and its predecessor, food stamps, from 1980 to 2017. From 2000 to 2013, there were annual increases in both the number enrolled and the amount paid in benefits. Since 2013, however, there has been a decline in both measures, primarily reflecting improvements in economic conditions (Ganong & Liebman, 2018).

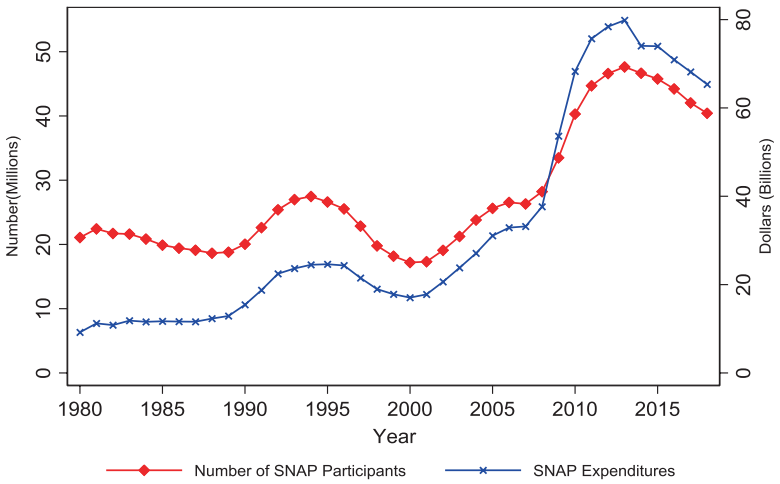



**Fig. 3.1** SNAP participants and expenditures: 1980–2018. Source: Author's calculations based on SNAP Data Tables (FNS, USDA, 2019)

## *SNAP: Eligibility Criteria and Benefit Structure*

Households are eligible for SNAP if they satisfy three criteria demonstrating limited resources. First, there is the gross income test where a household's income (before any deductions) must be <130% of the poverty line ($25,100 for a family of four in 2018). Some states have set more lenient thresholds of up to 200% of the poverty line. The gross income test is waived for households with seniors or persons with disabilities. Second, the household's net income cannot exceed the poverty line. Net income is calculated as gross income minus certain deductions. These include, for example, a 20% earned income deduction and a dependent care deduction when such care is necessary for work, training, or education. Third, a household's total assets cannot exceed $2250; $3500 for households with a senior or disabled member. The third criterion is now waived in most states and, in those states without waivers, the limit is often set higher.

For eligible households, benefit levels are then constructed as follows. A household with a net income of zero receives the maximum SNAP benefit; i.e., the cost to purchase the USDA-designed Thrifty Food Plan (TFP) specifying foods and amounts of food for adequate nutrition. (For more on how the TFP is constructed, see Wilde & Llobrera, 2009.) In 2018, the maximum benefit amounted to $640 per month for a family of four. For each additional dollar in net income, benefits are reduced by 30 cents; if the income is in the form of earnings from work, benefits are reduced by 24 cents. This distinguishes SNAP from other assistance programs which distribute benefits in a lump-sum manner that is independent of income once someone is eligible.

Upon entering SNAP, recipients are given an electronic benefit transfer (EBT) card that they can use at approved retail food outlets in the USA on a wide array of food products. The set of stores constitute nearly all food retailers in the USA and the scope of products has only minor limitations (e.g., no purchasing already cooked foods), so SNAP gives recipients a great deal of flexibility to meet their family's food needs.

The ability of SNAP to meet the food needs of vulnerable families is further enhanced by its status as an entitlement program. This is seen in Fig. 3.1 whereby there have been increases in expenditures on SNAP, in some years, large increases, and this occurred without the need for explicit legislative approval for additional monies in any given year. Conversely, when the economy is strong (e.g., currently and in the late 1990s), SNAP caseloads and expenditures fall. In contrast to SNAP, other government programs that are not designated as entitlement programs have a set amount of money available, and once that is gone, further authorization is needed to increase expenditures. (WIC is an example of such a program.)

## Food Insecurity

### *Measurement of Food Insecurity*

Eradicating food insecurity is an explicit and implicit goal of the USDA. However, prior to 1996, there was not consistent monitoring of the extent of food insecurity nor, for that matter, the efficacy of programs to address it. In 1996, though, the USDA introduced the Food Security Supplement (FSS) to the Current Population Survey (CPS) in order to measure food insecurity. The FSS consists of 18 questions: ten for households without children and eight for households with children, each relating to financial constraints. Examples of survey questions include: *Did you or the other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?*. *Were you ever hungry but did not eat because you couldn't afford enough food?* and *Did a child in the household ever not eat for a full day because you couldn't afford enough food?* (the most severe question). (For the complete set of questions, see Coleman-Jensen et al., 2019.)

The responses for these questions are *sometimes, yes* or *no*. In other cases, respondents are asked if something happened *never, sometimes,* or *often*. A response of *sometimes* or *often* is counted as an affirmative response. Other questions ask respondents if something happened *almost every month*, *some months but not every month*, or *in only 1 or 2 months*. A response of *almost every month* or *some months but not every month* is counted as an affirmative response. Based on these responses, households are delineated into three categories: A household is said to be *food secure* if they respond affirmatively to two or fewer questions; *low food secure* if they respond affirmatively to three to seven questions (three to five questions for households without children); and *very low food secure* if they respond affirma-

tively to eight or more questions (six or more questions for households without children). Households with any degree of food insecurity include one or more members who were hungry, at least at some time during the year, because they could not afford sufficient food. The categories of low food secure and very low food secure (VLFS) are often combined and called *food insecure*.

Figure 3.2 shows the official rates of food insecurity and VLFS from 2000 to 2018 (Coleman-Jensen et al., 2019; Table 1A). Irrespective of the measure, the patterns are similar insofar as the food insecurity rate was relatively steady at about 12% and the VLFS rate at about 3.5% until 2007. For both measures, the rates increased dramatically in 2008 with the onset of the Great Recession and remained elevated through 2014.

## *Determinants of Food Insecurity*

Consistent with other measures of vulnerability, the aggregate rates of food insecurity and VLFS do not portray the variation by geography and by demographic characteristics. Variation by geography can be seen in Fig. 3.3, a map of estimated food insecurity rates for children by county in 2017. (More details about how these estimates are constructed can be found in Gundersen, Dewey, Hake, Engelhard, & Crumbaugh, 2017.) In some parts of the country, including the upper Midwest and the Northeast, food insecurity rates are lower than the national average. In contrast, there are areas where rates are especially high (e.g., the Mississippi Delta and Appalachia). Even within states, there can be dramatic differences—consider the

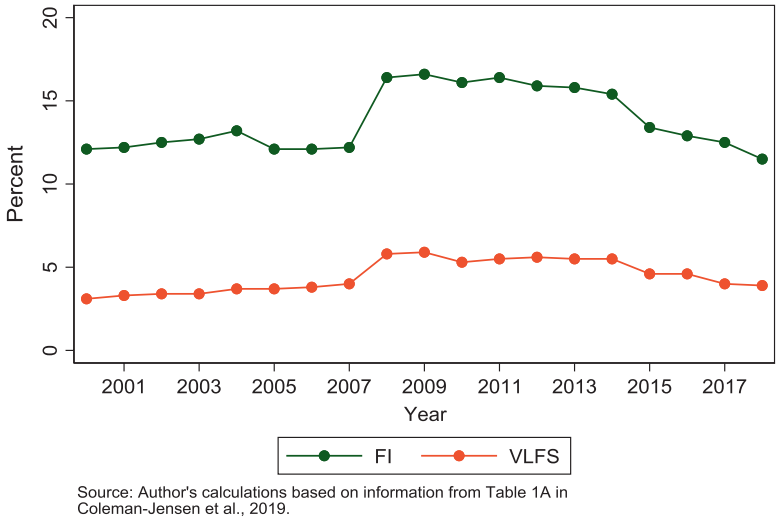
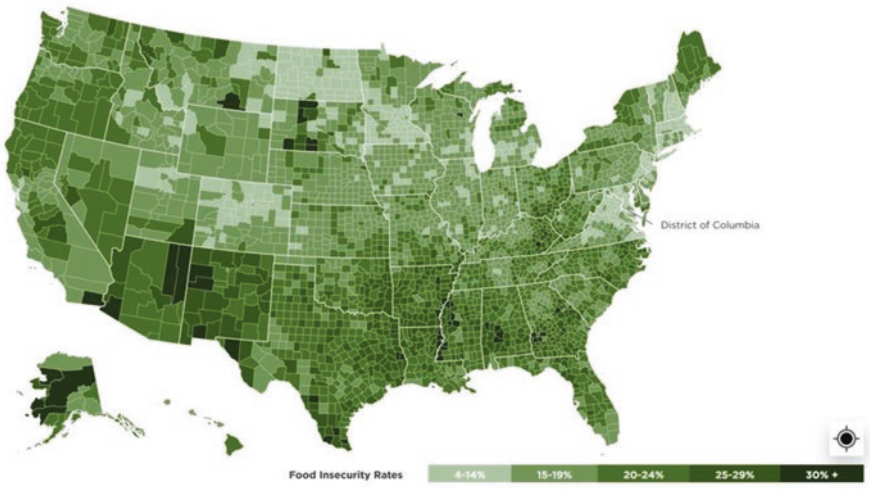



**Fig. 3.2** Food insecurity and VLFS rates by year. Source: Authors calculations based on information from Table 1A in Coleman-Jensen et al. (2019)




Source: Feeding America (2019). Reprinted with permission.

**Fig. 3.3** Child food insecurity rates, by county. Source: Feeding America (2019). Reprinted with permission

much higher rates of food insecurity in counties with Indian reservations in North Dakota. Figure 3.2 demonstrates the continuing presence of food insecurity in the USA, while Fig. 3.3 demonstrates its geographic pervasiveness. The explanation for the persistence and pervasiveness of food insecurity can be found by looking at why certain households are at greater risk. In what follows, I cover six of the determinants of food insecurity. (For a wider discussion of the determinants of food insecurity see Gundersen & Ziliak, 2018.)

## Low-Income

As expected, poor households are more likely to be food insecure than non-poor households. In 2017, for example, 36.8% of poor households were food insecure (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2018; Table 2). While income is obviously an important determinant, 73.2% of poor households are food secure. Looking at the proportion of the total food insecure population, the overwhelming majority of these households (68.2%) have incomes above the poverty line (Coleman-Jensen et al., 2018; Table 2). In other words, despite facing serious challenges in obtaining enough food to be food secure, these poor households are food secure.

### Disruptions in Income and Expenditures

Research has found that those facing drops in income, job loss, volatile income, and housing instability are more likely to be food insecure in comparison to similar households not facing those shocks (e.g., Gjertson, 2016; Heflin, Corcoran, & Siefert, 2007; King, 2018; Leete & Bania, 2010). Unexpected changes in expenditures are another shock that can increase the likelihood of food insecurity. Indirect evidence of this is found in the substantially higher probabilities of food insecurity among those who report having unpaid bills in at least 1 month in the previous year than those without unpaid bills (Gundersen, Engelhard, & Hake, 2017). Savings is one way to help buffer these shocks but so too is obtaining a loan to smooth consumption. Consistent with this is the finding that imposition of restrictions on the location of payday lenders led to increases in food insecurity (Fitzpatrick & Coleman-Jensen, 2014).

### Household Structure

Among households with children, those headed by a single mother have food insecurity rates of 30.3% versus 9.5% for those headed by two parents (Coleman-Jensen et al., 2018; Table 2). While single-parent households have lower incomes on average, the impact of household structure remains even after controlling for other factors. The effect of household structure is also seen in older populations. Consider those aged 40 or higher, living in households with and without grandchildren present. Here, the rates of food insecurity are over twice as high for the former group—19.2% versus 8.5% for the latter (Ziliak & Gundersen, 2016; Table 1). For households across the age spectrum, it is likely that unobserved characteristics of these households, rather than household structure in-and-of-itself, are responsible for the higher rates of food insecurity. For example, higher levels of chaos–which can be tied to household structure–is one characteristic that is often unobserved in data sets but has been shown to lead to higher rates of food insecurity (Fiese, Gundersen, Koester, & Jones, 2016).

### Disability Status

The food insecurity rates of households with at least one member who has a disability are substantially higher than households without a member who has a disability. These higher rates hold even after controlling for other observed characteristics such as income and household structure (e.g., Brucker, 2016; Brucker & Nord, 2016; Sonik, Parish, Ghosh, & Igdalsky, 2016). Across a wide array of disabilities, those with disabilities have substantially higher rates of food insecurity than those without disabilities, and in some cases, much higher rates—4.6 times higher for those with a mental health disability (Brucker & Coleman-Jensen, 2017).

### American Indians

Counties with high proportions of American Indians have, on average, starkly higher rates of food insecurity. This holds true for the broader American Indian population as their rates of food insecurity are 1.8 times higher in households with children and 2.1 times higher in households without children relative to non-American Indians (Gundersen, 2008).

### Prices of Food and Other Necessities

As previously discussed, the amount of *nominal income* available to a household influences food insecurity. How much nominal income purchases, however, depends on consumer prices and inflation; in other words, it is the *real income* of consumers that is relevant to food insecurity. Areas with lower food prices, all else being equal, have lower rates of food insecurity. More specifically, a one-standard deviation increase in food prices is associated with an increase of 2.7% in food insecurity (Gregory & Coleman-Jensen, 2013). One factor leading to lower food prices is the expansion of large-scale retailers into an area. Large-scale retailers are able to have lower prices and through this increased competition, other stores are compelled to lower their prices. As an example, the expansion of Walmart Supercenters has led to declines in food insecurity in those areas (Courtemanche, Carden, Zhou, & Ndirangu, 2019). Another necessity which constitutes a high proportion of expenditures for many low-income households is housing. On average, in low-income households, housing costs make up over 40% of their total expenditures (Schanzenbach, Nunn, Bauer, & Mumford, 2016). One estimate found that for each $500 increase in rent per year, there is a 10% increase in a household's probability of food insecurity (Fletcher, Andreyeva, & Busch, 2009).

## *Food Insecurity and Health Consequences*

The magnitude of food insecurity in the USA makes it one of the leading health and nutrition issues. As such, there is heightened interest among researchers in the association between food insecurity and health outcomes As reviewed in Gundersen and Ziliak (2015), this research has found that, among children, food insecurity is associated with increased risks of some birth defects, anemia, lower nutrient intake, cognitive problems, aggression, and anxiety. Food insecurity is also associated with higher risks of being hospitalized and poorer general health, and with having asthma, behavioral problems, depression, suicidal ideation, and worse oral health. For adults, food insecurity is associated with decreased nutrient intake; increased rates of mental health problems and depression, diabetes, hypertension, and hyperlipidemia; worse outcomes on health exams; being in poor or fair health; and poor sleep outcomes. Further raising the profile of food insecurity are the higher

healthcare costs due to these negative health outcomes. For example, households with food insecurity had significantly greater estimated mean annualized healthcare expenditures in comparison to food secure households—$6072 versus $4208 (Berkowitz, Basu, Meigs, & Seligman, 2018). This amounts to $77.5 billion in additional annual healthcare expenditures borne by individuals and the government.

## SNAP's Impact on Food Insecurity

Given the importance of SNAP in the social safety net, it is concerning that food insecurity rates are substantially higher among recipients than non-recipients. For example, in 2017, the food insecurity rate among SNAP participants was 50.1%, while SNAP-eligible non-participants had food insecurity rates of 23.4% (Coleman-Jensen et al., 2018; Table 8). This result is expected insofar as SNAP is designed to reach those who are at the greatest risk of food insecurity. However, after controlling for those at greatest risk of food insecurity, numerous studies have found that SNAP participants are less likely to be food insecure than eligible non-participants. For example, a recent study found that SNAP households with children are between 9.2 and 32.7% less likely to be food insecure than SNAP-eligible non-participating households with children. (See, Gundersen, Kreider, Pepper, & Tarasuk, 2017 for information about this estimate; see Gundersen, Kreider, & Pepper, 2017; Swann, 2017; and Gregory & Smith, 2019 for other recent work on this topic.) The impact of this on the overall food insecurity rate among children is seen in Fig. 3.4. The figure shows, from 2006 to 2018, the rate of food insecurity (a) with SNAP, (b)

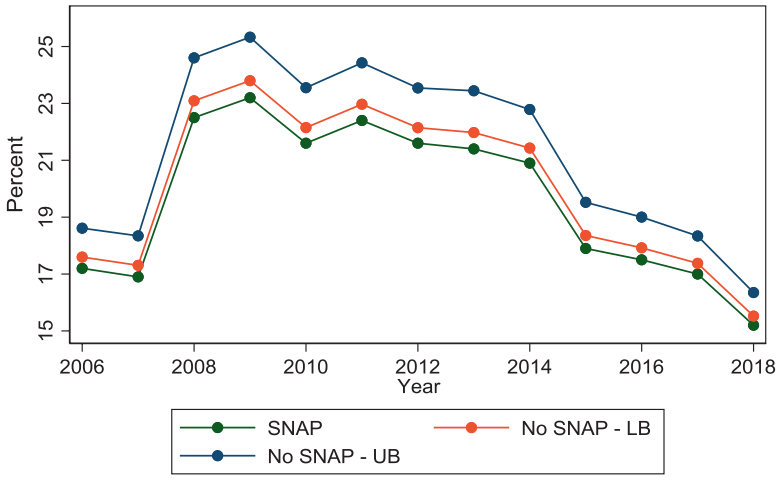



**Fig. 3.4** Child food insecurity rates by year with and without SNAP: 90% participation rate. Source: Author calculations based on Gundersen, Kreider, Pepper, and Tarasuk (2017) and Table 1A in Coleman-Jensen et al. (2019)

without SNAP and the lower bound estimate of the impact of SNAP (No SNAP−LB), and (c) without SNAP and the upper bound estimate of the impact of SNAP (No SNAP−UB). These estimates are shown under the assumption that 90% of eligible households with children participate. In addition to its impact on food insecurity, SNAP is improving well-being over multiple other dimensions (Bartfeld et al., 2015).

## Proposals to Change SNAP

The stature of SNAP in the social safety net and its size in the budget of USDA has led to a wide array of calls for changes. I first discuss two proposals that would lead to greater restrictions surrounding SNAP followed by two proposals that would expand the program.

### *Requirements for and Restrictions on SNAP*

There have been numerous calls from across the political spectrum to impose restrictions that would reduce the number of people in the program. Two of these proposals are framed in the context of the "right to food" (Gundersen, 2019).

While there is not a formal right to food in the USA, over many dimensions, de facto, SNAP serves to guarantee this right. One key component of any right is that it should not impose arduous conditions. As an analogy, consider the process of voting in the USA. After registration and going to a polling booth (or voting via absentee ballot), there are no further requirements imposed. For example, one does not have to demonstrate specific knowledge about candidates, justify why a vote was made, pass some form of IQ test, etc. The right to food as manifested in SNAP is constructed in a similar manner insofar as, after meeting the eligibility requirements and recertifying as needed, individuals do not have to meet further requirements.

The first set of proposals is to impose a wider set of work requirements on SNAP recipients. Currently, unemployed able-bodied adults without dependents (ABAWDs) between the ages of 18 and 50 years can receive SNAP for only 3 months in any 36-month period. Nevertheless, in times and places of economic stress, states can and do ask for waivers from this requirement. Proposals have been made to limit these waivers. There have also been proposals to expand the upper age limit to 60 years of age and require at least one parent to work if there is no child under the age of 6 years in the home.

This set of work requirements could perhaps be justified if SNAP did impede work effort. It is true that some assistance programs do discourage work at some points over the income distribution. As an example, suppose a household stands to lose $500 per month in benefits if they make $400 more from work. In this case the

household would be made worse-off by working more or earning higher wages. So a rational decision would be to not pursue earning the extra $400. While SNAP recipients do lose benefits when they get just above the eligibility threshold, the decline in benefits at the threshold is limited because, as stated earlier, benefits fall as someone approaches the threshold. In addition, at other points in the distribution, for each dollar earned there is a 24-cent decline in benefits which is unlikely to be an impediment.

A second set of proposals entails the imposition of restrictions on SNAP purchases. Since its inception, SNAP has faced calls to prohibit purchases of certain food items. These attempts aim to "improve the health of recipients," to prevent recipients from purchasing "luxury items", or to restrict certain companies from selling to SNAP recipients. Recently, these restrictions have concentrated on specific categories of food deemed to be "unhealthy." Some proposals have gone even further by arguing that all choice should be removed and instead, recipients should be mailed their food (so-called Harvest Boxes).

Unlike work, age and income requirements, restrictions on purchases would not directly remove people from the program. However, negative outcomes would occur due to increases in the stigma and transactions costs associated with SNAP. Stigma would increase insofar as, among other things, participants would feel singled out as being irresponsible and incapable of making well-informed food purchases for their children. The restrictions themselves convey the message that SNAP recipients make poor food choices, have unhealthy diets and perhaps, are more likely to be obese.

Restrictions on purchases would increase transactions costs for two main reasons. First, SNAP recipients will need to spend more time figuring out which food items are eligible for purchase with SNAP benefits and which are not. In stores where "SNAP eligible" or "SNAP ineligible" is clearly and correctly displayed, ascertaining which foods are eligible would be straightforward. But in stores without such displays, SNAP recipients would need to ascertain this information on their own (i.e., the opportunity cost of shopping with SNAP is higher). Second, due to the higher costs to stores associated with implementing these restrictions, the number of stores accepting SNAP benefits may decline. That could lead to longer travel distances in order for SNAP recipients to use their benefits, which may not be logistically possible for some. These hardships for recipients could lead to decreased participation in SNAP. (For a more in-depth discussion of why SNAP participation rates would fall, see Gundersen, 2015.)

## *Expansion of SNAP*

In contrast to proposals that seek to further limit SNAP, some have urged expansion of SNAP. As discussed earlier, a high proportion of participants are still food insecure. In response, one recent proposal urges an across-the-board increase of 20% in the maximum SNAP benefit (Ziliak, 2016) in order to address what many perceive

as the unduly low-value of the Thrifty Food Plan. This would likely lead to reductions in food insecurity, albeit the extent to which this would occur is not considered in the paper. To build on this proposal, the addition of a question on the CPS that asks how much additional income households would need in order to be food secure has been suggested (Gundersen, Kreider, & Pepper, 2018). The authors find that increasing SNAP benefits by a lump sum of $41.62 per week would lead to a reduction in food insecurity of just over 60% among SNAP participants at a cost of roughly $25 billion. This would represent an approximately 35% increase in SNAP expenditures.

In addition to questioning the adequacy of benefit levels, one may also question whether the current eligibility threshold of 130% of the poverty line is too low. As such, increasing the eligibility threshold has been proposed. Of course, the probability of food insecurity declines as income increases. Food insecurity rates of those with incomes below 130% of the poverty line compared to those with incomes between 130 and 185% of the poverty line are 39.6 and 21.8%, respectively (Coleman-Jensen et al., 2018; Table 3). Nevertheless, that over one-in-five of these households are food insecure may be high enough to be of concern. In response, 27 states and the District of Columbia have set their gross income limit higher, up to 200% of the poverty line. Not all of these households would be eligible for SNAP since they still have to meet the net income test, but a high proportion are eligible, especially in states with high housing costs. Gundersen et al. (2018) consider what would occur if all households with incomes between 130 and 185% of the poverty line received SNAP and the resulting benefit amount was sufficient to remove them from food insecurity. They find that the total estimated cost would be $22.2 billion, and there would be a 63.5% decline in food insecurity in this population (Gundersen et al., 2018).

## Conclusion

Food insecurity and its accordant health consequences has remained stubbornly high in the USA. The problem of food insecurity, though, would be substantially higher in the absence of SNAP. The success of SNAP is the primary reason the anti-hunger community has been steadfast in its opposition to work requirements and purchase restrictions. In terms of the former, there is no evidence that SNAP discourages work and, therefore, no indication that work requirements would lead to higher labor force participation, more self-sufficiency, and less need for assistance. Instead, additional requirements and the resulting decrease in the number of eligible households would lead to increases in food insecurity. A similar argument holds for restrictions on purchases insofar as there are no proven benefits to the imposition of restrictions on SNAP benefits (Gundersen, 2015), while the costs are clear—increases in food insecurity and general declines in well-being among low-income Americans.

Instead of dismantling SNAP, those concerned with food insecurity have proposed expansions of the program akin to the ones described here. These proposals have emerged because the structure of SNAP lends itself to expansions insofar as there are already regular increases in benefits due to inflation, and the eligibility criteria has been made more lenient over many dimensions (e.g., higher thresholds in some states; states waiving the asset test). Thus, it would be relatively straightforward to both increase benefit levels and bring more people into the program. While doing so would be expensive, as explained previously, the net result to the government should also include reductions in health care costs due to lower food insecurity rates. In particular, two government funded programs which have many food insecure households, Medicaid and Medicare, would see declines in costs.

In addition to proposed expansion of SNAP benefits and eligibility, as discussed here, changes that target specific households should be considered. As discussed here, certain households are at greater risk of food insecurity. One group is American Indians living on reservations. The distances that need to be traversed to get to a supermarket are often quite long in areas where reservations are located. This imposes additional costs with respect to gas, wear-and-tear on a vehicle (if one can afford a vehicle), time, etc. In response, the USDA may wish to consider incorporating these additional costs into the deductions used to calculate net income which would result in higher benefit levels. Another group is those with mobility disabilities. While for them, the distances to supermarkets are unlikely to be different than for non-disabled persons, the burden of getting to a supermarket is likely to be higher due to their disabilities. In response, the deductions for net income could be adjusted to incorporate differential costs depending on the mobility of the client.

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# Part II
# Family Ecologies of Eating Behaviors

# Chapter 4
# Family Mealtimes: Promoting Health and Well-being


**Barbara H. Fiese**

**Abstract** Family mealtimes are associated with a host of important health outcomes. This chapter uses a systems approach in applying the socio-ecological model to the complex relations among family dynamics during mealtimes, food consumption, and children's health. Three health outcomes are considered: mealtime routines and communication as protective factors for pediatric chronic health conditions, distractions and chaos in relation to nutritional health, and acculturation and adapting mealtime practices in the face of globalization and the influence of advertising on dietary habits. The chapter concludes with limitations of current research and directions for future research.

**Keywords** Family mealtimes · Pediatric nutrition · Family chaos · Pediatric chronic health conditions · Global health · Food and children's health · Mealtime routines · Chaos and health · Remote acculturation · Globalization and dietary habits

Food and family go hand in hand across the life span. The dietary patterns established in the first 1000 days of life (the period from conception to 2 years of life) portend for health outcomes in later childhood and into adulthood. For example, infants who are breastfed for 2 months or less are more likely to gain weight rapidly in the first 2 years of life (Carling, Demment, Kjolhede, & Olson, 2015). Rapid weight gain in the first 2 years of life is associated with increased risk for obesity and overweight during adolescence and adulthood (Peneau et al., 2017; Ziyab, Karmaus, Kurukulaaratchy, Zhang, & Arshad, 2014). However, these are not direct one-to-one correspondences as parenting practices, including responsive parenting, have the potential to modify early risk factors (Savage, Birch, Marini, Anzman-Frasca, & Paul, 2016). Other parenting practices that act as important modifiers include the active involvement of fathers (Davison et al., 2019), child care feeding

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practices (Dev, McBride, Speirs, Donovan, & Cho, 2014; Sisson, Krampe, Anundson, & Castle, 2016), and cultural expectations and traditions (Hammons, Wiley, Fiese, & Teran-Garcia, 2013; Kim, Fiese, & Donovan, 2017). Thus, even a cursory look at the early food environment suggests that there are multiple influences on the connection between food, family, and health. In order to account for these multiple influences, it is important to propose a coherent conceptual model that can guide predictions as well as interpretation of findings.

This chapter will apply a systems approach to the socio-ecological model as a guiding framework to understand the complex relations among family dynamics during mealtimes, food consumption, and children's health. After providing an overview of the theoretical model, three health outcomes are considered: mealtime routines and communication as a protective factor for chronic health conditions, distractions, and chaos in relation to nutritional health, and acculturation and adapting mealtime practices in the face of globalization and the influences of advertising on dietary habits.

## Connecting Food and Family from a Socio-Ecological Framework

Socio-ecological models are guided by the seminal work of Bronfenbrenner (1979) and expanded by Bronfenbrenner and Evans (2000). At its core, the socio-ecological model proposes that child development is affected by multiple spheres of influence ranging from more proximal influences, such as the family, to more distal influences, such as federal and state policies. Several scholars have adopted socio-ecological models to explain patterns of food consumption and a variety of health outcomes. For example, Davison and Birch applied Ecological Systems Theory (EST) to account for child weight status including: child characteristics of dietary intake, sedentary behavior, gender, and age; family characteristics of feeding practices, family TV viewing, and parent food preferences; and community and societal characteristics such as socio-economic status, accessibility of recreational activities, and school lunch programs (Davison & Birch, 2001). Similarly, Nuemark-Sztainer applied an ecological model to account for variations in weight-related problems (e.g., eating disorders, body image issues). Individual characteristics included timing of puberty, sexual orientation, and personality traits. Family influences included eating out practices, parental support, and parenting styles. Peer influences included peer weight talk, peer dieting, and peer media use. School and other institutional factors included sports, coach attitudes, and school lunch. Community factors included parks, safety, fast food restaurants. Societal factors included role expectations, weight discrimination, and media influences (Neumark-Sztainer, 2005).

The socio-ecological model applied in this chapter is based on the Six-C's model by Harrison and colleagues (Fiese, Bost, McBride, & Donovan, 2013; Harrison

et al., 2011). The model is adapted (and simplified) to meet the objectives of the chapter and focus on food and family in the context of family mealtimes. The Six-C's refers to cell, child, clan, community, country, and culture (See Fig. 4.1). The cell level includes genetic predispositions and biological contributions to how the child may react to different foods and interact around food. The child level includes temperamental characteristics and affective responses to food and feeding dynamics. The clan level represents family dynamics and parenting practices. Community includes schools (including early care and education), peer influences, and access to food. Country includes local, state, and federal policies that can act as supports or barriers for food consumption. Finally, culture includes culture-specific traditions and expectations surrounding food. Because the focus of this chapter is on family mealtimes, the emphasis will be on the intersection of the clan level with the child, community, country and culture levels.

## *Healthy Family Mealtime Routines*

From a socio-ecological perspective, family mealtimes serve as a link between child characteristics (e.g., temperament, affective response to the food environment) and more distal influences (e.g., community food environment, access to food). One way to understand these connections is to focus on the regulatory processes inherent

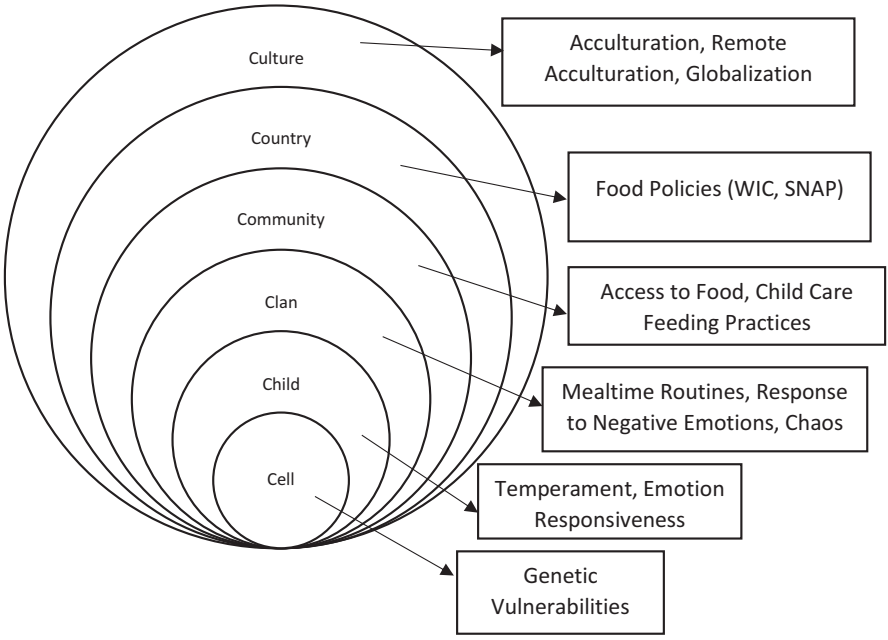


**Fig. 4.1** Ecological Model of Family Mealtimes

in family routines and how they may foster positive health outcomes, or the converse, create atmospheres of risk.

Routines provide predictability and order to family life. When repeated over time, routines have several key elements that are associated with children's health: assignment of roles, planning, expectations for attendance, modulation of emotion, and the creation of symbolic meaning (Fiese, 2006). Developmentally, routines become more organized as children become more active participants and provide input as to how the routine is carried out (Fiese, Hooker, Kotary, & Schwagler, 1993; Spagnola & Fiese, 2007). Mealtime routines are associated with children's nutritional health. Families reporting that they regularly shared meals together three or more times per week were 12% less likely to have a child who was overweight; had a 20% reduction in odds of eating unhealthy foods; a 24% increase in odds of eating healthy foods; and were 35% less likely to have a child with an eating disorder (Hammons & Fiese, 2011). During the preschool years, children who are more actively involved in food preparation, grocery shopping, and meal planning are less likely to consume fast food and more likely to consume fresh fruits and vegetables (Metcalfe & Fiese, 2018).

Moving beyond the sheer frequency of sharing meals together, variations in the social interactions observed during mealtimes may explain some of the effects on children's health. Three elements are of particular importance to a healthy mealtime: (a) positive interpersonal communication, (b) adequate response to negativity, and (c) an environment that is relatively free of disruptions to communication. Positive interpersonal communication can be framed from the McMaster Model of Family Functioning (Epstein, Ryan, Bishop, Miller, & Keitner, 2003). Positive interpersonal communication emphasizes the need for families to exchange information in a clear and direct manner with little to no hidden agendas. Direct observations of mealtimes have indicated that families who show genuine concern for each other's daily activities and communicate in a clear and direct manner have children who are of healthier weight and engage in healthier eating habits (Czaja, Hartmann, Rief, & Hilbert, 2011; Fiese, Hammons, & Grigsby-Toussaint, 2012). Thus, a key component to healthy mealtimes is to conduct conversations that communicate to all family members that they are valued members of the family and that their concerns of the day will be fully considered.

Response to negative emotion is also an important key element to regulating behavior during mealtimes. It is unlikely that every mealtime will proceed smoothly. It is likely that expressed opinions about the food served or sibling conflict may arise at the table. Indeed, these behaviors are often noted as causes of mealtime challenges by parents of preschool and school age children (Fulkerson et al., 2011; Quick, Fiese, Anderson, Koester, & Marlin, 2011). In a cross-sectional self-report study, parent response to negative emotion was related to more restrictive feeding practices and fewer mealtime routines, which in turn was associated with the consumption of less healthy food (Bost et al., 2014). Direct observation of mealtime behaviors also suggests that families who have more difficulty managing affect during meals also have children who are more likely to be obese (Berge, Jin, Hannan, & Neumark-Sztainer, 2013). The expression of negative emotion is part and parcel

of family mealtimes. However, the management of negative affectivity is an opportunity to create an atmosphere that may lead to calm and modulation of emotion rather than dismissal or escalation.

The third element to consider is structure and/or chaos. As previously mentioned, routines provide a sense of order to daily life. When routines are disrupted or lacking, then chaos prevails. Chaotic environments are characterized by a lack of structure, frenetic activity, background noise, and unpredictability (Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). Central to our concern is the role that chaos may play in disrupting communication that is essential to healthy mealtimes. There is considerable evidence in the literature documenting the role that habitual distractions may play in the risk for obesity, including the presence of television during mealtimes (Coon, Goldberg, Rogers, & Tucker, 2001; Gable, Chang, & Krull, 2007). There is also evidence that family chaos is associated with unhealthy food consumption for preschool age children (Martin-Biggers, Quick, Zhang, Jin, & Byrd-Bredbenner, 2018) and may moderate the effects of responsive feeding practices when toddlers overeat (Saltzman, Bost, McBride, & Fiese, 2019). In this chapter, a more process-oriented view of chaos will be presented. It is proposed that chaos during mealtimes is observed as distracted behavior that disrupts the positive elements of communication and ability to respond to emotions. Thus, a key element of healthy mealtimes is creating an atmosphere that is relatively free of distractions and chaos.

## Mealtime Routines: Protective Factors for Childhood Chronic Health Conditions

There is a long tradition of considering family dynamics as a protective (or risk) factor for pediatric health conditions (Kazak, 1989). Central to this proposition is that well organized households will protect children from some of the mal effects of chronic health conditions. One particular organizational context that has received considerable attention is family mealtimes. The direct observation of family mealtimes for families with a child who has a chronic health condition has been applied to cases of pediatric asthma (Fiese, Winter, & Botti, 2011), cystic fibrosis (Janicke, Mitchell, & Stark, 2005; Speith et al., 2001), Loss of Control Eating (LOC; Czaja et al., 2011), and type I diabetes (Patton, Piazza-Waggoner, Modi, Dolan, & Powers, 2009).

Many researchers have applied the McMaster Model of Family Functioning (Epstein et al., 2003) to detect variations in family interaction patterns and predict health outcomes. The Mealtime Family Interaction Coding System (MICS; Dickstein, Hayden, Schiller, Seifer, & San Antonio, 1994; Hayden et al., 1998) is an observational system based on the McMaster Model of Family Functioning. The coding system includes dimensions that parallel the McMaster model: Task Accomplishment, Communication, Affect Management, Interpersonal Involvement, Behavior Control, Role Allocation, and Overall Family Functioning. In a study comparing families with preschool age children who have cystic fibrosis to healthy

control families, the families of children with cystic fibrosis were observed to function poorer on all dimensions of the MICS (Speith et al., 2001). The dimensions where there were the greatest discrepancies were Communication, Affect Management, and Role Allocation. Taken together, these dimensional contrasts suggest that for families in which it is a struggle to feed their children, it is also a struggle to communicate in a clear and direct manner, manage affect, and assign roles to family members. The resulting image is one of strain and conflict at the table.

Again, using the MICS, the relation between mealtime interactions and dietary adherence and glycemic control in young children with type 1 diabetes was examined (Patton et al., 2009). Researchers found significant negative associations between dietary adherence and Task Accomplishment and Behavior Control. Further, there was a negative association between affect management and percent of blood glucose levels below the normal range. The authors concluded that if children with T1 diabetes are exposed to mealtimes that are disruptive and poorly managed, then there are consequences to dietary adherence. They proposed a transactional process whereby the burden of feeding a child with T1 diabetes in terms of counting carbohydrates may increase stress at the table and increase the likelihood that the child responds with negative affect. Consistent with the findings among children with cystic fibrosis, a pattern emerges whereby lack of structure at the meal is associated with negative affect, poor communication, and stress, which in turn may compromise the child's health. This pattern can also be seen in the case of pediatric asthma.

Asthma is one of the most common chronic diseases of childhood, affecting over 6.2 million children and youth in the USA (Zahran, Bailey, Damon, Garbe, & Breysse, 2018). Several family interaction factors have been found to moderate and mediate the expression of asthma symptoms including open and direct communication, positive affect, and low levels of conflict (Kaugers, Klinnert, & Bender, 2004). Although it can be argued that overall family functioning may be associated with better asthma management, the ability to detect specific behaviors such as those named above may pave the way for more effective interventions.

The ABC mealtime coding scheme is a time-based observational system that captures the amount of time that family members spend in three types of behaviors: Action, Behavior Control, and Communication (Fiese et al., 2011). This coding scheme builds upon the MICS by emphasizing the central role of clear and direct communication in mealtime interactions. The Action dimension reflects how much *hub bub* is apparent at the meal or how much family members get up and down during mealtime. The Action dimension is considered important as it signifies whether family members are present at the table or distracted. The Behavior Control dimension reflects the degree to which behavior is managed or controlled during the meal as it appears to be an essential ingredient in the task of feeding children (Hughes, Power, Fisher, Mueller, & Nicklas, 2005). The time-based approach allows for an examination of how much time family members spend in each of the categories and whether there are distinctions between groups (e.g., socio-demo-

graphic, health outcomes) and how time is spent interacting during the meal. The time-based approach provides guidance for intervention in terms of which behaviors may be associated with health outcomes.

In an observational study of 200 children with persistent asthma, the ABC coding scheme was applied. Health outcomes included medication adherence (measured via electronic monitoring of inhalers), asthma severity, lung functioning, and child quality of life. It was found that the amount of time spent in positive communication was related to medical adherence and child quality of life and negatively related to child asthma severity. The amount of time spent in Action was negatively related to child quality of life. Behavior control was positively related to asthma severity and negatively related to child quality of life symptoms. Even when controlling for maternal education and overall general family functioning, mealtime interpersonal communication remained a significant predictor of child quality of life.

Mealtime observations are snapshots of family life for children with chronic health conditions and provide a glimpse into daily challenges in managing routines. When considering conditions such as cystic fibrosis and diabetes that have inherent dietary demands, mealtimes become not only an important part of the health regimen but are also potentially emotionally charged events. The observation of these routines then illustrates how managing affect, setting rules, and communicating in a clear and direct manner become not only part of family dynamics but also essential to the health of the children.

In the case of pediatric asthma, where the meal itself may seem somewhat more removed from the health outcomes, it is the organization of the routine itself that may provide a better understanding of how the family approaches the challenge of managing a health condition that requires daily attention. For example, adherence to asthma medication protocols is notoriously poor, hovering around 50% (Bender et al., 2000). If families are able to successfully organize mealtime routines that are predictable, have relatively few distractions, and communicate to their children an interest in their daily lives, then their children are less likely to have severe symptoms and adhere to their medication regimen. Granted, this might be part of a larger picture of an organized household overall. However, the central role of organized mealtimes cannot be dismissed as it occurs on a regular basis and conveys a sense of commitment (rather than emotional volatility) that may be associated with these positive health outcomes.

## *Distractions, Chaos, and Children's Nutritional Health*

Chaotic environments have been characterized as crowded, noisy, frenetic, unstructured, unpredictable, and simply out of control (Evans et al., 2005). Children raised in chaotic environments are more likely to experience socio-emotional problems (Evans et al., 2005), compromised executive functioning skills (Brieant, Holmes, Deater-Deckard, King-Casas, & Kim-Spoon, 2017), and behavioral regulation problems during the early school years (Vernon-Feagans, Willoughby, Garrett-Peters,

& FLP Key Investigators, 2016). As previously mentioned, there is considerable evidence that the presence of a television during mealtimes is associated with increased risk for poor eating habits and obesity (Coon et al., 2001; Gable et al., 2007). However, what is less clear is the process by which distracted dining is associated with poor nutritional outcomes. To that end, observational studies are most helpful.

In an observational study of 109 families with 18–24 months old children, the ABC mealtime coding system was adapted to include distractions during the meal (Saltzman, Musaad, Bost, McBride, & Fiese, 2019). These included: technology distractions (i.e., use of electronic devices such as cell phones, tablets, television); non-technology distractions (e.g., playing with toys, pets); leave-taking distractions (e.g., leaving the meal, answering the door, going to the bathroom, leaving for work); and food-related distractions (e.g., retrieving or putting away something for the meal away from the meal location). The investigators found that overall, families spent about 20% of the mealtime in some type of distraction. Mothers spent a greater amount of time in food-related distractions; fathers spent a greater amount of time in leave-taking distractions; and children spent the most amount of time in technology related distractions. The investigators examined whether maternal responsive feeding style, a protective factor against unhealthy weight, was related to distractions during the mealtime. Maternal non-technology distractions and paternal total distractions were negatively associated with maternal responsive feeding observed during the meal. The authors concluded that father involvement during mealtime plays a supportive role for mothers, allowing them to be more responsive and less distracted. It is plausible that fathers were able to reduce the child's distracted behavior by engaging them in conversation rather than the child being distracted by screens or other objects. Thus, a whole family approach to family mealtimes may provide a more complete picture of how distractions affect processes associated with nutritional health.

An experimental approach was taken to understand the role that distractions may play in nutritional health (Fiese, Jones, & Jarick, 2015). In a study of 60 families (109 parents and 126 children), half of the families were exposed to a very loud vacuum cleaner outside of the observational dining room. The researchers reasoned that the noise created by the vacuum cleaner would distract the families and disrupt communication thought to be essential for a healthy mealtime. Somewhat surprisingly, no family exposed to the loud vacuum cleaner rose to open the door to see what was going on. (Some popcorn was spilled outside the door and the families were told that facilities and services had yet to arrive to clean up the mess). The investigators sought to determine whether the loud noise would indeed disrupt communication and if it would have any effect on food consumption. Overall, families who were exposed to the vacuum cleaner engaged in more Action behaviors (i.e., getting up and down from the table) and less Communication behaviors (i.e., showing genuine concern and regard for each other's thoughts and feelings). In addition, those exposed to the vacuum cleaner ate more cookies and drank more diet soda than the control families. In this experimental study, a minimal manipulation of exposure to noise resulted in less *positive communication* and more *activity or*

*distracting behaviors*. Disturbances to these two essential components of healthy mealtime behaviors may lead to poor nutritional habits over time. Whether distracted by noise or technology, lack of attention to other family members during this brief regular routine can have detrimental health effects.

Finally, chaos has also been examined in the context of households that are food insecure. Food security is defined as having access to adequate amounts of food to lead a healthy, active life (Nord, 2012). In 2017 in the USA, 15.7% of households with children were classified as food insecure (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2018). For households with children headed by a single woman, 30.3% were food insecure (Coleman-Jensen et al., 2018). Food insecurity has serious health consequences for children including compromised brain functioning, birth defects, being hospitalized, and have poor health overall (Gundersen & Ziliak, 2015). Despite the well-documented relation between food insecurity and children's health, less is known about the mechanisms linking these conditions.

One potential link between food insecurity and children's health is the role that family structure and proximal processes may play in explaining why some families experience food insecurity. Although the majority of food insecure households are low-income, not all low-income households are food insecure. Drawing from Evans' proposition that for some low-income households, the presence of environmental chaos can increase risk for poor outcomes (Evans, 2004), it was reasoned that lack of mealtime planning and the presence of chaos would predict food security status. In a study of 176 families sampled quarterly over a period of a year, over half of the families were classified as food insecure (60.1%; Fiese, Gundersen, Koester, & Jones, 2016). This remarkably high rate of food insecurity was due to the fact that the families were selected to be in the study if school personnel thought that the children were likely to go hungry over the weekend and would benefit from receiving a backpack of food (Fiese, Gundersen, Koester, & Waxman, 2020). Overall, the investigators found that food insecure households reported more household chaos and less mealtime planning than food secure households. In a logistic regression model predicting food security status and controlling for household income, employment status, and household size it was found that mealtime planning and chaos distinguished food secure from food insecure households. Further, household chaos distinguished very low food secure households from low food secure households with very low food secure households reporting the highest levels of chaos.

Chaos in the home and distractions during meals may serve both as a risk factor and as a signal of stress in the home. Researchers have proposed that chaos in the home is a sign of how adults respond in highly stressed environments and may compromise executive functioning skills (Brieant et al., 2017; Deater-Deckard et al., 2009). It is reasonable to speculate that the more distal factors of poverty affect parenting and family routines through a disruption in planning and order. For family mealtimes, this often means a lack of planning, inconsistent and unpredictable timing of meals, and unsettled communication patterns. The effects on nutritional health are often a lack of attention to what and how much children are eating, last minute grab, and go food choices or in some cases not enough food for the entire

family. Future research, practice, and policy efforts are warranted to consider how to reduce chaos in family daily life to improve the health and well-being of children.

## *Cultural and Globalization Effects on Mealtime Practices and Nutritional Habits*

Thus far, family dynamics during mealtimes and effects on children's health have focused primarily on proximal processes such as social interaction patterns and to some degree, more distal effects such as food insecurity. There is also evidence that cultural and globalization effects indirectly affect mealtime practices and nutritional health. This is consistent with the Six-C's model whereby culture and exposure to broader societal influences transact with family and child factors (Fiese et al., 2013; Harrison et al., 2011). To illustrate this point, research that has considered acculturation and effects of globalization on mealtimes and dietary habits is considered.

From a socio-ecological perspective, cultural traditions are often expressed through food and celebrations. Although cultural traditions related to food and mealtimes have positive effects such as strengthening intergenerational ties (Fiese, 2006), under conditions of immigration those traditions can have health consequences. Often referred to as the nutrition transition (Popkin & Udry, 1998), second generation immigrants arriving in the USA and other middle- and high-income countries around the world have transitioned from a balanced diet of plants, grains, fruit, and meat to a diet of sugar sweetened beverages, processed foods, and larger portion sizes. This is particularly evident in young children who immigrate to the USA with their parents (Van Hook, Quiros, Dondero, & Altman, 2018). Hispanic families often endorse the value of sharing meals together (Davis, Cole, Blake, McKenney-Shubert, & Peterson, 2016). However, long work hours in the USA and added household responsibilities for mothers are often cited by U.S. Mexican immigrant families as barriers to sharing meals (McArthur, Anguiano, & Gross, 2004).

To explore how immigration and globalization may affect mealtimes and dietary practices, a qualitative study of 41 Mexican parents (40 mothers, one grandmother) was conducted (Villegas, Hammons, Wiley, Fiese, & Teran-Garcia, under review). The country of origin for all of the participants was Mexico. Twenty-one (51%) resided in Mexico and 20 (49%) had immigrated to the USA. For those who had immigrated, the average time in the USA was 20 years. Participants took part in focus groups led by Spanish speaking facilitators. The focus group protocol included questions about mealtime routines such as cooking and eating and was based on previous research (Evans et al., 2011; Nepper & Chai, 2016). Three major themes were identified across both groups: (1) Mothers shop and cook the food, but children and fathers command the food; (2) Family meals are different than before, and globalization is a contributing factor; and (3) Family time has shifted to weekend endeavors, eating at restaurants, and eating at fast food chains. Somewhat

surprisingly, there were few differences in the themes across the mothers in Mexico and those who had immigrated to the USA on average 20 years ago.

Globalization can influence dietary habits. We asked mothers who grew up in Mexico to compare their childhood dietary habits with their current dietary practices. Mothers both in the USA and Mexico described how there were more fresh fruits and vegetables on the table when they were growing up than are currently available. In both countries, they described the presence of fast food and processed foods, and less access to fresh vegetables than when they were children.

At both sites, mothers described technology and electronics as distractions during mealtimes. They described an erosion of family time together as children viewed screens during meals and at times, did not sit together at the table. Mothers also commented that they did not understand what the children were doing on their phones and shared this frustration with their own mothers. A sense of isolation appeared to have developed.

The effects of globalization do not affect only immigrant families but can have an effect on children and families remotely. The concept of remote acculturation proposes that individuals can be acculturated psychologically through indirect exposure that results in change in the individual's behaviors and values (Ferguson & Bornstein, 2012). The USA can have a particularly strong influence through imported goods, cable television, other media, and the presence of U.S. branded fast food outlets. Residents of Jamaica were remotely acculturated to U.S. culture and moved toward a type of psychological "Americanization" (Ferguson, 2016). Americanization is associated with watching more U. S. cable television and consuming more U.S. style fast food such as Kentucky Fried Chicken (KFC; Ferguson & Bornstein, 2015). The media landscape in Jamaica is dense with advertisements for unhealthy food choices. An analysis of food advertisements in newspapers and outdoor advertising in Kingston identified that most of the advertisements were for energy dense, highly processed foods, snack foods, and fast food restaurants (Nelson, Ahn, Giray, & Ferguson, 2017). KFC was the most frequent food advertiser.

Remote acculturation can have a significant impact on mealtime behaviors and dietary habits. In a cross-sectional study of Jamaican youth and their mothers, the more adolescent girls were Americanized, the more U.S. cable television they watched and the more unhealthy food they consumed (Ferguson, Muzaffar, Iturbide, Chu, & Gardner, 2018). There was an indirect effect of watching U.S. television on consuming unhealthy food for the more Americanized mothers of girls. For adolescent boys, there was an indirect effect of U.S. cable television viewing on unhealthy food consumption for the more Americanized boys.

In a qualitative report, Jamaican mothers discussed the effects of U.S. culture on diet and mealtimes. Several mothers noted a loss of traditional foods that they had grown up with and their children's desire to eat more American foods such as pasta and pizza (Ferguson & Iturbide, 2015). The mothers considered healthy food as the foods they grew up with and those in a traditional Jamaican diet. American foods and fast food were considered unhealthy. However, Americanized foods were also seen as convenient and useful for busy and working mothers. There was considerable value placed on having meals together as a time to talk and share news of the day.

There was also discussion about television sometimes getting in the way of a peaceful experience.

The effects of globalization on mealtimes have implications for prevention and intervention programming. Rather than consider changes in mealtime patterns a fait accompli, it is possible to emphasize cultural values and raise awareness of media impact on dietary habits. The Abriendo Caminos program is a six-week family-based healthy eating program aimed at reducing obesogenic behaviors among Latinx parents and children (Hammons et al., 2013). The program includes nutrition education to promote healthier eating habits, modules on sharing meals together while reducing conflict at the table and increasing positive communication, and a whole family approach to physical activity. The multi-component program is based on the principle of Mas-e-Menos: a little bit more (fruits and vegetables, physical activity, shared family mealtimes) and a little bit less (sugar sweetened beverages, television viewing, conflict at the table). The culminating event of the program is a Fiesta where program participants share a traditional dish prepared by substituting healthier ingredients for original ones higher in fat or sugar. Preliminary findings from the pilot project indicated that the program is effective in reducing the consumption of sugar sweetened beverages and increasing the consumption of fruits and vegetables (Hammons et al., 2013).

Another approach to addressing globalization effects on nutrition is to increase media literacy and raise awareness of the effects of advertising on food consumption. Media literacy programs seek to raise awareness of how advertisers manipulate consumers and attempt to persuade them to purchase their products (Nelson & Kehr, 2016). The JUS Media? Programme has provided media literacy training to Jamaican youth and their mothers to raise awareness of food advertising and effects on nutrition habits (Ferguson, Fiese, Nelson, & Meeks Gardner, 2019). The team applies a *sub-vertisement* approach whereby teens and their parents take a pre-existing advertisement and make a parody or spoof of the ad to reveal its underlying intent and potential effect on poor health outcomes. This approach is seen as particularly effective in Jamaican culture as it builds upon Jamaican values of cultural critique, resistance of oppression, and self-empowerment (Ferguson et al., 2019).

In sum, globalization, either through immigration or remotely through the dissemination of U.S. products and U.S. cable television, is having a profound effect on dietary habits and mealtime practices around the world. Although cultural influences are typically thought to be more distally tied to mealtime practices, the encroachment of food advertising and fast food restaurants into a global society has reshaped the diet and mealtime practices for considerable numbers of families around the world. Not only does technology have a place at the table, impacting family mealtime interaction, but also the advertised products come to shape identity and food preferences that transform traditional diets. Globalization is a complex phenomenon as it is also embedded in shifting work dynamics and gender roles. For the family dynamics of mealtimes, it is important to recognize that the brief 20-min event reflects not only the desires of those sitting at the table but also pressures evident in society.

## Summary and Conclusions

In this brief overview, the dynamics of family mealtimes were reviewed with an emphasis on their relation to children's health and well-being. Drawing from socio-ecological models (Fiese et al., 2013; Harrison et al., 2011), it is proposed that the power of family mealtimes to affect children's health is embedded in larger systems including biological and temperamental systems of the child, community systems that affect access to food, country policies that include federal programs associated with food assistance, and societal influences including globalization.

There are several essential ingredients to a healthy mealtime that can be directly observed. Essential social interactions observed during mealtimes include direct and open communication to demonstrate a genuine concern for family member's feelings and activities; adequate response to negative emotions; and an environment relatively free of distractions. If any one of these elements is disrupted, then there are consequences to children's health and well-being.

A nagging concern in mealtime research is whether these principles or essential ingredients are simply markers of overall positive family functioning. This concern cannot be completely discounted, although several research reports have controlled for general family functioning and other socio-demographic factors when identifying the potentially unique role that sharing meals may play in promoting health and well-being (Fiese et al., 2011, 2016; Fulkerson et al., 2006). The unique contribution of family mealtimes may be considered from the perspective of organized routines that provide structure and predictability to family life. In addition, when repeated over time, these routines come to have meaning and create a symbolic identity for the family in terms of "this is who we are as a group" (Fiese, 2006). With rapid changes in globalization, there is a sense that there is a hominization of diet not only in the USA but also in middle income countries heavily influenced by U.S. exports, including media. The result is often a loss of connection to a broader cultural identity and unique diet across generations.

Future research and practice should explore how families preserve traditions in the face of global change and incorporate healthy mealtime practices free of distractions and full of meaningful conversations. Further, it will be important to consider how proximal processes such as response to negative affect and communication patterns may be influenced by more distal factors such as food insecurity, food advertising, and the growing influence of prepared foods and dining out (Elitzak & Okrent, 2018). To address these multiple layers of influence will require transdisciplinary teams of researchers to integrate a truly cell-to-society approach.

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# Chapter 5
# Feeding Styles and Child Eating Behaviors: A Multi-Method Approach


**Sheryl O. Hughes and Thomas G. Power**

**Abstract** During the early twentieth century, research on child eating targeted the type of food children ingested and the adequacy/deficiency of nutrients in their diets. Simultaneously, psychologists were studying how parents socialize their children into becoming adults. Subsequently, a multidisciplinary field emerged regarding the development of child eating behaviors grounded in the idea that parents play an important role in socializing children's eating. Early studies showed that patterns of general parenting were associated with child eating and obesity risk. However, subsequent studies focusing on feeding children provided a more proximal target for studying eating behaviors in the family context. Consequently, the construct of feeding styles emerged in the literature. Numerous studies over the past two decades have shown that feeding styles are differentially associated with child outcomes, with the most consistent relationships found between the indulgent feeding style, problematic child eating, and higher weight status. Interest in feeding styles led to the question of the stability of feeding styles over situations and time. Whether parents exhibit the same feeding behaviors across meals and situations or whether feeding varies over time is an important question for prevention research. This chapter covers the stability of common self-reported and observed feeding in studies among families with low-income levels. Additionally, the direction of effects—whether child weight predicts parental feeding or if parental feeding predicts later child weight—is also presented. Intervention programs may choose to target parental feeding behaviors at young ages to prevent the development of childhood obesity.

**Keywords** Feeding styles · Feeding practices · Child eating behaviors · Childhood obesity · Child socialization · Stability of feeding · Authoritative feeding · Authoritarian feeding · Controlling feeding · Indulgent feeding · Uninvolved feeding · Problematic child eating · Socializing children's eating · Parental feeding · Caregiver's Feeding Styles Questionnaire

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The Greek physician Hippocrates (400 B.C.) has been credited with saying, "Let thy food be thy medicine and thy medicine be thy food" (Witkamp & van Norren, 2018). This exact quotation does not appear in any of the recovered writings of Hippocrates. Nonetheless, nutrition has been a core element in traditional western medicine since that time. This early recognition of the importance of food and its impact on health, as well as food's role in the prevention of illness, has had a major influence on the study of eating behaviors, especially in children.

## History of Parent Feeding and Child Eating Literature

Child eating behaviors and parent feeding have received a plethora of interest from a number of disciplines including pediatrics, nutrition, and psychology. Historically, the major focus of child eating among pediatricians and nutritionists was on the importance of adequate physical growth and development during pregnancy, infancy, and childhood (Kleinman, Barness, & Finberg, 2003). In the early twentieth century, research related to growth focused on the significance of nutrients in the child's diet. Beginning in 1912 with the discovery of vitamins by Casimir Funk (Kucharz, Shampo, & Kyle, 1994) and extended by the work of Eijkman and Hopkins who received the Nobel Prize in 1929 (Raju, 1998), the relationship between various vitamins and child growth was identified. Similarly, the role of iron in human health was discovered by Mackay in 1928, which increased our understanding of the incidence of respiratory and diarrheal diseases in infants (MacKay, 1928). Throughout the next four decades, scientists continued to focus on the role of deficiencies in micronutrients such as iron, zinc, and others in the growth and development of young children (Kleinman et al., 2003). Therefore, prior to the 1970s, research related to child eating and growth targeted the type of foods children ingested, focusing primarily on the nutrients in those foods and nutrient adequacy or deficiencies in the child's diet.

Simultaneously, during the early part of the twentieth century, psychologists were beginning to theorize about how various approaches used by parents to socialize children influenced child outcomes (Maccoby, 1992). Socialization in this context referred to how parents instill habits, skills, values, and motives that enable children to become functioning adults (Maccoby, 1992). This early general parenting research on child socialization in the family focused mainly on child rearing practices and was dominated by psychoanalytic and behavioral theories (Cairns, 1983). As the field of child socialization evolved and other theories emerged, such as developmental psycholinguistics (Chomsky, 1959), attachment theory (Bowlby, 1969), and social learning theory (Bandura & Walters, 1963), the field turned to more domain specific child outcomes such as cognitive development, emotional competence, and social development. During this era and into the late 1990s, developmental psychologists viewed mother/child interactions during eating episodes as a context for studying child rearing. Little attention was being given to child eating outcomes, the influence of maternal feeding practices on these outcomes, and the

complex interplay of the two. General parenting research based on child socialization theories of child rearing evolved into an understanding that better parenting consisted of reasonable expectations for the child, autonomy promotion, respect for a child's individual needs, and the need for nurturance (Baumrind, 1989). A plethora of evidence-based research showed that individualized approaches to general parenting produced differential child outcomes across multiple contexts including academic, health, and socio-emotional development (Baumrind, 1989).

Subsequently, a scientific literature began to emerge during the late 1970s and into the 1980s based on groundbreaking studies of child taste preference and short-term energy intake (Birch & Deysher, 1985; Birch & Marlin, 1982). Early studies of taste preference showed that when young children were exposed to novel foods (i.e., offered the food), an exposure effect was found on choice and liking (Birch & Marlin, 1982; Birch, McPhee, Shoba, Pirok, & Steinberg, 1987). Researchers showed that it took 8–15 or more exposures for children to learn to prefer novel foods (Birch & Marlin, 1982). These findings have been replicated across multiple settings (Cooke, 2007). Similarly, early work on short-term energy intake showed that young children possessed the innate ability to regulate energy intake by responding to their internal cues of fullness (Birch & Deysher, 1985, 1986). Short-term energy intake was defined as the ability to regulate intake of energy in response to covert changes in energy density of foods consumed as a first course (Birch & Deysher, 1985, 1986). It was later shown that many children lose this ability as they age (Cecil et al., 2005; Johnson & Taylor-Holloway, 2006). More importantly, differences in children's ability to self-regulate their eating were linked to parenting. In a seminal study conducted in the 1990s, it was found that mothers reporting higher control in feeding had children who exhibited a lessened ability to self-regulate their eating (Johnson & Birch, 1994). Based on these seminal child taste preference and energy intake studies, the integration of parenting theories from developmental psychology, and the continuing focus on child eating behaviors in pediatrics and nutrition, the multidisciplinary study of child eating behaviors emerged. The new field of study focusing on the development of child eating behaviors was grounded in the idea that parents play an important role in socializing children's eating in the context of the family. Since the early 2000s, a burgeoning literature has focused on this subject as evidenced by a rapid increase in the number of published articles—less than 10,000 in the 1990s to over 80,000 from 2000 to the present (Dimensions Research Database, 2019).

## Parental Feeding Practices: Influence on Child Eating Behaviors

The rapid increase in the early twenty-first century of published studies on the association between parental feeding and child eating behaviors was heavily influenced by the emergence of the Child Feeding Questionnaire (CFQ) developed by Leanne

Birch and colleagues (Birch et al., 2001). The CFQ is the most widely used measure of parental feeding in the field of child eating behaviors and has been instrumental in its focus on highly controlling feeding practices used by parents of young children (Hurley, Cross, & Hughes, 2011). The CFQ measures the highly controlling parental feeding practices of restriction, monitoring, and pressure to eat along with parental attitudes of perceived responsibility, perceived parent and child weight, and concern about child weight (Birch et al., 2001). The idea behind the development of the CFQ was that highly controlling feeding practices are used by parents because of their concern over their child's weight (Hughes et al., 2006). Early development of this questionnaire was directly related to the seminal work by Johnson and Birch in the 1990s showing that high control in feeding was linked to a lessened ability for children to self-regulate energy intake (Faith, Scranlon, Birch, Francis, & Sherry, 2004; Johnson & Birch, 1994). Thus, these two events—linking parental feeding to child eating self-regulation and the development of the CFQ to assess controlling feeding practices—led to the emergence of a new paradigm in the field of child eating behaviors. Subsequently, a large number of studies were conducted and published supporting the premise that high control in feeding may lead to the development of childhood obesity (see Ventura & Birch, 2008 for a review).

Restriction and pressure to eat are the highly controlling feeding practices most commonly measured in the literature. Restriction has to do with the extent to which parents restrict children's access to certain energy dense foods (e.g., junk food and sweets). Pressure to eat assesses parents' tendency to pressure children to eat more (Birch et al., 2001). Across multiple studies, restrictive feeding has been associated with problematic child eating behaviors and obesity (see Shloim, Edelson, Martin, & Hetherington, 2015 and Ventura & Birch, 2008 for reviews). For example, restrictive feeding has been linked to children consuming more junk food, sweets, and unhealthy snacks (Boots, Tiggemann, Corsini, & Mattiske, 2015), being overresponsive to food (Webber, Cooke, Hill, & Wardle, 2010), and eating in the absence of hunger (Birch, Fisher, & Davison, 2003). Furthermore, restricting access to desired food has been shown to make the food more desirable to the child (Fisher & Birch, 1999). Longitudinal studies show links to child weight gain (Faith et al., 2004; Hughes, Power, O'Connor, Fisher, & Chen, 2016); however, some studies show no association (Gubbels et al., 2011; Webber, Hill, Cooke, Carnell, & Wardle, 2010). In contrast, pressure to eat has been linked to lower child weight across many studies (see Shloim et al., 2015 for a review). Some researchers have suggested that parents may adapt their feeding practices in response to their child's weight. Longitudinal data indicate a complex bi-directional association between highly controlling feeding practices and child weight with a stronger effect of child weight on practices than vice versa (Jansen et al., 2014).

Initial studies on child eating behaviors from the 1980s and 1990s and subsequent studies examining feeding practices that influence child eating, provided an important focus that expanded the literature beginning early in the twentieth century. Together, these studies produced an extensive literature highlighting the importance of parental feeding, in general, in the development of child eating behaviors and weight trajectories. Subsequent studies resulted in our current understanding of

how highly controlling feeding practices impact the development of childhood obesity (see Ventura & Birch, 2008 for a review). There were limitations to the earlier studies, such as a reliance on parent-report to measure practices, a primary emphasis on highly controlling as opposed to more positive parental directives, parenting behaviors embedded in laboratory studies calling into question the context in which these constructs were assessed, and an emphasis on white, middle-class samples (Birch et al., 2003; see Faith, Scranlon, et al., 2004 for a review; Fisher & Birch, 1999). Nonetheless, this research laid the groundwork for an important evolution in the field of child eating behaviors—specifically, a focus on family processes (including positive parental behaviors) that foster healthier eating in children. This focus gave rise to interest in individualized approaches to socializing children in the context of eating that influence the risk for later childhood obesity.

## General Parenting Styles and Child Eating Behaviors

Some of the first studies to examine the influence of more positive parental behaviors on child eating and weight status examined the role of general parenting styles. These styles were introduced into the literature by Diana Baumrind in the late 1960s (Baumrind, 1967, 1973) and later expanded by Eleanor Maccoby and John Martin in the 1980s (Maccoby & Martin, 1983). Levels of demandingness (clear boundaries and expectations) and responsiveness (warmth and approval) translated into four individualized approaches to child rearing (Maccoby & Martin, 1983). Authoritative parents (high demand, high response) were distinguished by involvement, nurturance, and structure; authoritarian parents (high demand, low response) were identified by restrictive, punitive, and power-assertive behaviors; permissive/indulgent parents (low demand, high response) were denoted by warmth, acceptance, and a lack of monitoring; and uninvolved parents (low demand, low response) were characterized by little control and involvement with the child. In general, research on parenting styles shows that authoritative parenting tends to be associated with positive developmental outcomes (e.g., emotional stability, adaptive patterns of coping, life satisfaction); authoritarian parenting has been associated with poor academic achievement and depressive symptoms; and permissive parenting has been associated with poor self-control, low self-esteem, and aggression (see Mandara, 2003; Maccoby & Martin, 1983; Power, 2013 for reviews).

Several early studies examined the relationship between measures of general parenting style and child food consumption and/or weight status. Researchers found that the authoritative parenting style was associated with greater adolescent fruit and vegetable consumption (Kremers, Brug, de Vries, & Engels, 2003; Lytle et al., 2003), whereas authoritarian parenting was associated with greater availability of sweets in the home (Gable & Lutz, 2000). The most influential and frequently cited paper in this area was an analysis of the data from National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006). They found that authoritative

parenting assessed at 4 years was associated with the lowest levels of childhood obesity in the first grade. Since then, numerous studies have confirmed that general authoritative parenting is associated with lower childhood obesity risk, as well as health-promoting food consumption patterns (see Shloim et al., 2015; Sleddens, Gerards, Thijs, de Vries, & Kremers, 2011 for reviews), including a longitudinal study of Mexican-American preschoolers (Olvera & Power, 2010). Mexican-American preschoolers with indulgent or uninvolved mothers were shown to be at greatest risk for subsequent childhood obesity.

## Construct of Feeding Styles Based on Parenting Style Framework

Around the same time that researchers began to examine the relationship between general parenting and childhood obesity, our research group began to explore how parenting styles could be examined specifically in the feeding context (Hughes, Power, Fisher, Mueller, & Nicklas, 2005). The construct of feeding styles is based on the general parenting style framework and emphasizes family processes specifically around feeding children in the home. Since that time, a clear distinction has been made in the literature between feeding styles and practices (Vaughn et al., 2016). In the context of feeding, *practices* such as restriction and pressure to eat refer to goal-oriented strategies or directives that parents use to get the child to do something specific, such as refraining from eating high fat foods or eating more vegetables (Vaughn et al., 2016). In contrast, *styles* of feeding, much like general parenting styles, refer to a broader, more general approach used by parents in the eating socialization process. Feeding styles include the emotional climate created between parents and children during eating episodes (Hughes et al., 2005; Vaughn et al., 2016).

### *A Questionnaire to Measure Feeding Styles*

Feeding styles, similar to general parenting styles, are measured on two continuous, parent-reported scales: demandingness and responsiveness. Demandingness refers to the amount of control and supervision a parent expresses when feeding his/her child. Responsiveness refers to the amount of warmth with which a parent expresses that demandingness. Cut points on the demandingness and responsiveness scales are used to categorize parents into one of the four feeding style categories: authoritative (high demand, high response); authoritarian (high demand, low response); indulgent (low demand, high response); and uninvolved (low demand, low response; Hughes et al., 2005).

Initial work on the development of the Caregiver's Feeding Styles Questionnaire (CFSQ) was conducted through a study with low-income African-American and Hispanic Head Start families with preschoolers. Parents completed the CFSQ along with a general parenting questionnaire (Parenting Dimensions Inventory; Power, 2002) and a measure of highly controlling feeding practices (Child Feeding Questionnaire; Birch et al., 2001). Multiple differences across the feeding styles were seen on the general parenting constructs (Hughes et al., 2005). Results showed that authoritative parents reported more nurturance compared to parents with low responsive styles (i.e., authoritarian and uninvolved). Authoritarian parents reported more inconsistency in their child rearing compared to uninvolved parents, and reported lower reasoning and reminding compared to high responsive styles (i.e., authoritative and indulgent). Uninvolved parents reported that they followed through on discipline less often compared to high responsive parents and reported less organization compared to the other three feeding styles. Finally, indulgent parents reported less use of physical punishment compared to the low responsive styles. Regarding associations with feeding practices, authoritarian parents reported putting more pressure on their children to eat compared to parents low on demandingness (indulgent and uninvolved feeding styles); indulgent parents reported using less restriction compared to parents high on demandingness (authoritative and authoritarian feeding styles), and authoritative parents reported more monitoring compared to parents low on responsiveness (authoritarian and uninvolved feeding styles; Hughes et al., 2005).

Subsequently, a number of studies using the CFSQ supported the predictive validity of the measure in families from low-income backgrounds with children. Indulgent feeding has been linked to larger self-selected portion sizes (Fisher, Birch, Zhang, Grusak, & Hughes, 2013), lower intake of vegetables, dairy, and fruit (Hoerr et al., 2009), and higher intake of snack foods in children (Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2012). The authoritative feeding style has been linked to lower child intake of snack foods (Hennessy et al., 2012) as well as better diet quality of the meal both served to and consumed by children at dinner (Arlinghaus et al., 2018). Uninvolved feeding has been linked to lower child intake of fruit and vegetables (Hoerr et al., 2009). Evidence supports the premise that indulgent feeding puts children at risk for the development of childhood obesity (see Table 5.1).

## *Validation of the CFSQ Through Direct Observation*

Research conducted in our laboratory (Hughes et al., 2007, 2011; Power et al., 2018) and by others (Edelson, Mokdad, & Martin, 2016; Ontai, Sutter, Sitnick, Shilts, & Townsend, 2019) has shown convergence between feeding constructs derived from the CFSQ and independent observations of feeding behavior. A study of 50 Head Start child care providers found that endorsement of indulgent feeding on the CFSQ was positively correlated with observed indulgent feeding across three

**Table 5.1** Studies linking feeding styles to child intake and weight

| Author | Sample | Results |
|---|---|---|
| Hughes et al. (2005) | 231 (African-American, Hispanic) ages 3–5 | Higher child BMI z-score (indulgent) |
| Hughes, Shewchuk, Baskin, Nicklas, and Qu (2008) | 718 (African-American, Hispanic, white) ages 3–5 | Higher child BMI z-score (indulgent) |
| Hoerr et al. (2009) | 715 (African-American, Hispanic, white) ages 3–5 | Lower child intake of fruit, vegetables, and dairy; higher child intake of energy dense foods (indulgent; uninvolved) |
| Hennessy, Hughes, Goldberg, Hyatt, and Economos (2010) | 99 (African-American, Hispanic, white) ages 6–11 | Higher child BMI z-score (indulgent) |
| Hughes et al. (2011) | 177 (African-American, Hispanic) ages 3–5 | Higher child BMI z-score in Hispanic boys (indulgent) |
| Hennessy et al. (2012) | 99 (African-American, Hispanic, white) ages 6–11 | Higher child intake of energy dense snacks (indulgent)<br>Lower child intake of energy dense snacks (authoritative) |
| Tovar et al. (2012) | 383 (Brazilian, Haitian, Latino) ages 3–11 | Higher child BMI z-score (indulgent) |
| Fisher et al. (2013) | 60 (African-American, Hispanic, white) ages 4–6 | Greater child self-served portions and higher child energy intake (indulgent; authoritarian) |
| Tovar et al. (2015) | 313 (Brazilian, Haitian, Latino) ages 3–11 | Lower child intake of whole grains (mothers in US <5 years) (indulgent) |
| Hughes et al. (2016) | 129 (Hispanic; longitudinal) ages 4–5 at first time point | Increased child BMI z-score 18 months later (indulgent) |
| Horodynski et al. (2018) | 626 (African-American, Hispanic, white) ages 3–5 | Higher child BMI z-score (indulgent) |
| Arlinghaus et al. (2018) | 131 (African-American, Hispanic) ages 3–5 | Higher diet quality served to and consumed by child (authoritative) |

mealtime observations in a preschool classroom, $r(48) = 0.27$, $p < 0.05$ (Hughes et al., 2007). Authoritative feeding showed a marginally significant correlation, $r(48) = 0.24$, $p < 0.10$, and authoritarian feeding showed no significant correlation, $r(48) = 0.08$, n.s.

Subsequently, 177 African-American and Hispanic Head Start families with low incomes were observed during three dinners in their homes (Hughes et al., 2011). Two observers independently recorded the frequency of 25 specific feeding behaviors and conducted global ratings of the emotional climate of the meal using an observational system adapted from Belsky, Crnic, and Woodworth (1995). Parents also completed the CFSQ. Numerous differences in observed behavior were identified between parents reporting the four feeding styles. Specifically, authoritative and authoritarian parents (high demandingness styles) were most likely to use spoon

feeding/physical intervention, verbally prompt eating, use reasoning, and make positive comments about the food. Authoritarian parents were more likely to encourage the child to eat a small amount, hurry eating, and disapprove of or scold the child. Finally, indulgent and uninvolved parents (low demandingness styles) were less likely to use most of the observed feeding behaviors compared to parents reporting high demandingness styles and did not significantly differ from one another. Examination of the effect sizes (data not reported in Hughes et al., 2011) showed that the significant effects of feeding style on observed feeding accounted for between 5% and 12% of the variance.

Emotional climate global ratings also differed as a function of self-reported feeding style (Hughes et al., 2011). Specifically, parents reporting an authoritarian or uninvolved feeding style (low responsive) exhibited the greatest negative affect; authoritarian parents showed the highest intrusiveness; and uninvolved parents showed the greatest detachment. Unexpectedly, indulgent parents showed high levels of detachment as well; they did not significantly differ from uninvolved parents. There were no significant differences between the four self-reported feeding styles on observer ratings of positive affect. Examination of the effect sizes (data not reported in Hughes et al., 2011) showed that the significant effects of feeding style on observed emotional climate ratings accounted for between 7% and 12% of the variance.

Videotapes made of the first 144 families who participated in the Hughes et al. (2011) study were coded (Power et al., 2018). Financial limitations prevented videotaping the last 33 families. Measures of parental demandingness and responsiveness were derived from the observed data using a procedure similar to the scoring of the CFSQ. Parental demandingness was assessed by calculating the mean rate of observed parental prompts to eat averaged across three meals. Responsiveness was assessed by calculating the mean proportion of total observed feeding behaviors that were child-centered (following the classification used to score child-centered feeding in the CFSQ). Using the same process used in scoring the CFSQ, parents were assigned to one of the four feeding styles using median splits on observed measures of demandingness and responsiveness. Results showed that correlations between the observed and self-report measures of these two dimensions were statistically significant: demandingness, $r(135) = 0.24$, $p < 0.01$; responsiveness, $r(135) = 0.18$, $p < 0.05$. Not surprisingly, given the rather low correlations between the observed and self-report measures of the two dimensions, the correspondence between the observed and self-reported feeding styles was not more than would be expected by chance alone. Rates of agreement by feeding style were: authoritarian (45%), authoritative (26%), uninvolved (22%), and indulgent (21%). Overall, parents showed the same feeding styles across the two methods only 28% of the time.

Two studies conducted by other investigators provide evidence for the relationship between self-reported feeding using the CSFQ and independent observations of feeding: a study of low-income parents of preschoolers recruited through Head Start and the Special Supplemental Nutrition Program for Women, Infant, and Children (WIC; Ontai et al., 2019) and a study of middle-class parents of 1–3-year-olds in Switzerland (Edelson et al., 2016). In the first study, 60 low-income parents

of preschoolers completed a modified, visually enhanced version of the CFSQ called the My Child at Mealtime (MCMT) self-assessment (Ontai, Sitnick, Shilts, & Townsend, 2016) and were videotaped during a home meal (87% of the meals were dinners). Scores reflecting observed ratings during the meal of child- and parent-centered feeding were correlated with self-reports of child- and parent-centered feeding on the MCMT. Results showed a significant, positive association between self-reported and observed feeding for parent-centered ($p < 0.05$), but not for child-centered feeding. Finally, in the second study, 60 parents videotaped all instances of feeding on a single day at home (Edelson et al., 2016). Coding of the videotapes showed that parents reporting an authoritarian feeding style were significantly ($p < 0.05$) more likely than parents reporting an authoritative style to pressure their child to eat during observed feeding (the main effect for feeding style in this analysis was $p < 0.07$).

Together, the results of these studies show statistically significant associations between observed and self-reported feeding on the CFSQ. The effect sizes were predominantly small, explaining between 3% and 12% of the variance (corresponding to correlation coefficients of 0.18–0.35). The one study that examined correspondence between observed and self-reports of the four feeding style categories (Power et al., 2018) showed no more agreement than expected by chance alone. This is not surprising given that parents were assigned to feeding styles based on median splits of the feeding dimensions of demandingness and responsiveness that showed statistically significant but low levels of agreement. Additional analyses showed that using a dimensional approach (i.e., examining main effects of demandingness and responsiveness along with their statistical interaction) was superior to classifying parents into feeding styles using median splits in predicting child BMI and individual differences in child eating behavior (Power et al., 2018).

Given the limitations of self-report measures and the multiple situational factors that can influence feeding (see discussion in the next section), the small effect sizes reviewed here help to validate the CFSQ. There are multiple sources of error in parental reports of childrearing practices including social desirability biases; faulty recall or recall biases; ambiguous, general, or leading questions; limited awareness of one's own behavior; and careless or random responding (Power et al., 2013). These errors, combined with the significant impact of situational factors, should inevitably result in small effect sizes when examining correspondences between observed and self-reported parenting. The effect sizes reported here were similar to those found in other studies of parenting outside of the feeding domain. In a recent meta-analysis of 36 articles, an average effect size of $r = 0.17$ was found for the relationship between observed and self-reported parenting practices (Hendriks, Van der Giessen, Stams, & Overbeek, 2018). They found two significant moderating variables in their analysis—effect sizes were higher for longer questionnaires and higher for negative parenting practices compared to positive ones. Consistent with this finding, the effect sizes in the Hughes et al. (2011) study were highest for global ratings of negative affect and the observed rate of scolding (both eta squares equaled 0.12, equivalent to a correlation of 0.35—unpublished results).

## Stability of Feeding Styles and Practices: Observations and Self-Report

Given that parents demonstrate individual differences in feeding, and that feeding has been associated with various child outcomes (particularly childhood obesity), an important question concerns how stable is feeding over situations and time. That is, do parents typically exhibit the same feeding behaviors across meals and situations or do feeding behaviors vary across meals and time as a function of situational factors? For individual differences in feeding to have an effect, one would expect some consistency across situations. This person-situation (or state-trait) debate has a long history in the field of psychology (e.g., Hartshorne, May, Maller, & Shuttleworth, 1928; Hunt, 1965; Mischel, 1968; Newcomb, 1929).

The issues of both short-term and long-term feeding stability have been addressed (Silva Garcia et al., 2018) using data from the Hughes et al. (2011) study of low-income African-American and Hispanic parents, described above, and from a separate longitudinal study of 138 Hispanic parents with low-incomes observed feeding their children in a laboratory setting 18 months apart (Hughes, Power, O'Connor, & Fisher, 2015). Analyses addressed these two issues: (1) stability of feeding styles and practices across three meals observed within the short period of time of approximately 2 weeks (data from Hughes et al., 2011) and (2) stability of feeding styles and practices across an 18-month period (data from Hughes et al., 2015).

Based on literature from social psychology (i.e., Epstein, 1983; Fleeson & Noftle, 2008; Funder, 2016; Hunt, 1965; Mischel, 1968; Mischel & Peake, 1982), Silva Garcia et al. (2018) predicted that: (1) parents would exhibit moderate stability in feeding styles and practices observed over a period of 2 weeks, (2) parents would exhibit greater stability in feeding observed over 2 weeks compared to 18 months, (3) self-reported feeding would be more stable than observed feeding over 18 months, and (4) higher-order measures of feeding dimensions and styles (i.e., feeding measures aggregated across multiple individual behaviors) would show higher levels of stability over 2 weeks and 18 months compared to individual feeding practices (observed only).

### *Stability of Feeding Observed over a 2-Week Period*

Results partially supported the first hypothesis by showing moderate stability of individual feeding practices over a 2-week period on the observed data from three dinner meals (Hughes et al., 2011). For 70% of the feeding practices, mean correlations across three meals for specific feeding practices ranged from 0.20 to 0.41. These included discouraging eating (0.35), encouraging the child to eat a different food (0.40), enthusiastic modeling (0.32), unelaborated commands (0.38), and verbal hints (0.37). Practices showing higher mean correlations were frequency of mealtime conversations about the child (0.63), total frequency of eating prompts

(0.62), use of spoon feeding (0.54), enforcement of table manners (0.47), and use of nonverbal gestures (0.44). Practices showing very low consistency across meals were discussions of food characteristics (0.19), use of questions/suggestions (0.13), and frequency of mealtime conversations about other people (0.09). Regarding the categories of feeding styles and the dimensions on which they are based, demandingness showed a relatively high level of stability (0.63), responsiveness a moderate level (0.33), and feeding styles low levels (0.21–0.23).

Together, these findings showed that although parents showed considerable consistency when trying to get their children to eat (as evidenced by high mean correlations for eating prompts, 0.62, and demandingness, 0.63), only moderate levels of stability were seen for how they accomplished their goal (i.e., practices used to encourage or discourage eating). These mean correlations (0.20–0.41) were very similar in size to correlations found for cross-situational stability of observed behavior in other domains. For example, many reviews of the stability of adult and child behavior across situations published in the 1960s (e.g., Hunt, 1965; Mischel, 1968; Vernon, 1964; Wallace, 1966) concluded that the size of correlations typically ranged from 0.20 to 0.30 and rarely above 0.40. More recent studies confirmed these effect sizes as well (Fleeson & Noftle, 2008). A range of factors can influence feeding on any given day (e.g., nature of interactions earlier in the day or at previous meals, parent or child emotional state, time of day, food served, child's level of hunger, length of the meal, presence of distractions) leading to low levels of stability. However, parental efforts at encouraging eating appear to be much more consistent than individual practices. Although parents may use different practices across meals to get their child to eat, the overall degree to which they try to achieve this goal is rather consistent. The degree to which differences reflect parental beliefs and attitudes about how much children should eat versus their reactions to picky eating or other child eating behaviors is a question for future research.

## *Stability of Feeding: 2 Weeks Versus 18 Months*

The second hypothesis that parents would exhibit greater stability over 2 weeks compared to 18 months received some support, particularly for individual feeding behaviors. Data for the 2-week period was obtained from an observational study of home meals among Head Start families (Hughes et al., 2011) and data for the 18-month period was obtained from a longitudinal study of child eating self-regulation using observational protocols (Hughes et al., 2015). The same coding system was used in both studies. For many feeding behaviors (e.g., encouragement of table manners, encouragement to eat a different food, unelaborated commands, and enthusiastic modeling) mean correlations over 2 weeks and those over 18 months did not differ. These correlations were predominately between 0.20 and 0.40. For seven behaviors (i.e., frequency of eating prompts, encouragement to eat all of the food on the plate, verbal hints, verbal pressure to eat, nonverbal gestures, helping the child eat, and spoon feeding), the difference between correlations over 2 weeks

and those over 18 months was 0.20 or greater with stability being higher over 2 weeks compared to 18 months.

Surprisingly, the results for the feeding dimensions and styles were different. Although observed demandingness showed greater stability over 2 weeks (0.63) compared to stability over 18 months (0.34), observed responsiveness showed greater stability over the 18-month period (0.49 versus 0.33). Observed feeding *styles* showed low levels of stability over both the 2-week and 18-month periods (0.19–0.33) with one exception, for the uninvolved feeding style, there was low stability over the 2-week period (0.21), but no stability over 18 months (0.02).

Together, these findings partially supported the hypothesis that for some feeding measures there was greater stability over 2 weeks compared to 18 months; however, for most feeding (i.e., 65%), levels of stability were low to moderate and similar across these two time frames. These results support the notion that despite considerable situational variation, levels of stability observed over a short period is similar to that observed over a longer period for most feeding behaviors studied.

## *Self-Report Versus Observed Feeding over 18 Months*

The third hypothesis that, over 18 months, self-reported feeding would show greater stability than observed feeding, was partially supported. Parents in the Hughes et al. (2015) study completed measures of feeding styles (CFSQ, Hughes et al., 2005) 18 months apart along with two feeding practice questionnaires—Child Feeding Questionnaire (CFQ, Birch et al., 2001) and Comprehensive Feeding Practices Questionnaire (CFPQ, Musher-Eizenman & Holub, 2007). Of the 14 CFPQ feeding practice subscales with adequate coefficient alphas, all except two showed high levels of stability over 18 months with correlations ranging from 0.38 to 0.66 (mean = 0.50). Monitoring subscales from the CFQ and the CFPQ showed lower levels of stability over time (correlations of 0.19 and 0.29, respectively). Self-reported feeding style dimensions of demandingness (0.62) and responsiveness (0.51) also showed high levels of stability over 18 months. Observed feeding practices over 18 months resulted in seven variables with correlations greater than 0.38: frequency of eating prompts (0.39), frequency of encouraging eating a different food (0.46), table manners (0.45), encouraging other food related behaviors (0.51), enthusiastic modeling (0.49), unelaborated commands (0.39), and observed responsiveness (0.49). Therefore, this hypothesis was only partially supported such that only some correlations for self-reported feeding were higher than those for observed feeding. This was also supported for data on the four feeding styles categories. Self-reported feeding styles yielded slightly higher levels of stability over 18 months (mean correlation = 0.29) compared to observed feeding styles (mean correlation = 0.21).

As argued by Mischel (1968) and others, a major reason for higher stability of self-reported behaviors over time is that these measures are more assessments of cognitive constructions of how parents see themselves rather than a reflection their

actual behavior. Moreover, when completing questionnaires, parents are forced to ignore situational variation and instead report on typical behaviors. Parents likely vary widely in awareness of their own feeding behaviors and how individual instances of feeding are weighed in generating a "typical" response. However, as discussed above, given that self-reports show small, but statistically significant associations with observed feeding, such self-reports appear to have some validity and reflect, at least to a modest degree, the actual behavior of parents. Because observations and self-reports each have their own limitations (Power et al., 2013), researchers may choose to use both methods for studies in this area. Despite this recommendation, the use of self-reported feeding questionnaires currently outnumbers observational assessments (Hughes et al., 2013).

### *Stability of Higher-Order Measures of Feeding Dimensions and Styles*

The final hypothesis was that higher-order measures of demandingness and responsiveness (dimensions of feeding styles), as well as the feeding styles themselves, would show higher levels of stability compared to individual feeding practices, despite the length of time between assessments. This was expected because these measures were created by aggregating across multiple feeding behaviors, thus resulting in a more reliable individual difference measure yielding greater stability over time. This hypothesis was partially supported for observed demandingness with the 2-week period of stability among some of the highest values observed (0.63). However, the stability of demandingness over 18 months was only 0.34 making it similar to that of individual feeding practices. The opposite was found for the dimension of responsiveness—stability over 18 months was one of the higher values observed (0.49); however, its stability over the 2-week period was similar to that of individual feeding practices (0.33).

Finally, the stability of observed feeding styles was low (across 2 weeks as well as 18 months) showing correlations similar to stability of individual feeding practices. Correlations ranged over 18 months from 0.02 for the uninvolved feeding style to 0.30 for the authoritarian feeding style (mean correlation = 0.21). These correlations were considerably lower than many of the individual feeding practices. One reason for the low levels of stability for feeding styles may be the use of median splits on the two dimensions when assigning parents to the four categories. This provides further support for the use of the demandingness and responsiveness dimensions as continuous measures in analyses of feeding styles and child outcomes (Power et al., 2018).

## Bi-Directional Analyses of Feeding Styles and Child BMI

Despite the consistent relationship found between indulgent feeding on the CFSQ and child BMI (see Table 5.1), it is impossible to determine whether indulgent feeding contributes to the development of childhood obesity or whether childhood obesity leads to the development of indulgent feeding. Because a number of studies have demonstrated that childhood weight status can influence subsequent feeding behavior (Eichler et al., 2019; Jansen et al., 2014; Rhee et al., 2009), it is important to examine the possibility of bi-directional influences between indulgent feeding and child weight status over time. Hughes, Power, Fisher, and O'Connor (2020) examined this relationship in analyses of data from the Hughes et al. (2015) study. In order to secure data at three time points, after completion of the 18-month follow-ups described in Silva Garcia et al. (2018), parents were contacted an average of 24 months later and completed the CFSQ a third time. Their children were weighed and measured at this third time point as well and their BMI z-scores computed.

A cross-lagged panel analysis was conducted across the three time points using the continuous child BMI z-scores and dichotomous variables to represent three of the feeding styles (authoritative, authoritarian, and indulgent). Only three feeding styles could be examined simultaneously in this analysis. Adding a dichotomous predictor for uninvolved feeding would be mathematically redundant since parents reporting the uninvolved style would have a zero on all three feeding style variables. In the path model, we examined autoregressive paths for the three feeding styles and child BMI z-scores between adjacent time points, as well as examining all cross-lagged paths between the feeding style variables and the child's BMI z-scores (in both directions—from feeding style to weight status and vice versa). Feeding styles showed low to moderate levels of stability over time (standardized betas ranged from 0.20 to 0.41), whereas child BMI z showed very high levels of stability (betas = 0.91 and 0.94). Results are consistent with the Silva Garcia et al. (2018) results. Despite the high levels of stability in children's weight status, at both Time 1 and Time 2, indulgent feeding predicted child BMI z-scores at the next time point. The beta from Time 1 indulgent feeding to Time 2 BMI z-score was significant (beta = 0.11, $p < 0.05$) and the beta from Time 2 to Time 3 was marginally significant (beta = 0.08, $p < 0.07$). In addition, child BMI z-score at Time 2 positively predicted indulgent feeding and negatively predicted authoritarian feeding at Time 3. No other paths were significant.

Together, the findings demonstrated that despite considerable stability in child weight status over this 3-year period, increases in child weight status between adjacent time points were predicted by earlier indulgent feeding. Although a unidirectional effect was found from feeding to child weight status at the first two time points, this relationship became bi-directional between the second and third time points when the children were older.

## Conclusions

Interest in research on parenting influences on child eating behavior has increased dramatically since the early 2000s. This may be due to the emergence of an interdisciplinary focus on the development of child eating behaviors by the disciplines of psychology, nutrition, and pediatrics. An early focus on the highly controlling feeding practices of restriction and pressure to eat has shown fairly consistent links to child weight status; however, little research was conducted on more positive feeding prior to 2000. The construct of parental feeding styles emerged in 2005, which was defined as a broader, more general approach to feeding similar to general parenting styles. Subsequent research has shown that authoritative feeding is associated with better child health outcomes relative to the other feeding style categories. Indulgent feeding is considered the most problematic feeding style with links to less healthy child eating behaviors and weight status across multiple cross-sectional and one longitudinal study. Bi-directional analyses showed that child weight was predicted by earlier indulgent feeding; however, this relationship became bi-directional at later ages. Regarding the stability of parental feeding over time, considerable consistency was seen in the degree to which parents tried to get their children to eat but only moderate levels were seen in how they accomplished this goal (i.e., the type of feeding practices they used to encourage or discourage eating). Furthermore, the higher-order measure of demandingness (observed) was among the highest stability values seen in feeding ($r = 0.63$). This level of stability was not seen in the observed higher-order measure of responsiveness—its stability was only $r = 0.34$ making it similar to feeding practices. Future research should focus on other socio-economic groups and child outcomes over time through longitudinal designs. Intervention programs may choose to target authoritative feeding at young ages to prevent the development of childhood obesity.

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# Chapter 6
# Mixed-Methods Assessment of Childhood Obesity: Parental and Familial Factors


**Jerica M. Berge**

**Abstract** Given the known health risks, societal burden, and healthcare costs associated with childhood obesity, addressing child weight and weight-related behaviors is critical. The home environment is one key domain to examine when trying to understand risk and protective factors for childhood obesity. This chapter presents innovative mixed-methods approaches to measuring key parental and familial factors linked to child weight and weight-related behaviors. The importance of including multiple family members when measuring the influence of the home environment on child weight and weight-related behaviors is discussed. Selected findings from three NIH-funded mixed-methods studies related to parent and familial factors of importance to child weight and weight-related behaviors are reported, and implications for future intervention research are presented.

**Keywords** Childhood obesity · Mixed-methods · Parent feeding practices · Parenting · Siblings · Ecological momentary assessment · Multiple family members · Familial factors in obesity · Weight-related behaviors · Child weight

## Parental and Familial Factors Associated with Child Weight

There are potentially numerous levels of influence (e.g., biological, household, school, neighborhood, societal) on child weight and weight-related behaviors (e.g., diet quality, physical activity, sedentary behaviors). The home environment including parental (e.g., parent feeding practices, parental weight-focused conversations) and familial factors (e.g., family meal frequency) is one central domain that is fundamental to examine. For example, controlling parent feeding practices (restriction, pressure-to-eat) have been shown to be associated with child overweight and disordered eating behaviors (Birch, Fisher, & Davison, 2003; Fisher, Mitchell,

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Smiciklas-Wright, & Birch, 2002; Larson, Eisenberg, Berge, Arcan, & Neumark-Sztainer, 2015; Loth, MacLehose, Larson, Berge, & Neumark-Sztainer, 2016). However, predictors of parental feeding practices, such as stress and mood, are less understood. In addition, the majority of families in the U.S. have at least two children (U. S. Census Bureau, 2010). Thus, it is important to take into consideration the influence of multiple family members (e.g., parents, siblings) on home environment factors related to child weight and weight-related behaviors. Prior studies have not typically included multiple family members. Dyadic and familial-level analyses may create a more refined picture of the home environment and allow for results that disentangle risk and protective factors for childhood obesity (Berge, MacLehose, Eisenberg, Laska, & Neumark-Sztainer, 2012; Davison & Birch, 2001). For example, understanding whether parents utilize similar parent feeding practices with siblings would help inform the development of family-based interventions targeting child weight and weight-related behaviors. Furthermore, inclusion of home environment factors related to childhood obesity is important because many of these factors can be objectively measured for increased precision, and better understood if mixed-methods (e.g., quantitative, qualitative, direct observation) are employed. For example, when investigating the relationship between parental weight-related conversations and child weight status, it would be important to have qualitative data to know what is said in weight-related conversations.

The current chapter aims to: (1) present innovative mixed-methods approaches to measuring key parental and familial factors linked to child weight and weight-related behaviors, (2) identify the importance of including multiple family members when measuring the influence of the home environment on child weight and weight-related behaviors, and (3) present findings from three NIH-funded mixed-methods studies involving multiple family members to examine parental and familial factors of importance to child weight and weight-related behaviors within racially/ethnically diverse and immigrant/refugee households. Additionally, implications for future family-based interventions using cutting-edge mixed-methods such as ecological momentary intervention (EMI) to target childhood obesity in diverse households are discussed.

## Family Systems Theory

Family Systems Theory (FST; Bertalanffy, 1952; Whitchurch & Constantine, 1993) is a useful framework for understanding the role of the home environment in child weight and weight-related behaviors. According to FST, the family environment is the most proximal influence on child weight and weight-related behaviors (Berge, Wall, Bauer, & Neumark-Sztainer, 2010; Berge, Wall, Larson, Loth, & Neumark-Sztainer, 2013; Rhee, 2008). FST suggests that intervening on individual-level behavior (e.g., dietary intake) has limited success unless the family-level behavior sustaining or overriding the individual-level behavior (e.g., fruits/vegetables served at family meals, parent feeding practices) changes too (see Fig. 6.1).

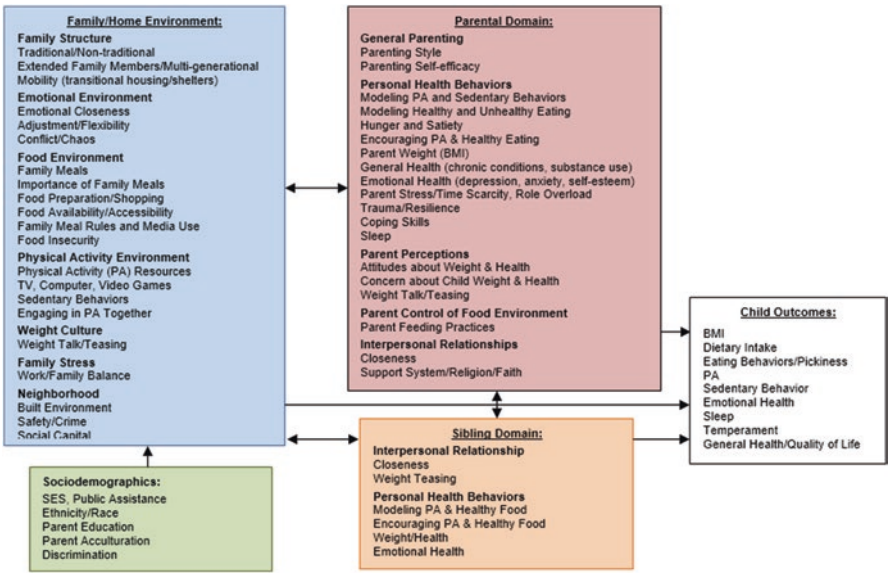


**Fig. 6.1** Individual, dyadic, and familial influences on childhood obesity Source: Berge, Trofholz et al. (2017)

Family systems theory focuses on relational connections between family members and how these interconnections can influence individual behavior, as well as family-level behavior. For example, a child may experience negative weight-based talk from a family member. This in turn may increase the child's negative emotional response, triggering the child to emotionally eat. This increase in unnecessary calories could result in the child gaining weight, thus increasing the likelihood of experiencing more negative weight-based talk. Overweight and obesity, therefore, become a familial-sustained problem. Furthermore, FST suggests that including multiple family members (e.g., parents, grandparents, siblings) in interventions increases the likelihood of family-level change, which promotes more sustainable change (Berge et al., 2014; Berge, Jin, Hannan, & Neumark-Sztainer, 2013). Utilizing FST as an underlying theory for understanding the relationship between parental and familial factors and childhood weight and weight-related behaviors will facilitate solid study design, research question and hypothesis formulation, and analysis and interpretation of results.

## Using Mixed-Methods in Child Obesity Research

Applying mixed-methods allows for breadth (e.g., quantitative methods) and depth (e.g., qualitative methods) in understanding potential parental and familial factors of importance to child weight and weight-related behaviors. Collecting different types of data allows for a more complex picture of public health prob-

lems such as childhood obesity and will increase the potential to intervene in these difficult-to-change problems. Three mixed-methodologies used in research on parental and familial factors related to child weight and weight-related behaviors include: video recordings, ecological momentary assessment (EMA), and qualitative interviews.

## *Ecological Momentary Assessment*

Many parental and familial factors can vary across time and context (e.g., parent feeding practices). However, they are often measured using static measures (e.g., one-time surveys) that do not allow for assessing the momentary nature of these factors. For example, parent feeding practices such as restriction, pressure-to-eat, and monitoring may be more likely to vary across time rather than being stable (Berge, Tate, Trofholz, Loth et al., 2018). Parents experience momentary stressors such as difficult child behavior (e.g., picky eating) or a stressful day that leads them to engage in certain feeding practices (e.g., pressure-to-eat). Different feeding practices (e.g., providing choices/options) may be employed when parents are not experiencing stress. Ecological momentary assessment (EMA) is a method that allows for capturing fluctuations in behavior across time and context (De Young et al., 2014; Dunton, Intille, Wolch, & Pentz, 2012; Heron & Smyth, 2010; Shiffman, Stone, & Hufford, 2008). Using a smartphone-based web application to record behaviors and/or ratings of stress, anxiety, hunger, etc., EMA allows for observation of behaviors as they unfold in context, moment-by-moment. EMA has several advantages. First, EMA captures dynamic changes in behavior that are relevant to a participant's environment in real time. Second, EMA measures within- and between-subject variation. EMA can identify whether parental behaviors are state-like, and influenced by momentary mechanisms (e.g., stress) that can be intervened on in real time, or whether they are trait-like. Third, designs that incorporate EMA analyses address limitations of cross-sectional designs, such as reverse causality and temporal ordering of variables. EMA also avoids limitations and biases inherent in retrospective recall. The majority of prior studies have assessed key familial variables such as parent stress or parent feeding practices as static variables. However there may be day-to-day changes in parent stress levels and fluctuations in parent feeding practices that require measurement of intra-individual processes (i.e., occurring within the individual). Using innovative technologies such as EMA can help pinpoint within- and between-day fluctuations to identify nuances within the home environment that amplify or exacerbate childhood obesity risk.

EMA methods also lend themselves well to future intervention delivery. For example, momentary mechanisms that influence parent feeding practices, such as stress or depressed mood, can be identified using EMA. Those mechanisms can then be targeted in interventions that use ecological momentary intervention (EMI) to reduce the use of unhealthy parent feeding practices.

## *Video-Recorded Direct Observation*

Utilizing direct observational approaches, such as video-recording parent and other family members' behaviors, can result in a more in-depth understanding of interpersonal dynamics and nuances in individual, dyadic, and family-level behavior. Specifically, observing behavior unfold in real time allows for capturing potentially more valid behavioral patterns with more variability in behaviors over the observation time period. Prior research has shown that direct observational research conducted in the home using unstructured observations (e.g., play, routines) has more predictive validity and reliability of the behavior under study compared to laboratory settings using structured observations (e.g., eating in a lab; Gardner, 2000; Haidet, Tate, Divirgilio-Thomas, Kolanowski, & Haidet et al., 2009; Paterson, Bottorff, & Hewat, 2003). For example, using direct observational methods to video record a family meal in a family's own home (i.e., natural setting; no observers present) eating as they normally do (i.e., an unstructured way) for 1 week would allow for capturing a more in-depth representation of parental and familial factors with more variability in behavioral patterns, especially interpersonal dynamics.

Best practice in observational research shows that participants acclimate and become less reactive to direct observational equipment as the observational period increases (Gardner, 2000; Haidet, Tate, Divirgilio-Thomas, Kolanowski, & Happ, 2009; Paterson et al., 2003). Using a *sensitizing period* such as recording repeated observations across multiple days or longer observational time periods are strategies to capture a more representative sample of behavior. Not coding the first 10–15 min of behavior can also be used as a sensitizing period. For example, video recording a family while eating meals together for a one-week period would allow for dropping the first day of data collection as a sensitizing period and provide an opportunity for variability in behaviors to emerge.

Direct observational methods such as video recording also have high potential for use in intervention delivery. Video footage of parental feeding practices captured at family meals could be used to work with parents in identifying problematic feeding practices (e.g., restrictive feeding practices). Families could watch the video footage and then be coached how to engage in more healthful feeding practices.

## *Qualitative Interviews*

Capturing individual family member's own words and motivations regarding specific parental and familial factors (e.g., weight talk in the home, controlling parent feeding practices) is a powerful method to gain more in-depth understanding into potential risk and protective factors, in addition to future intervention targets. Having parents discuss the weight culture in their home environment and how they engage (or not) in weight-related conversations, allows for understanding what actual weight conversations sound like, who is more likely to engage in them, how

family members respond to them when they occur, and how they are handled within the family.

These different data types are interesting on their own but are even more powerful when combined. EMA data paired with qualitative data provides important information about the fluctuating nature of parental and familial behaviors (EMA) along with narrative and descriptive information about potential motivations related to the behaviors (interview data). Quantitative data from surveys can provide variables by which qualitative data is stratified to examine research questions related to certain behaviors by group status. An example is: why do households with children who are overweight versus households with children who are nonoverweight engage in different amounts of family meals per week? By grouping the qualitative data by child weight status, important quotes from parents about how and why they carry out family meals can provide insight into future intervention targets.

## Using Mixed-Methods to Examine Childhood Obesity

Mixed-methods approaches have enabled researchers to better understand the association between parent and familial factors and child weight and weight-related behaviors. Three large such studies funded by National Institutes of Health are showcased here.

### *Family Meals, Live! and Sibling Edition Studies*

*Family Meals, LIVE!* (Berge et al., 2014) and *Sibling Edition* (Berge, Tate, Trofholz, Conger, & Neumark-Sztainer, 2016) were National Institutes of Health funded mixed-methods cross-sectional studies designed to identify key risk and protective factors for childhood obesity in the home food environment. The two studies were built on each other, with Family Meals, LIVE! being the original study and Sibling Edition being the ancillary follow-up study focused on siblings. Both studies were guided by Family Systems Theory (FST), which recognizes multiple levels of familial influences (i.e., parent, sibling, family-level) on a child's eating behaviors (Berge, Wall, et al., 2013; Bertalanffy, 1952; Whitchurch & Constantine, 1993). Direct observational data were collected including: iPad video recordings of family meals, qualitative interviews, three 24-hour dietary recalls on the target child with primary caregiver assistance, and a home food inventory. Additionally, surveys were conducted with one parent and the child enrolled in the study.

**Recruitment and Eligibility Criteria** Children ($n$ = 120) and their families (primary caregiver, second parent, siblings, extended family members) from four primary care clinics serving diverse and low-income families in Minneapolis/St. Paul participated in Family Meals, LIVE! in 2012–2013 and Sibling Edition in 2014–

2015. A recruitment letter from the child's primary care doctor was sent to the primary caregiver of the eligible child to invite study participation. Children and their families were eligible to participate if the child was between the ages of 6 and 12 years old; had a sibling between the ages of 2 and 18 years; family members spoke and read English; and if the family ate at least three family dinners per week—in order to ensure that families who typically ate family meals together were being recruited. Based on previous literature suggesting inconsistencies in the protective nature of family meals by weight status, recruitment was stratified by weight status (>5th BMI %ile < 85th = nonoverweight; ≥85th %ile = overweight/obese) to learn how family meals may function differently in these households (Berge, Wall, Hsueh, Fulkerson, & Neumark-Sztainer, 2015; Fulkerson, Neumark-Sztainer, Hannan, & Story, 2008).

Of the 120 participants, 53% were boys and 47% were girls, with an average age of 9 (SD = 2.1; range = 6–12). Siblings were on average 9 years old (SD = 4.2; range = 2–18). The majority of parents/guardians were mothers or other female guardians (90%) and were approximately 35 years old (SD = 7.5; range = 25–65). The racial/ethnic backgrounds of the participating children were as follows: 74% African American, 18% white, 9% American Indian, 6% Asian, and 3% mixed or other race/ethnicity; parents were similarly diverse. Over 50% of the children were from very low socioeconomic status households (<$25,000). The majority of parents had finished high school but had not attended college and about 50% of parents were working full or part time.

**Procedures and Data Collection** Families participated in two home visits. During the first home visit, families were provided an iPad and asked to record 8 consecutive days of family dinners and to capture both weekdays and weekends. Families were told to eat as they normally do, including moving to locations within the house where they typically eat their meals (e.g., family room). Additionally, families were told that the main aim of the study was to learn about what a "modern day" family meal looked like and that there was no "right" or "wrong" way to have a family meal. Families recorded the meals themselves during the observational period with no study staff present, in order to increase the feeling of a "natural" environment. The first day of recordings was used as a sensitizing period and was not included in the coding of the week-long family meal observation period.

## *Family Matters Study*

*Family Matters* (Berge, Trofholz, et al., 2017) was a National Institutes of Health funded 5-year incremental (Phase I = 2014–2016; Phase II = 2017–2019), mixed-methods prospective longitudinal study carried out in the home environments of racially/ethnically diverse and primarily low-income children. The Family Matters study was specifically designed to: (a) examine in-depth the home environments of diverse families to identify novel risk and protective factors for childhood obesity

(Phase I, $n = 150$) and (b) examine these factors longitudinally within a large diverse sample to identify potential explanatory mechanisms for childhood obesity disparities (Phase II, $n = 1200$). Children and their families were from six racial/ethnic groups including African American, Hispanic/Latino, Hmong, Native American, Somali, and white. Phase I included 25 children from each racial/ethnic group. A mixed-methods analysis (e.g., EMA, video-recorded direct observations, qualitative interviews, dietary recalls, accelerometry) of the home environments of children ages 5–7 years old and their families was conducted to identify individual, dyadic, and familial risk and protective factors for childhood obesity. For Phase II, a longitudinal epidemiological cohort study of diverse children ages 5–9 years old and their primary caregiver is currently being conducted using online surveys and EMA.

**Recruitment and Eligibility Criteria** For Phase I, eligible children ($n = 150$) and their families were recruited from the Minneapolis/St. Paul, MN area between 2015 and 2016 via a letter sent to them by their family physician. Children were eligible to participate in the study if they were between the ages of 5 and 7 years old, had a sibling between the ages of 2 and 12 years old living in the same home, lived with their parent/primary guardian more than 50% of the time, shared at least one meal/day with the parent/primary guardian, and were from one of the six racial/ethnic categories for the study. The sample was intentionally stratified by race/ethnicity and weight status (overweight/obese = BMI ≥85%ile; nonoverweight = BMI >5%ile and <85%ile) of the study child to identify potential weight- and/or race/ethnic-specific home environment factors related to obesity risk.

**Procedures and Data Collection** A 10-day in-home observation was conducted with each family, including two in-home visits and an 8-day direct observational period between home visits. The observational components included: (1) an interactive observational family task (Melby & Conger, 2001) using a family board game with activities around family meal planning, meal preparation, and family physical activity to measure family functioning and parenting practices; (2) EMA (Shiffman et al., 2008) surveys measuring parent stress, depressed mood, parent feeding practices, food preparation, parent modeling of eating and physical activity, and child dietary intake, physical activity, and sedentary behaviors; (3) child and parent accelerometry; (4) three 24-h child dietary recalls; (5) a home food inventory; (6) built environment block audit; (7) objectively measured height and weight of all family members; (8) a parent-completed online survey; and (9) a parent interview. All study materials were translated into Spanish, Somali, and Hmong. Bilingual staff were available at all home visits, allowing families to participate in their preferred language.

## Evidence-Based Mixed-Methods Childhood Obesity Studies

The Family Meals, LIVE!, Sibling Edition, and Family Matters studies have identified important parental and familial factors related to child weight and weight-related behaviors by using mixed-methodologies and by including multiple family

members. Key findings from these studies are described below across three key research areas: (1) parent feeding practices, (2) family meals, and (3) weight-related conversations that have been shown to have consistent associations with child weight and weight-related behaviors. Details regarding which mixed-methods were utilized in each study and how these methods were essential in identifying the relationships between home environment factors and child weight and weight-related behaviors are described. In addition, topics for further study in each of the three areas are identified, followed by a discussion of related key findings from Family Meals, LIVE!, Sibling Edition, and Family Matters.

**Parent Feeding Practices** Prior studies have shown that food-related parenting practices such as parent feeding practices and healthfulness of foods served at family meals are associated with child weight and weight-related outcomes (Birch et al., 2003; Larson et al., 2015; Loth et al., 2016). For example, controlling parent feeding practices such as restriction and pressure-to-eat have been found to be associated with overweight (Birch & Davison, 2001; Birch & Fisher, 2000; Loth et al., 2013), unhealthy diet quality (Birch & Davison, 2001; Birch & Fisher, 2000; Fisher et al., 2002), lower satiety responsiveness (Birch et al., 2003; Fisher & Birch, 1999), and unhealthy weight control behaviors/disordered eating (Loth et al., 2014) in children and adolescents. Additionally, research has suggested that serving unhealthy foods at family meals (e.g., energy dense foods, high-fat foods, sugar-sweetened beverages) is associated with more unhealthy diet quality and overweight status in children (Cullen et al., 2003; Larson et al., 2015; Loth et al., 2016; Neumark-Sztainer et al., 2014). However, factors that influence/predict the use of these food-related parenting practices such as stress and depressed mood are not well understood. It is unknown whether certain types of stress (e.g., chronic, transient) result in different food-related parenting practices (Meyer, 2003; Pearlin, 1989). Chronic stressors are longer-lasting sources of stress (e.g., unemployment > 6 months), whereas transient or acute stressors are temporary and more quickly resolved sources of stress (e.g., momentary conflict with child; Pearlin, 1989). For example, a family experiencing unemployment or chronic illness of a family member may experience high levels of chronic stress that remain constant over days, weeks or months. On the other hand, stress experienced after a difficult encounter with a child around picky eating (transient/acute stress) in the morning may affect evening feeding practices within the day (or between days), but may not maintain across time. Distinguishing between transient and chronic stress in minority and immigrant households would be important because they may be more likely to experience both types of stress, which could put them at higher risk for engaging in restriction and pressure-to-eat feeding practices or feeding their family fast food.

Previous research on parent feeding practices has relied primarily on survey assessments and has not examined whether parent feeding practices vary across different contexts. This is problematic because survey or self-report items assume parent feeding practices are static/unchanging characteristics or trait-like. Thus, it is essential to understand whether parent feeding practices are stable (i.e., state-like) or whether they vary (i.e., trait-like) across time and context and whether parents

engage in restriction or pressure-to-eat of certain types of foods. Addressing these questions will allow for developing interventions that can potentially alter parent feeding practices to thereby reduce childhood obesity. If feeding practices vary across time and context, then targeting real-time predictors of parent feeding practices in interventions could potentially result in decreased restriction and pressure-to-eat feeding practices. It is also important to identify contextual factors occurring during the meal that are associated with using certain feeding practices. For example, if meal characteristics such as the meal atmosphere (e.g., tense, chaotic, relaxed, enjoyable) or meal type (e.g., fast food, homemade) are associated with engaging in one type of parent feeding practice or the other, then these meal characteristics can be targeted in interventions to reduce the likelihood of parents engaging in controlling parent feeding practices.

Furthermore, given that it is common for families in the U.S. to have siblings (U. S. Census Bureau, 2010), examining whether parents adapt their feeding practices to accommodate siblings' eating behaviors in the same household and whether parents use similar feeding practices with both siblings is important to investigate. Previous research examining parental feeding practices with siblings has been limited and inconclusive (Berge, Tate, et al., 2016; Costanzo & Woody, 1985). For example, research has indicated that parents use more food restriction feeding practices when they are concerned about the weight/size of one sibling, when one sibling is a picky eater or when one sibling is heavier than the other sibling (Farrow, Galloway, & Fraser, 2009; Keller, Pietrobelli, Johnson, & Faith, 2006). However, other studies have shown no significant associations between maternal feeding practices (i.e., restriction, pressure-to-eat) and sibling overweight and nonoverweight status (Saelens, Ernst, & Epstein, 2000; Wardle, Sanderson, Guthrie, Rapoport, & Plomin, 2002). Answers to these important questions have been understudied in the field of childhood obesity and are highly relevant for designing effective family-based obesity prevention interventions for families who have more than one child in their household.

Addressing questions related to parent feeding practices is crucial to development of interventions to reduce the use of unhealthy parenting feeding practices and decrease childhood obesity. Four specific questions the Family Meals, LIVE!, Sibling Edition, and Family Matters mixed-methods studies addressed include: (1) Is parent stress and/or depressed mood associated with parent feeding practices and food served at family meals? (2) Do certain types of stressors (transient vs. chronic) increase a parent's potential to engage in controlling feeding practices or to serve unhealthy foods and does this differ by race/ethnicity? (3) Are parent feeding practices variable over time versus stable and what are the predictors of engaging in specific feeding practices? and (4) Do parents use similar or different feeding practices when there are siblings in the home? Results related to these questions are shown below by identifying which study data set was utilized, the hypothesis tested, which mixed-methods measures were used in analyses, and key study findings.

***Parent Stress and Mood: Parent Feeding Practices*** Using EMA data from the Family Matters study that measured both the exposure and outcome variables, we

examined the association between parental momentary reports of stress and mood in the morning and early afternoon and parenting feeding practices (i.e., restriction, pressure-to-eat, types of food served at meals) the same night at dinner. The main hypothesis we tested was: high parental stress and depressed mood experienced earlier in the day will be associated with controlling parent feeding practices (i.e., restriction, pressure-to-eat) and less healthful foods (i.e., pre-prepared foods, fast food) served at family meals the same evening. Our results showed that parents who reported higher stress levels and depressed mood earlier in the day used more pressure-to-eat feeding practices and were more likely to serve fast food and less homemade foods to their children at dinner the same evening (Berge, Tate et al., 2017).

***Transient and Chronic Stress: Parent Feeding Practices*** From the Family Matters study, we utilized our longitudinal time-lagged EMA data that allowed for measuring within-day and across-day variations (i.e., transient stressors measured four times per/day, across one week) and our survey data (i.e., 30-day chronic stress self-report survey measure) to test the hypothesis: transient stressors would be more strongly associated with parent feeding practices than chronic stressors with parent feeding practices. We found that transient stressors (i.e., financial, interpersonal) were more strongly associated with controlling parent feeding practices (i.e., pressure-to-eat) and less healthy foods served at dinner (i.e., fast food) compared to chronic stress. Certain racial/ethnic groups were more likely to experience these transient stressors (i.e., African American, Native American, Hispanic; Berge, Tate, Trofholz, Fertig et al., 2018).

***Variability in Parent Feeding Practices*** Using EMA data and self-report survey data from the Family Matters study we examined the following hypothesis: parent feeding practices will fluctuate across time and context (i.e., state-like) rather than remain stable (i.e., trait-like). Our results found that parent feeding practices (i.e., restriction, pressure-to-eat) were more state-like than trait-like (Berge, Tate, Trofholz, Loth, et al., 2018). In addition, contextual factors at the meal associated with parent feeding practices included: number of people at the meal, who prepared the meal, types of food served at meals (e.g., pre-prepared, homemade, fast food), meal setting (e.g., kitchen table, living room), and meal emotional atmosphere. Parents tended to restrict desserts and dairy and pressure children to eat fruits, vegetables, meat proteins, and refined grains. There were some differences by race/ethnicity across findings, with Hmong parents engaging in the highest levels of pressure-to-eat feeding practices.

***Parent Feeding Practices with Siblings*** Using the Family Meals, LIVE! and Sibling Edition's quantitative survey data and qualitative interviews, the following hypothesis was tested: siblings will have different eating behaviors, and parents will use different feeding practices with siblings when siblings are discordant on weight status (i.e., one child is overweight and one child is nonoverweight). Results showed that when sibling dyads were discordant on weight status, the sibling who was overweight had higher food enjoyment and lower levels of food satiety (Berge, Tate,

et al., 2016). Additionally, within discordant weight status siblings, parents were more likely to use restrictive feeding practices with siblings who were overweight and pressure-to-eat feeding practices with siblings who were nonoverweight (Berge, Meyer, MacLehose, Loth, & Neumark-Sztainer, 2016; Berge, Tate, et al., 2016). Qualitative findings showed that parents used child food preferences, in-the-moment decisions, and planned meals when deciding how to feed siblings (Berge, Trofholz, Schulte, Conger, & Neumark-Sztainer, 2016). Additionally, the majority of parents indicated that they managed picky eating by making one meal or giving some flexibility/leeway to siblings about having other food options. Furthermore, parents endorsed using different feeding practices with siblings (e.g., food restriction, portion control, pressure-to-eat, opportunities for healthful eating) dependent on child weight status or age/developmental stage.

**Family Meals** Cross-sectional and longitudinal research over the last decade has consistently shown that having frequent family meals is associated with a number of health benefits for children including increased fruit and vegetable intake (Gable & Lutz, 2000; Neumark-Sztainer, Hannan, Story, Croll, & Perry, 2003), lower levels of extreme weight control behaviors (Neumark-Sztainer, Eisenberg, Fulkerson, Story, & Larson, 2008), and better psychosocial health (Eisenberg, Olson, Neumark-Sztainer, Story, & Bearinger, 2004). These protective associations in children have been found across gender, race/ethnicity, and socioeconomic status (SES; Gable, & Lutz, S., 2000; Neumark-Sztainer et al., 2003). Furthermore, some studies have shown significant associations between the frequency of family meals and reduced risk of childhood obesity, although findings have been inconsistent across studies (Fulkerson et al., 2008; Gable, Chang, & Krull, 2007; Larson, Neumark-Sztainer, Hannan, & Story, 2007a). However, important questions regarding family meals and child weight and weight-related behaviors remain. Examples of important areas to examine are dyadic (e.g., parent/child, child/sibling) and family-level interpersonal and food-related dynamics at family meals, such as communication, group enjoyment, and parental food intrusiveness. Characteristics of family meals such as who is present, number of distractions (e.g., electronics, leaving the table) or length of the meal may give a more comprehensive understanding of the characteristics of family meals that increase their protective nature. Examining interpersonal and food-related dynamics between family members during family meals may lead to identifying modifiable factors in the home. That could inform childhood obesity intervention development aimed at increasing the frequency of family meals and improving the emotional quality of meals. Findings may also inform recommendations for health care providers working with families with school-aged children.

Given the high prevalence of childhood obesity (Larson et al., 2008; Larson et al., 2009; Larson, Neumark-Sztainer, Hannan, & Story, 2007b; Ogden et al., 2006), it is important to know whether differences in family meals exist between households with children who are overweight/obese and children who are nonoverweight. Establishing what meal-level characteristics differ between families that have frequent and infrequent family meals could identify protective factors that other families could engage in to increase the protective nature of family meals.

Furthermore, it would be important to understand the intergenerational transmission of family meals to help more families be able to carry out family meals.

These important unanswered questions related to family meals were examined in the Family Meals, LIVE!, Sibling Edition, and Family Matters mixed-methods studies.

***Family Meals, Family Dynamics, Childhood Obesity Risk*** Using the Family Meals, LIVE! video-recorded data, we tested the association between dyadic and familial interpersonal interactions at family meals and risk for childhood obesity. The main hypothesis of this study was that families with more positive interpersonal (i.e., parent/child, sibling) and food-related dynamics during family meals would have children who are less likely to be overweight/obese. We found that positive family-level (i.e., parent, study child, siblings) and parent-level (i.e., parent/child dyad) interpersonal dynamics (i.e., warmth, group enjoyment, parental positive reinforcement) at family meals were associated with reduced risk of childhood overweight (Berge et al., 2014). Additionally, significant associations were found between positive family-level and parent-level food-related dynamics (i.e., food warmth, food communication, parental food positive reinforcement) and reduced risk of childhood obesity.

***Intergenerational Transmission of Family Meals*** Using the Family Matters qualitative and quantitative data, themes were identified by race/ethnicity and immigrant/refugee status to understand how family meals were transmitted from one generation to the next. Parents overwhelmingly reported learning as children that family meals were important and then conveying this message to their own children (Berge, Miller et al., 2018). Length of time in the U.S. appeared to drive parent responses. For example, parents who were immigrant/refugees and had been in the U.S. longer were more likely to endorse learning/teaching about family meal importance; that the food eaten now is different than when parents growing up; that a chaotic environment was a challenge to having family meals; and that they accommodate family member's schedules in order to have family meals. Differences also existed among racial/ethnic groups. For example, Somali parents frequently endorsed having no challenges with intergenerational transmission of family meal practices, whereas Native American and white families identified difficulties in continuing family meals across generations.

***Family Meals: With and Without an Overweight Child*** The Family Meals, LIVE! qualitative and quantitative datasets were used for this analysis. Qualitative data were coded for family meal-level themes. Data was then stratified by child overweight and nonoverweight status to identify potential family meal-level risk and protective factors for child weight and weight-related behaviors in the home environment. Results showed some similarities and some differences in family meal-level characteristics by child weight status (Berge, Hanson, & Draxten, 2016). Similar themes between families with and without an overweight/obese child included family meals provide more healthful food; families have rules about manners; families use meal planning strategies; and families involve children in meal

preparation. Themes that were different between families with and without an overweight/obese child included connection and communication (nonoverweight households), "clean your plate rule" (overweight households), use of electronic devices at meals (overweight households), and child behavior problems (overweight households).

***Frequent and Infrequent Family Meal Households*** The Family Meals, LIVE! qualitative and quantitative datasets were used for this analysis. Qualitative data were coded for themes related to family meals and were then stratified by family meal frequency to identify potential family meal-level risk and protective factors for child weight and weight-related behaviors in the home environment. Results indicated some similar meal characteristics (e.g., child picky eating) between households having frequent and infrequent family meals. Differences existed between households having frequent family meals (e.g., importance of family meals, more flexibility in the definition of family meals, more family meal rules, no pressure-to-eat feeding practices) versus infrequent family meals (e.g., more pressure-to-eat parent feeding practices, family meals are dinner meals only, and more difficult meal time behaviors; Berge, Draxten, et al., 2018).

**Weight-Related Conversations** Prior research has shown that weight talk and weight teasing are associated with the onset of obesity, disordered eating behaviors (e.g., binge eating, fasting), early dieting, and psychosocial problems (e.g., depression, low self-esteem) in children (Balantekin, Savage, Marini, & Birch, 2014; Berge, MacLehose et al., 2013; Hanna & Bond, 2006; Neumark-Sztainer et al., 2010). Of concern, many children report that family members are a main source of weight talk or weight teasing (Balantekin et al., 2014; Neumark-Sztainer et al., 2010). However, little is known about what weight talk and weight teasing actually sound like in the home environment. Given the negative consequences of weight talk and teasing, it is important to know more about their occurrence in the home such as what types of weight talk and teasing occur in the home environment; why do families engage in weight talk or teasing; which family members (e.g., parents, brothers, sisters) are more likely to engage; and how is weight talk and teasing handled when it occurs?

In addition, it is important to distinguish between weight-focused and health-focused conversations. Past research has suggested that there are two different types of conversations that parents/family members engage in with their children regarding weight and health including: (1) *weight-focused conversations* where comments are made about the child/adolescent's weight, shape, or size or they are encouraged to diet or lose weight and (2) *health-focused conversations* where comments are about healthy eating and being physically active to have a strong body (Gillison, Lorenc, Sleddens, Williams, & Atkinson, 2016). Prior research has shown that weight-focused conversations are associated with overweight/obesity, dieting, unhealthy weight control behaviors (e.g., binge eating, skipping meals, taking diet pills or diuretics), and low psychosocial well-being (e.g., depressive symptoms, low self-esteem, low body satisfaction) in children and adolescents (Bauer et al., 2013;

Berge, Maclehose, et al., 2013; Berge, MacLehose et al., 2015; Berge, Winkler et al., 2018; Davison & Deanne, 2010; McCormack et al., 2011; Neumark-Sztainer et al., 2010), and that the impact of these weight-focused conversations tracked from childhood/adolescence into adulthood (Berge, Winkler, et al., 2018). Whereas, other prior studies have shown that health-focused conversations are associated with more healthful weight and weight-related behaviors and better emotional well-being outcomes in children and adolescents (Berge, MacLehose, et al., 2015; Berge, Trofholz, Fong, Blue, & Neumark-Sztainer, 2015; Gillison et al., 2016; Trofholz, Tate, & Berge, 2018). Taken together, these results suggest that health-focused conversations may be a more positive way to approach and address concerns about child weight and/or weight-related behaviors compared to weight-focused conversations. However, because limited studies have been conducted on health-focused conversations it is not clear what form they take, how families/parents engage in them with their children, and whether families who use them are more likely to have children who are nonoverweight/obese. These unanswered questions were examined in the Family Meals, LIVE!, Sibling Edition, and Family Matters mixed-methods studies. Results are presented below.

***Parent Weight-Related Conversations*** Using Family Meals, LIVE! qualitative data, a grounded theory analysis found the following two overarching themes and their sub-themes related to parental engagement in weight-related conversations: (1) weight talk contradictions occurred when parents said they did not use weight conversations in their home, but then identified examples of how weight-related conversations occurred; (2) parents used both overt (intentional) and covert (unintentional) weight-related conversations with their children; reciprocal teasing occurred in the household (i.e., one family member would tease another and then that family member would tease back); and cultural factors related to weight talk/teasing were common (i.e., it is expected that family members will be blunt about weight, shape or size in some cultures; Berge, Trofholz, et al., 2015).

***Family-Level Weight Conversations*** Family Meals, LIVE! and Sibling Edition quantitative data were used to examine the prevalence of negative weight-based talk across mothers, fathers, older/younger brothers, and older/younger sisters and the likelihood of engaging in negative weight-based talk by specific family members. In addition, the qualitative data from Sibling Edition were used to provide a more in-depth picture of what negative weight-based talk sounded like in the home environment. Children reported the highest prevalence of negative weight-based talk from siblings (older brothers in particular) followed by mothers (Berge, Hanson-Bradley, Tate, & Neumark-Sztainer, 2016). In households with younger brothers, children reported less negative weight-based talk compared to other household compositions. Both quantitative and qualitative results indicated that mother's negative weight-based talk focused on concerns about child health, whereas father's and sibling's negative weight-based talk focused on child appearance and included teasing.

***Weight Conversations With and Without an Overweight Child in Household*** Family Matters quantitative data were used to stratify qualitative themes related to weight- and health-focused conversations by child overweight versus nonoverweight status. Results showed that parents of children who were nonoverweight engaged in fewer weight-focused conversations. Rather, they (1) focused on child growth, (2) emphasized that differences in people's body shape and size are normal, (3) took the other person's perspective, and (4) engaged in health-focused conversations emphasizing dietary and physical activity patterns, focusing on physical health, being supportive and encouraging in their language with their children, and shifting potential weight-focused conversations to health-focused conversations (Berge, Trofholz, Danner, Brandenburg, & Loth, in press). Results indicated that parents of children who were overweight/obese engaged in more weight-focused conversations by (1) being direct, (2) teasing, (3) using mixed weight- and health-focused conversations, (4) discussing health consequences of being overweight/obese, and (5) critiquing their own weight.

## Developing Mixed-Methods Family-Level Childhood Obesity Interventions

### *Real-Time Interventions: Parental and Family Factors*

Results from the Family Meals, LIVE!, Sibling Edition, and Family Matters mixed-methods studies have implications for family-based interventions targeting child weight and weight-related behaviors. Specifically, the findings from EMA data in the Family Matters study showing parent feeding practices were more likely to be variable (i.e., state-like) and that parental stress was associated with more controlling feeding practices and less healthful foods being served at family meals, can inform future interventions targeting momentary influences on food-related parenting practices. Intervention methods such as ecological momentary intervention (EMI) will allow for intervening on participants' behaviors in real time, based on previous information participants have provided (e.g., level of stress), to promote behavior change (Clough & Casey, 2011; Heron & Smyth, 2010). For example, a participant responds to a text early in the day regarding their stress level and sources of stress (e.g., too much to get done). An EMI message is then sent later in the day that provides suggestions to support them in making a healthful choice for family meals in the face of stress (e.g., tip for making a quick pasta meal more healthful by adding vegetables; Fertig et al., 2019; Noar, Harrington, Van Stee, & Aldrich, 2011; Rimer & Kreuter, 2006). The Family Matters research team is currently pilot testing this approach.

### *Video Feedback on Parent/Family Behaviors at Meals*

Results from Family Meals, LIVE! and Sibling Edition show that interpersonal dynamics during family meals were associated with increased risk for childhood obesity. Findings can be used to create interventions using video feedback to intervene on parental and child behaviors at family meals. For example, parents and children can be video recorded during family meals to capture interpersonal dynamics, parent feeding practices, and healthfulness of foods served at meals. Interventionists can code these data and provide feedback, using a strengths-based approach such as motivational interviewing, to parents and children about behavior change during family meals to improve the quality of the meal—both the interpersonal interactions and the healthfulness of food served. The Family Meals, Live! and Sibling Edition research team is currently pilot testing this approach.

### *Interventions Including Multiple Family Members*

Findings from Family Meals, LIVE!, Sibling Edition, and Family Matters showed that mothers and brothers were more likely to engage in weight-related conversations, but motivations for engaging in weight-related conversations differed (i.e., mothers = health concern; siblings/fathers = appearance concerns). These findings suggest that including multiple family members in family-based interventions targeting weight-related conversations may be necessary and that intervention components may need to be tailored to specific family members. In addition, findings related to parents engaging in different feeding practices with siblings depending on whether one was overweight or not can set the stage for informing interventions in parental feeding practices and child eating behaviors when there are multiple children in the home.

## Conclusions

The prevalence of childhood obesity may have started to plateau for some groups of children (Bethell, Simpson, Stumbo, Carle, & Gombojav, 2010; NIHCM, 2007; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). However, other groups such as children from low-income, minority, or immigrant households are experiencing disparities in childhood obesity (Ogden, Lamb, Carroll, & Flegal, 2010; Orsi, Hale, & Lynch, 2011; Wang, Orleans, & Gortmaker, 2012). Given the known health risks (Daniels, 2006; Gordon-Larsen, The, & Adair, 2010; Merten, 2010; Pi-Sunyer, 2002; Popkin, 2007; Stovitz et al., 2010; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997), societal burden (Finkelstein, Trogdon, Cohen, & Dietz, 2009), and healthcare costs (Finkelstein et al., 2009) associated with childhood obesity, addressing

child weight and weight-related behaviors is critical. This chapter has highlighted the importance of utilizing mixed-methodologies and multiple family members when examining parental and familial factors of importance to child weight and weight-related behaviors. These methods can help move the field forward in understanding and intervening on this important public health problem.

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# Part III
# Family Ecologies of Overweight and Obesity in Youth

# Chapter 7
# Culturally-Relevant Obesity Interventions: African American Children and Adolescents


**Monica L. Baskin, Meghan Tipre, and Molly Richardson**

**Abstract** A systematic review was conducted to evaluate the efficacy of culturally-relevant interventions targeting childhood obesity in African American children and adolescents. A scoping review of the literature resulted in 58 studies for qualitative analyses. This chapter focuses on 39 of those studies which were analyzed quantitatively, as they contained empirical data on outcomes of interest. Approximately 59% of the studies focused solely on African American youth. Most studies were developed with at least one established theoretical model and had two or more intervention components which focused on nutrition, increasing physical activity, adopting healthy lifestyles, or improving self-efficacy to adopt healthy behaviors. Primary outcome was intervention efficacy as measured by body mass index (BMI). Findings suggest limited efficacy of reduction in obesity (i.e., BMI) among the interventions reviewed. Factors associated with statistically significant decreases in BMI post-intervention include the use of multiple theoretical models and targeting a co-ed population rather than female only. The review reinforces results from previous reports that noted a limited number of overall intervention studies; limited interventions for younger (under age 6 years) and older (adolescent) populations relative to middle-school age youth; low-quality study designs; limited documentation of cultural tailoring/adaptation; and inconsistent reporting of demographic characteristics and subgroup analysis. To address these gaps, the authors recommend identifying key constructs and documenting methods used to culturally-tailor interventions; reporting demographic data for study participants; and designing studies with longer follow-up time to allow for robust evaluations of the impact of the interventions—all of which may lead to the development of effective interventions targeting African American youth.

**Keywords** African American childhood obesity · Culturally-relevant obesity interventions · Childhood obesity interventions · Culturally-tailored obesity interventions · Culturally-adapted obesity interventions · Overweight and obesity interventions · Obesity outcomes

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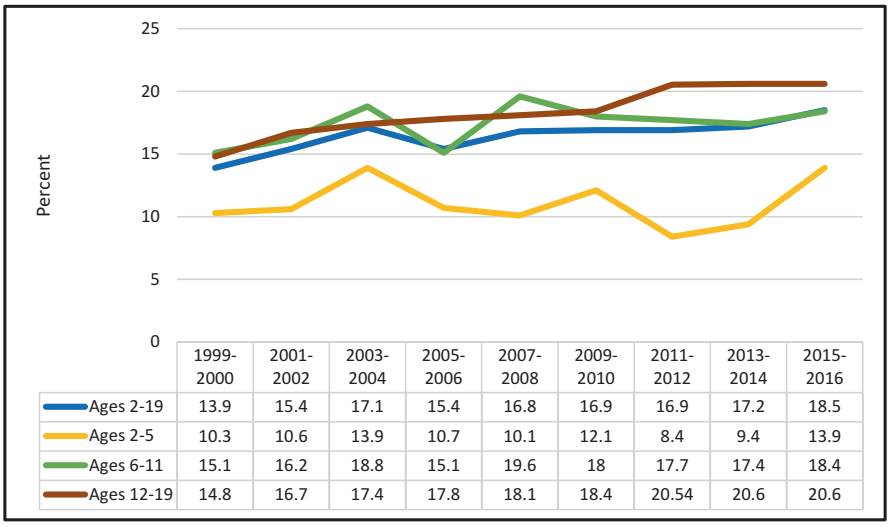
Childhood obesity is a medical condition with serious physical and mental health consequences including type 2 diabetes, cardiovascular disease and depression (Reilly & Kelly, 2011; Vander Wal & Mitchell, 2011). Child and adolescent obesity are defined as a body mass index (BMI) at or above the 95th percentile on the Centers for Disease Control (CDC) sex-specific BMI-for-age growth charts. In the USA, 17% of children (ages 2 to 19 years) are obese (Ogden, Carroll, Kit, & Flegal, 2014). For infants and toddlers younger than 2 years, there is no standard definition of obesity. The working definition is the percentage of toddlers at or above the 97.7th percentile of World Health Organization (WHO) weight for recumbent length growth standards (World Health Organization, 2006). Accordingly, 7.1% of U.S. infants from birth to 2 years are considered obese based on the WHO criteria (Ogden et al., 2014).

## Childhood Obesity Trends and Disparities

The major trend in obesity among U.S. youth (Fig. 7.1) is an overall increase in prevalence from 1999–2000 to 2015–2016 (Hales, Carroll, Fryar, & Ogden, 2017). However, there appears to be no significant changes in youth obesity prevalence with the exception of the noted quadratic trend among children ages 2–5 years. Between 2007–2008 and 2011–2012 obesity prevalence among 2–5 year olds decreased from 10.1% to 8.4% only to increase to 13.9% in 2015–2016 (Hales, Fryar, Carroll, Freedman, & Ogden, 2018).

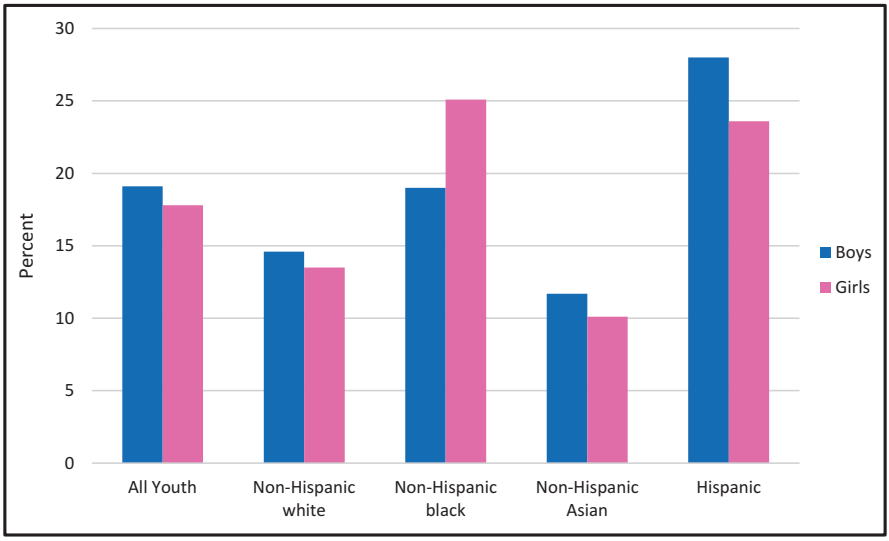
Differences in childhood obesity prevalence by race and ethnicity are also of note (Fig. 7.2). Non-Hispanic black and Hispanic youth have higher prevalence of obesity than their Non-Hispanic white counterparts (22.0% and 25.8% vs. 14.1%, respectively). Non-Hispanic Asian youth have the lowest prevalence (11.0%; Hales et al., 2017). Obesity prevalence by race/ethnicity among boys mirrors the overall rates with Hispanic (28.0%) and non-Hispanic black (19.0%) boys with rates higher than non-Hispanic white (14.6%) and non-Hispanic Asian boys (11.7%). Among girls, non-Hispanic black (25.1%) had the highest prevalence, followed by Hispanic girls (23.6%), then non-Hispanic white (13.5%), and non-Hispanic Asian girls (10.1%). Further, the prevalence of obesity among non-Hispanic Asians and Hispanic boys and girls, and non-Hispanic white girls is lower among higher income groups; however, the protective factor of income is not associated with non-Hispanic black girls who have similar prevalence across household income categories (Ogden et al., 2018).




| | 1999-2000 | 2001-2002 | 2003-2004 | 2005-2006 | 2007-2008 | 2009-2010 | 2011-2012 | 2013-2014 | 2015-2016 |
|---|---|---|---|---|---|---|---|---|---|
| Ages 2-19 | 13.9 | 15.4 | 17.1 | 15.4 | 16.8 | 16.9 | 16.9 | 17.2 | 18.5 |
| Ages 2-5 | 10.3 | 10.6 | 13.9 | 10.7 | 10.1 | 12.1 | 8.4 | 9.4 | 13.9 |
| Ages 6-11 | 15.1 | 16.2 | 18.8 | 15.1 | 19.6 | 18 | 17.7 | 17.4 | 18.4 |
| Ages 12-19 | 14.8 | 16.7 | 17.4 | 17.8 | 18.1 | 18.4 | 20.54 | 20.6 | 20.6 |

Sources: Ogden et al., 2016; NCHS, National Health and Nutrition Examination Survey, 2015–2016

**Fig. 7.1** Age-specific trends in obesity among U.S. children and adolescents, 1999–2000 through 2015–2016 (Sources: Ogden et al., 2016; NCHS, National Health and Nutrition Examination Survey, 2015–2016)




Source: NCHS, National Health and Nutrition Examination Survey, 2015–2016

**Fig. 7.2** Obesity prevalence among U.S. children and adolescents by race and ethnicity, 2015–2016 (Source: NCHS, National Health and Nutrition Examination Survey, 2015–2016)

## Factors Contributing to Childhood Obesity

The etiology of childhood obesity is complex and likely the consequence of interactions between multiple factors including, but not limited to, environment, genetics, and ecology (Kumar & Kelly, 2017). Obesity in children due to genetic diseases, endocrine disorders, and pharmaceutically-promoted weight gain are less common than exogenous obesity (Raychaudhuri & Sanyal, 2012). Key determinants such as dietary pattern (i.e., eating fast foods and snacks; skipping breakfast) and behavioral characteristics (i.e., sedentary activities and screen viewing; patterns of decreased physical activity; and short sleep duration) are major contributors to childhood obesity (Mohamed, 2015). Such health behaviors and resulting obesity may be seen as a function of the interplay between multiple spheres of influence including individual, interpersonal, institutional, environmental, and political domains (Koplan, Liverman, & Kraak, 2005).

Relevant to Penn State's 27th Annual National Symposium on Family Issues, *Families and Food*, the literature points to family influences as a contributing factor to childhood obesity and associated gender and racial/ethnic disparities. Overweight children are more likely to have at least one parent who is overweight (Wang, Min, Khuri, & Li, 2017; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). Genetic influences notwithstanding, patterns of health behavior among family members may explain the familial impact on childhood obesity. For example, the seminal work led by Dr. Leann Birch, to whom this volume and the preceding Family Symposium are dedicated, posited the role of the family in establishing the first context for learning about food and eating (Birch & Fisher, 1998). Birch and her colleagues established that food preferences are learned through early and repeated exposure to foods (Birch, 1999; Hill, 2002). Likewise, how we come to know about portion or meal sizes and how frequently we should eat is first learned at home (Campbell, Crawford, & Ball, 2006). Parent feeding style, home food environments, and mealtime behaviors (e.g., eating meals together; eating in front of the television) have all been associated with childhood overweight and obesity (Couch, Glanz, Zhou, Sallis, & Saelens, 2014; Hughes & Papaioannou, 2018; Lee, Lee, & Park, 2016).

## Cultural Influences on Childhood Obesity Among African American Youth

As is often the case among ethnic groups, patterns of dietary intake and physical activity have roots in social and historical experiences (Baskin, Odoms-Young, Kumanyika, & Ard, 2009). Among African Americans, this cultural context includes vestiges of cooking methods and foods available to African slaves living primarily in the South, which included meals primarily of fried and starchy foods, meats of high fat content, and molasses for flavoring (Seemes, 1996; Sucher & Kittler, 2008). Similar patterns of dietary intake have been reported in a large racially diverse (42%

black) cohort of southern residents (Shikany et al., 2015). As such, dietary patterns that may predispose African Americans to excess calorie intake and subsequent obesity may be passed down from generation to generation.

With respect to parent feeding practices, both *restrictive feeding* (i.e., limiting access to select foods by setting limits on the quantity and/or imposing standards on quality of food) and *indulgent feeding* (i.e., not controlling or setting limits on food quality or quantity) are noted feeding practices of African American mothers and are associated with child overweight (Faith, Scanlon, Birch, Francis, & Sherry, 2004; Hughes, Power, Orlet Fisher, Mueller, & Nicklas, 2005; Hughes, Shewchuk, Baskin, Nicklas, & Qu, 2008; Sacco, Bentley, Carby-Shields, Borja, & Goldman, 2007). Black mothers are also more likely to use the parent feeding practice of *monitoring* (child intake) and *pressure to eat* than are white mothers (Spruijt-Metz, Li, Cohen, Birch, & Goran, 2006; Spruijt-Metz, Lindquist, Birch, Fisher, & Goran, 2002). As such, African American children may adapt eating behaviors that are inconsistent with weight management.

African American families may also impact physical activity among youth. As with norms about food, cultural norms about leisure-time physical activity may reflect historical perspectives of time away from work or school as an opportunity to rest and relax rather than exert oneself in ways that are reminiscent of the historically labor-intensive work of many blacks, particularly in the southern USA (Airhihenbuwa, Kumanyika, Agurs, & Lowe, 1995; Boyington et al., 2008). In general, African American youth engage in less physical activity than their white counterparts. However, family social support for physical activity is associated with increased physical activity among African American youth (Baskin et al., 2013; Baskin, Dulin-Keita, Thind, & Godsey, 2015; Wilson, Lawman, Segal, & Chappell, 2011).

Finally, many factors such as the neighborhood socioeconomic conditions, built environment, and sociocultural environment all influence the environmental contribution to obesity. Children are at 20–60% higher risk of being obese when they live in a neighborhood with unfavorable social conditions, defined as poor housing; lack of access to sidewalks, parks, and recreation centers; and high crime rates, than children living in favorable social conditions (Kramer, Raskind, Van Dyke, Matthews, & Cook-Smith, 2016; Singh, Siahpush, & Kogan, 2010). Neighborhood economic deprivation and perceived neighborhood disorder are associated with obesity among African American youth (Dulin-Keita, Kaur Thind, Affuso, & Baskin, 2013; Rossen, 2014).

## Culturally-Relevant Interventions to Reduce Obesity Among African American Youth

The high prevalence of obesity and persistent health disparities among African American children underscore the need to improve the effectiveness of current interventions. Culturally-relevant, evidence-based interventions may be one of the

effective approaches to address this gap. Cultural sensitivity is defined as "the extent to which ethnic/cultural characteristics, experiences, norms, values, behavioral patterns and beliefs of a target population, as well as relevant historical, environmental, and social forces are incorporated in the design, delivery, and evaluation of targeted health promotion materials and programs" (Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1999). Cultural tailoring is the process of taking existing materials or programs that were developed within a population and adapting them in the context of a new racial, cultural, or ethnic subpopulation (Resnicow et al., 1999). Tailored messages are more relevant to the target audience and may subsequently be more effective than those that are not tailored (Kreuter, Lukwago, Bucholtz, Clark, & Sanders-Thompson, 2003; Kreuter & Wray, 2003).

An empirically validated model for promoting health and wellness in African American and Latino children emphasizes intervention strategies, which reflect the subjects' cultural characteristics, including interests, expectations, and norms (Suarez-Balcazar, Friesema, & Lukyanova, 2013). The effectiveness of an intervention would benefit from the cognitive, behavioral, and contextual factors emphasized in the model by Suarez-Balcazar and colleagues. These factors include critical awareness and knowledge, cultural skills and competencies, and organizational/contextual issues (Suarez-Balcazar et al., 2013).

Based on existing concepts and frameworks (Kreuter et al., 2003; Kreuter & Wray, 2003; Resnicow et al., 1999; Suarez-Balcazar et al., 2013), we have defined culturally-relevant interventions as those which: appreciate and seek to understand the diverse ethnic and cultural experience of the subpopulation; incorporate cultural knowledge and align content with their norms, beliefs, and attitudes into an appropriate and acceptable strategy; and motivate an effective, sustained behavioral change in the targeted context to meet the need identified.

It is important to clarify that cultural adaptation goes beyond the superficial layer of tailoring to a specific subgroup based on age, geographic area, or socioeconomic status to include the diverse cultural or ethnicity of the group. In addition, it is important that cultural adaptation be an ongoing process. To accomplish this, certain study designs such as community-based participatory research (CBPR) or community-engaged research may be relevant as they involve partnerships between stakeholders representing differing cultural backgrounds. Involving stakeholders at all stages of the process helps to ensure the success of the project within a specific cultural or ethnic group. Formative practices, such as interviews, focus groups, and surveys, may be a part of the tailoring process.

While the evidence from several systematic reviews and meta-analyses suggest a favorable trend in weight-related outcomes in studies that may include some degree of cultural adaptation, few reviews have focused exclusively on interventions in African American children (Hudson, 2008; Knowlden & Sharma, 2013; Kumanyika, Swank, Stachecki, Whitt-Glover, & Brennan, 2014; Seo & Sa, 2010; Suarez-Balcazar et al., 2013). With this in mind, we conducted a systematic review to document and summarize culturally-relevant childhood obesity prevention and management interventions among African Americans through 2019. Publication

dates and outlets, the research questions addressed, sample characteristics, study designs and methods, and key results were included.

## Methods

To achieve our goals, we scoped several search engines including CINAHL, Embase, ERIC, MEDLINE, Ovid, PubMed, and Scopus. The first search included terms related to children and adolescents (child, youth, adolescent, pediatric), African Americans (African American, black), obesity, and obesity interventions (health education, weight reduction, weight management, obesity management). Studies were limited to those that: (1) focused on 2 –18 years old; (2) included a study sample of ≥50% African Americans or included subgroup analyses for African Americans; (3) included obesity-related outcomes; (4) included culturally sensitive, tailored or relevant interventions according to our definition. A total of 465 abstracts were identified after the initial search. After removing duplicates and reviewing abstracts for inclusion criteria, 89 studies were selected for full-text review.

After full-text review, 58 studies were retained. Thirty-one studies that did not include a culturally-sensitive intervention had been excluded. All 58 studies were retained for qualitative analyses, including those that mainly described the designs and methods of the intervention studies. Thirty-nine of those studies were analyzed quantitatively as they included empirical data on relevant outcomes of interest to this review.

## Results of the Quantitative Review

Table 7.1 provides a summary of descriptive statistics for the 39 studies in the quantitative review. The majority of the studies were randomized control trials (RCTs; $n = 32$). A total of 6553 youth age 3–18 years were enrolled. Most studies focused on children from age 6 to 11 years ($n = 24$) followed by studies focused on teens from age 12 to 18 years ($n = 10$). Three studies focused only on preschool children from 3 to 5 years of age. About one-third of the studies included only females ($n = 14$).

Approximately 59% of the studies targeted only African American children ($n = 23$). Thirteen studies primarily focused on African American children but also included Latino/Hispanic American and Caucasian American children. One study did not report the racial demographics of the sample but did provide a culturally-tailored intervention to parents of overweight African American children (Mazzeo et al., 2012; Stern et al., 2015).

The duration of the interventions ranged from 1 day to 2.5 years with an average duration of 28 weeks (standard deviation [SD] ±33 weeks; median, 14 weeks; interquartile range, 12 weeks). In 21 studies (54%), outcomes were assessed at

**Table 7.1** Select study characteristics of articles included in the quantitative analyses ($n$ = 39)

| *Demographics* | N | % |
|---|---|---|
| Race | | |
| African American only | 23 | 59 |
| African American and Latino/Hispanic American | 7 | 18 |
| African American and Caucasian American | 6 | 16 |
| African American, Latino/Hispanic American, and Caucasian American | 2 | 5.0 |
| Not reported | 1 | 3.0 |
| Gender | | |
| Females | 14 | 36 |
| Co-ed | 25 | 64 |
| Age range (in years) | | |
| Preschool to middle (3–12) | 4 | 10 |
| Middle (6–11) | 24 | 62 |
| Middle to teens (6–17) | 1 | 2.6 |
| Teens (12–18) | 10 | 26 |
| *Study characteristics* | | |
| Design | | |
| Randomized-controlled trial | 32 | 82 |
| Pre-post intervention | 6 | 15 |
| Quasi-experimental design | 1 | 2.6 |
| Sample size | | |
| Mean (SD) | 168 (187) | |
| Median (interquartile range) | 76 (188) | |
| Range | 29–729 | |
| Duration of intervention (in weeks) | | |
| N | 38 | |
| Mean | 28 (33) | |
| Median (interquartile range) | 14 (12) | |
| Range | 0.1–130 | |
| Not reported | 1 | |
| Duration of follow-up (in weeks) | | |
| N | 38 | |
| Mean | 51 (45) | |
| Median (range) | 27 (92) | |
| Range (min-max) | 0.1–156 | |
| Not reported ($n$) | 1 | |
| Target population | | |
| Child and parent | 24 | 62 |
| Child | 14 | 36 |
| Child, parent and community | 1 | 2.6 |

(continued)

**Table 7.1** (continued)

| *Intervention* | | |
|---|---|---|
| Intervention setting | | |
| School | 16 | 41 |
| Home | 9 | 23 |
| Community | 9 | 23 |
| Clinic | 3 | 7.8 |
| Community/home | 2 | 5.1 |
| Type of intervention | | |
| Single component | 5 | 13 |
| Two components | 13 | 33 |
| Three or more components | 21 | 54 |
| *Outcomes/results* | | |
| Body mass index (BMI)[a] | 34 | 87 |
| Major outcomes (BMI)[b] | | |
| Significant decrease post-intervention | 9 | 36 |
| No difference | 16 | 64 |

[a]Body Mass Index (BMI) was measured as primary or secondary outcome; [b]BMI was the primary outcome

post-intervention. While all the interventions focused on children or adolescents, about 59% targeted both parent and child. About half of the interventions were conducted in a school-based setting ($n$ = 17). Other settings included homes of the participants ($n$ = 9), community venues such as churches and community recreation centers ($n$ = 8), and weight loss clinics ($n$ = 3).

Thirty-two of the 39 intervention studies were based on an established theoretical model, and most of those used a single theory or model ($n$ = 20). The remaining studies ($n$ = 12) were guided by two or more theoretical models. Bandura's Social Cognitive Theory (Bandura, 1989) was the most commonly used theory ($n$ = 23 studies). Other theories included the Self-determination Theory (Ryan & Deci, 2000), Socio-ecological Theory (Bronfenbrenner, 1979), Stages of Change (Prochaska & DiClemente, 1992), and the Theory of Triadic Influence Model (Flay & Petraitis, 1994).

Parents were actively or passively involved in the majority of studies ($n$ = 31). Parental involvement was considered active if both parent and child or parent-alone received the interventions ($n$ = 24). In the Nourishing Our Understanding of Role modeling to Improve Support and Health (NOURISH) studies (Mazzeo et al., 2012; Stern et al., 2015), the intervention was provided to parents alone with an underlying hypothesis that a culturally-sensitive parent-alone intervention may be promising and, potentially, a cost-effective method for pediatric obesity treatment. Another study, compared whether parents who received worksite support for attendance at a school-based healthy weight program would attend more sessions, lose more weight, and make healthier changes in home food environments than parents who did not receive worksite support (Anderson, Symoniak, & Epstein, 2014). Other studies where parents were passively involved included the distribution of newsletters or brochures to inform parents of the intervention and provided reading materials

or homework that would encourage positive behaviors and environments at home for their children. Eight studies did not involve parents ($n = 8$) other than obtaining informed consent for their child to participate in the study.

Three studies used one component interventions and eight used two-component interventions. Most ($n = 29$) though, included three or more components. The intervention components mainly focused on increasing physical activity, adoption of healthy lifestyles, nutrition and healthy food choices, and improving self-efficacy to adopt healthy behaviors. In many studies, formative research was conducted to identify culturally-relevant physical activities, such as Hip-Hop dance and basketball; food preferences and culturally appropriate recipes and tips to promote intake of fruits and vegetables; beliefs and perceptions about weight and body image; barriers to adopting healthy lifestyles; as well as preferable means of communication to relay information.

## *Outcome Measures*

In most studies, BMI was measured as a primary ($n = 25$) or secondary outcome ($n = 9$). Other outcomes included level of physical activity or fitness ($n = 32$); physiological measures such as heart rate, blood pressure, sexual maturation ($n = 18$); dietary intake, including calories, fat, fruits and vegetable ($n = 28$); biological markers, including lipid profile and percent body fat; and psychosocial measures such as self-esteem, depression, quality of life, and stress ($n = 27$). Five studies measured the effect of intervention on TV viewing.

## *Intervention Effects*

Significant decreases in BMI post-intervention were observed in 9 of the 25 studies that measured BMI as primary outcome. In studies that targeted other measures, significant results were reported in 10 of the 14 studies. Overall, a majority of the studies reported significant effect of interventions on secondary outcomes ($n = 31$).

## *Factors Associated with Efficacy of the Intervention*

Studies employing underlying multiple theoretical models (9 of 11) were significantly more likely to have favorable outcomes as compared to the studies that applied a single model (6 of 20) or no theoretical model (4 of 7) in design and implementation of the intervention. Similarly, studies that targeted both males and females (17 of 24) were more likely to report positive outcomes than those focusing only on females (2 of 14). No other factors, including parental involvement, setting

of the intervention (school vs. community vs. home), number of intervention components or age range, were associated with significant positive impacts of the interventions.

## Discussion

Childhood obesity is a major public health problem with long-term implications (Reilly & Kelly, 2011). While rates of childhood obesity are problematic across all racial, ethnic, and gender groups, African American youth are among the subgroup with persistently high rates that often mirror rates among adults (Ogden, 2009; Ogden et al., 2016; Ogden, Carroll, & Flegal, 2008). Childhood obesity is likely a result of complex interactions among multiple factors including the home and family context. In fact, family-based lifestyle interventions are the recommended form of treatment for childhood obesity (Kumar & Kelly, 2017). In spite of the focus on family-based interventions, there is a relative dearth of published interventions with diverse populations (Ash, Agaronov, Young, Aftosmes-Tobio, & Davison, 2017).

The purpose of this review was to evaluate the efficacy of culturally-relevant interventions to address childhood obesity among African American children and adolescents. Prior reviews of this topic (Hudson, 2008; Knowlden & Sharma, 2013; Kumanyika et al., 2014; Seo & Sa, 2010; Suarez-Balcazar et al., 2013) suggested a favorable trend in weight-related outcomes for studies including some degree of cultural adaptation. However, few prior reviews focused exclusively on interventions for African American children (Hudson, 2008). Our systematic review uniquely contributes to the published literature by reviewing those studies published through July 2019 that included a majority sample of African American subjects and described their intervention as being culturally adapted for the target audience.

Findings from this scoping review showed limited efficacy among the interventions reviewed to reduce obesity (i.e., BMI). Factors associated with statistically significant decreases in BMI post-intervention included the use of multiple theoretical models and targeting a co-ed population rather than female only.

## Conclusion and Recommendations

The prevalence of obesity among African American youth and the lack of efficacious interventions for this population necessitate renewed efforts to better design, implement, and evaluate culturally-relevant interventions. This review reinforced prior studies that noted a limited number of overall intervention studies; limited interventions for younger (under age 6 years) and older (adolescent) populations relative to middle-school age youth; low-quality study designs; limited description and documentation of cultural tailoring/adaptation; and inconsistent reporting of demographic characteristics and subgroup analysis (Ash et al., 2017; Reed, Wilbur,

& Schoeny, 2015). These critiques may offer a partial explanation for the overall lack of efficacy of the studies reviewed in demonstrating initial or sustained changes in obesity outcomes (e.g., BMI). In an effort to effectively develop and evaluate childhood obesity interventions targeting African American families, the following recommendations are offered:

1. Identify the key constructs that may be relevant to cultural adaptation or tailoring of evidence-based interventions. Frameworks, such as community-based participatory research (Israel et al., 2005), that engage the target population may be ideal for better design, implementation, and evaluation of tailored interventions.
2. Document the methods and processes used to tailor the intervention. Documentation will better inform those who want to replicate this work and will also better allow for the fair comparison of these interventions with others in the literature.
3. Capture and report demographic data on study participants. Again, this will assist in assessing generalizability of the findings and conducting systematic reviews and meta-analyses.
4. Include longer-term follow-up (at least 6 months post-intervention) to allow for a more robust evaluation of the impact of the intervention after active components have ended. Given that BMI change is more likely to occur after consistent and sustained changes in energy balance resulting from diet and physical activity changes, the full impact of the intervention may take longer to be realized.

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# Chapter 8
# Fathers and Food Parenting: Current Research and Future Opportunities


**Kirsten Davison, Jess Haines, Sabrina Douglas, Evelin Garcia, and Brent McBride**

**Abstract** Food parenting encompasses the strategies that parents use to shape or modify children's dietary behaviors. Examples of strategies include ensuring children have access to healthy foods, modeling healthy eating behaviors, using sweets as a reward for good behavior, and pressuring children to eat specific foods. In the context of epidemic rates of obesity in children, food parenting strategies that support healthy eating behaviors are critical to support child health. While food parenting research is a robust area in inquiry, with over 500 published papers, research to date has focused primarily on mothers. Given the diversity of family structures today, and increases in the time fathers engage in caregiving, fathers' food parenting and its impact on children warrants attention. To address this shortfall, we recently initiated a scoping review of fathers' food parenting research. Here we share preliminary findings including an overview of the research questions, study designs, sample characteristics, theories, and data collection methods. Drawing on these results, we highlight gaps in the literature and, informed by developmental science and results from a recent working group of fatherhood scholars, we propose possible solutions. Finally, we identify opportunities for future research using examples of upcoming studies from our research team and others.

**Keywords** Childhood obesity · Obesity in children · Food parenting · Fathers food parenting · Food parenting practices · Child feeding practices · Parenting practices · Fatherhood · Father involvement · Children's dietary behavior · Child nutrition · Child feeding research

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## Food Parenting Research: Definitions and Origins

Obesity in young children is a pressing public health problem with immediate and long-term health consequences including diabetes, hypertension, heart disease, and certain types of cancer (Daniels, 2006; Reilly & Kelly, 2010). Children's energy balance related behaviors—including their diet, physical activity, sedentary behavior, and sleep—emerge early in life in the context of the family (Birch & Davison, 2001; Whitaker & Orzol, 2006), thus highlighting the critical role that families play in their behavioral etiology (Davison & Birch, 2001; Friedman, Dietz, & Collins, 2010; Monasta et al., 2011). Food parenting has received particular attention as a precursor to excessive energy intake, energy imbalance, and weight gain in children (Stang & Loth, 2011). Food parenting includes a range of strategies such as ensuring children's access to healthy foods, modeling healthy eating behaviors in the presence of children, restricting children's access to specific foods, pressuring children to eat desired food types and amounts, and using food as a reward for specific behaviors (Vaughn et al., 2016). An expansive literature on food parenting and its implications for children's diet and health outcomes has accumulated over the past 40 years. The resulting studies provide convincing evidence that supportive feeding practices (e.g., access to healthy foods, modeling healthy behaviors) are linked with higher fruit and vegetable consumption and higher diet quality in children (Birch & Marlin, 1982; Shim, Kim, & Lee, 2016; Shloim, Edelson, Martin, & Hetherington, 2015). Conversely, maladaptive feeding practices (e.g., restriction, pressure, reward) coupled with exposure to high calorie, low nutrient foods within the home environment promote a preference for low nutrient foods and undermine children's internal hunger and satiety cues, thereby disrupting appetite regulation (Birch & Davison, 2001; Larsen et al., 2015; O'Connor, Hughes, Watson, & Baranowski, 2010; Sleddens et al., 2014) and increasing risk of obesity (Ventura & Birch, 2008). Collectively, this literature emphasizes the need to engage and support parents during the early childhood years to promote optimal child nutrition and prevent obesity (Waters et al., 2011). Furthermore, the literature informs the content of family-based interventions (Coleman et al., 2005; Davison, Jurkowski, & Lawson, 2013; Gentile et al., 2009; Robinson, 1999). Yet, these conclusions are limited to mothers' food parenting. Much less is known about fathers' food parenting and its implications for children. In this chapter, we compile and critique research on fathers' food parenting practices and, building on lessons learned from developmental science, propose future directions.

### *Leann Birch: Food Parenting Research*

Food parenting research, previously referred to as child feeding research, has been drastically shaped by the seminal work of Leann Birch, to whom this volume is dedicated. Leann was one of the first scientists to blend pediatric nutrition and

developmental science to examine young children's food preferences and intake patterns spanning experimental studies, longitudinal cohort studies and, most recently, intervention studies. From Leann's early work, we learned that repeated exposure to new foods increases children's food acceptance and reduces *picky eating*. We learned that infants regulate their energy intake over a 24-h period instead of meal by meal, such that very low intake during one feeding is compensated for over the subsequent 24 h rather than just at the next feeding as expected. Building on her research on children's food preferences, Leann examined precursors to children's dietary patterns, particularly the role of parents and the feeding strategies they adopt. Her timely research put *parents* on the radar of childhood obesity researchers in the early 1990s as alarm over rising rates of obesity in children was drawing attention to the problem of children's energy imbalance. Some of the most critical studies informing family interventions to prevent childhood obesity emerged during this time. When asked by the first author (as a doctoral trainee with Leann) nearly two decades ago, what led her to pursue research on food parenting, Leann's response was brief and effective, "Well, because it is an interesting and important question, and no one seems to be doing it." The lack of research in this area meant that Leann had to create the field, ultimately designing her own protocols, survey instruments, and conceptual frameworks to operationalize young children's preferences, food intake, and parenting practices linked with children's eating patterns.

In the same vein, we initiated research on fathers' food parenting within the past 5 years as it became apparent that the contributions of fathers in the realm of families and food had been neglected. In a sense, fathers' food parenting is the *elephant in the room* in food parenting research. It has been a long and hazardous process to initiate work on this topic and convince skeptical reviewers of the need for research on fathers' food parenting. Fortunately, we recently broke this barrier and were awarded an R01 grant to recruit a large cohort of fathers of young children and examine their food parenting (along with physical activity, media, and sleep parenting) across the preschool period. The initiation of this study along with an invitation to present at Penn State's 27th Annual Symposium on Family Issues provided an impetus to compile and profile research to date on fathers' food parenting. In this chapter we (a) briefly review the representation of fathers in childhood obesity prevention research, (b) share preliminary findings from an ongoing scoping review on fathers and food parenting, (c) identify gaps in the literature and propose solutions drawing on developmental science, and (d) highlight opportunities for future research along with upcoming research by our team and others.

## Fathers in Childhood Obesity Research

While the representation of fathers' in food parenting research has yet to be established, their inclusion in a related body of work, childhood obesity prevention, has been documented. In a systematic review and quantitative content analysis of more than 600 studies on parenting and childhood obesity prevention published between

2009 and 2015, only 8 studies focused on the role of fathers (Davison et al., 2016). In contrast, 244 studies focused on mothers. Fathers made up approximately 16% of parent participants in observational studies on parenting and childhood obesity (Davison et al., 2016) and 6% of parents in a similar review of family interventions to prevent childhood obesity (Davison et al., 2018). Fathers were least likely to be included in studies of young (<6 years) children and studies examining the role of food parenting versus other obesity-related parenting practices such as physical activity parenting (Davison et al., 2016). Furthermore, non-biological, low-income, and non-residential fathers were rarely included in studies (Davison et al., 2016). In short, at least until 2015, fathers received little attention in research on parenting and childhood obesity prevention. This pattern was observed despite demographic increases in the number of two-parent working families in the USA (from 49% in 1970 to 66% in 2016), a threefold increase in the time fathers spend caring for their children over a similar time period, and increases in the quality of father engagement with children (Cabrera, Fitzgerald, Bradley, & Roggman, 2014; Livingston & Parker, 2019; Pleck, 1997). The lack of fathers in childhood obesity research is concerning for a number of reasons. Developmental studies consistently illustrate the beneficial effects of engaged fathers on all areas of child development including social, emotional, cognitive, and physical development (McWayne, Downer, Campos, & Harris, 2013; Penilla et al., 2017; Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008; Wilson & Prior, 2011). Additionally, there is growing evidence that fathers play a critical role, beyond mothers, in shaping children's diet and physical activity and subsequently, their risk of obesity (Khandpur, Blaine, Fisher, & Davison, 2014; Tschann et al., 2015; Wong et al., 2017). Finally, as noted in a meta-analytic review of parenting programs, programs that include mothers *and* fathers demonstrate greater improvements in child health outcomes than programs with only mothers (Lundah, Tollefson, Risser, & Lovejoy, 2008).

## Fathers' Food Parenting in Research

Recognizing the knowledge gap in the role of fathers in childhood obesity prevention in general, and children's dietary behaviors in particular, we are undertaking a scoping review of research on fathers' food parenting practices. While the review is still in progress, we share preliminary findings here. Eligible studies include peer-reviewed research studies published in English documenting fathers' food parenting practices, more specifically, *fathers' active involvement in the process by which food is procured, prepared, and fed to children.* This definition includes fathers' active involvement in decision making and rule generation but excludes research on fathers' perceived responsibility for feeding and knowledge of healthy eating strategies, as well as parenting or feeding styles. Studies focused on parenting or feeding styles, without assessment of food parenting practices, are excluded because parenting/feeding styles focus on the social dynamic of parent–child interactions rather than the specific actions of fathers in the context of child feeding. Additional exclu-

sion criteria include studies focused on parents of young adults (older than 18 years), the pre-weaning period (i.e., birth to 6 months) when many children are breast fed, and those focused on clinical populations. While eligible studies are not required to focus on fathers, they must include data for fathers separate from mothers or other caregivers. Studies are not required to include data on child outcomes.

Consistent with scoping review guidelines (Levac, Colquhoun, & O'Brien, 2010; Munn et al., 2018; Tricco et al., 2018), we searched multiple databases (PubMed, PsychInfo, CINAHL, EBSCO) using a standardized search string combining terms referencing fathers (father, paternal, male caregiver, dad) and food parenting (e.g., feeding, food parenting, grocery shopping, cooking, mealtime, family meal). This process yielded more than 800 references. After removing duplicates and applying screening criteria, 62 eligible studies were reviewed. The authors, a multidisciplinary team of faculty, students, and staff, extracted data from eligible studies using a standardized coding form.

The majority of studies ($N = 44$, 71%) were published in 2011 or later. Between 2011 and 2015 approximately 4 studies were published per year; this increased to 8 studies per year from 2016 onward. More than half of the studies ($N = 38$) were conducted in the USA, followed by 11 studies in Europe. While all studies included data on fathers, only 18 studies (29%) were primarily focused on fathers. Approximately half of the studies included 100 or fewer fathers, and 10 studies included 500 or more fathers. There was no predominant pattern in the age range of the referent children or the racial/ethnic make-up of samples; similar numbers of studies examined fathers of infants, preschool-aged children, and school-aged children and included predominantly white versus predominantly racial/ethnic minority samples. The vast majority of studies were cross sectional ($N = 58$, 94%), with only two studies adopting a longitudinal design and two a mixed methods design. Finally, one in four studies utilized a theory or conceptual framework with Attachment Theory, Ecological Systems Theory and Social Cognitive Theory being the predominant frameworks.

Studies examined a range of topics, with two key research areas emerging. Just over half of studies (57%) explored fathers' food parenting/feeding practices with the remainder of studies examining fathers' involvement in food work including food preparation, feeding children, or the implementation of family meals. Overall, studies examining fathers' involvement in food work showed that although fathers are involved, their level of involvement is lower than that of mothers (Bauer, Hearst, Escoto, Berge, & Neumark-Sztainer, 2012; Fouts & Brookshire, 2009; Hossain, Roopnarine, Ismail, Hashmi, & Sombuling, 2007; Knop & Brewster, 2016; Lora, Cheney, & Branscum, 2017; Tanner, Petersen, & Fraser, 2014; Thullen, Majee, & Davis, 2016). These results mirror findings from research exploring gender division of child care and housework generally. Studies in Canada, the USA, and Europe consistently demonstrate that despite men's increasing involvement, women remain responsible for the bulk of house and family work, including assuming responsibility for the health and well-being of family members and organizing their children's lives (Doucet, 2017; Moyser & Burlock, 2018). Qualitative studies examining father involvement in food work suggest that fathers see their role in household food work

as important (Mallan et al., 2014; Penilla, Tschann, Sanchez-Vaznaugh, Flores, & Ozer, 2017; Walsh et al., 2017). However, fathers report that full-time employment and work pressures are common barriers to their participation (Bauer et al., 2012; Penilla, Tschann, Sanchez-Vaznaugh, et al., 2017). Studies examining the impact of father involvement on children's dietary intake and weight outcomes are inconclusive; some studies report that father involvement is linked with improved dietary intake and growth outcomes for children (Abate & Belachew, 2017; Cutler, Flood, Hannan, & Neumark-Sztainer, 2011), whereas others show no association (Berge, MacLehose, Larson, Laska, & Neumark-Sztainer, 2016; Wasser et al., 2013).

Among studies examining fathers' food parenting practices, there is some evidence that fathers may be more likely than mothers to use controlling feeding practices, such as pressure to eat or restriction (Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2013; Mallan et al., 2014; Orrell-Valente et al., 2007). As with studies examining father involvement, the influence of fathers' food parenting practices on children's outcomes is inconsistent. While a number of studies report that father restriction is associated with higher weight in children (Johannsen, Johannsen, & Specker, 2006; Penilla, Tschann, Deardorff, et al., 2017; Tschann et al., 2015), one study shows no association between father restriction and child weight (Vollmer, Adamsons, Foster, & Mobley, 2015). Similarly, one study finds that father restriction is associated with poorer dietary intake in children (Watterworth et al., 2017); another study reports improved dietary intake in children (De Bourdeaudhuij, 1997); and yet another reports no association (Vollmer et al., 2015).

## Limitations of Father Food Parenting Literature

Results from the scoping review, while preliminary, reveal a number of important gaps in the literature. First and foremost, while food parenting is in general a robust area of inquiry with more than 500 published papers (identified in a search of PubMed), very few studies include data on fathers; that is, only 64 eligible studies were identified and only 18 of these studies focused on fathers. Thus, at present, there is little depth in the literature on fathers' food parenting. A second limitation is that most studies are atheoretical. Only 15 studies used any kind of theoretical framework or conceptual model. Most of these studies utilized ecological systems theory or some derivative thereof and only one study utilized a framework specific to fatherhood. Third, almost all published studies are cross sectional; only 2 longitudinal studies were identified and neither focused on fathers. As a result, there is a void of information on changes in fathers' engagement in food parenting, the specific practices they adopt as children grow and develop, and implications of fathers' food parenting for children's emerging dietary behaviors.

A fourth limitation is food parenting studies rarely consider the role of coparenting—defined as all the ways that parents do or do not coordinate with and support each other in their roles as parents (Feinberg, 2003). While many of the studies included in the review compared mean levels of food parenting practices for fathers

versus mothers (e.g., differences in mean levels of restriction), only 9 studies (14%) out of 64 examined the interplay between fathers and mothers. The majority of these studies ($N = 5$) examined concordance in mothers' and fathers' perceptions or practices and the impact on child outcomes. The remaining studies, most of which were qualitative, examined the role of parent undermining, gatekeeping or negotiation, which more closely align with the construct of coparenting. It is worth noting, however, that studies on coparenting that did not report results for fathers separate from mothers, which is often the case in qualitative studies of mother–father dyads, were excluded during the screening process. Hence our estimate of studies on fathers' food parenting studies that examine coparenting will underestimate their presence in food parenting research as a whole, particularly if most of these studies are qualitative.

## Future Research: Leveraging Developmental Science

In contrast to the literature on food parenting and child nutrition more broadly, developmental science has an extensive history in fatherhood research with scholars specializing in fatherhood and studies documenting the nature of fathers' engagement in child rearing, its contextual origins, and impacts on child outcomes. Moreover, researchers in developmental science are typically trained in parenting dynamics and bring this expertise to their scholarship. In June 2016, an interdisciplinary working group of fatherhood scholars was convened to discuss methods, conceptual issues, and measures of father-child relationships in the child development literature. A number of insights from the meeting and the associated monograph (Volling & Cabrera, 2019) speak directly to the limitations in fathers' food parenting research and provide guidance for future research.

One key insight that can be gained from developmental research on fathers is the field's use of theory. As previously noted, few studies on fathers' food parenting include theory. The general lack of theory may explain the noted inconsistency in findings. In the aforementioned monograph of fatherhood research, theory was referenced in all papers. While a range of theories was utilized, a developmental ecological systems framework was common across all papers (Volling & Cabrera, 2019). The framework expands the conceptualization of fatherhood to consider the multiple systems within which the father-child relationship is situated and their interconnections. Fatherhood research informed by this framework looks beyond the father-child microsystem to examine the role of factors such as family functioning (e.g., parental conflict, coparenting, maternal gatekeeping), parent work-force engagement, workplace policies, cultural practices, the legal system, and time. The ecological framework of fatherhood illustrates the role of time, thereby acknowledging that fathering, father-child relationships, and the systems in which they are embedded are dynamic. Given that only two studies to date on fathers' food parenting adopted a longitudinal design, this literature is clearly at the *precontemplation* stage of recognizing the dynamic nature of fathering. The

life course perspective (Elder, 1997) and attachment theory (Bowlby, 1969) are additional developmental theories that integrate time and can guide future research on fathers' food parenting.

Along with integrating the factor of time, future studies on fathers' food parenting should consider the role of coparenting. Research from developmental science shows that fathers who experience higher coparenting quality are more engaged in caregiving (Marcia, Pilkauskas, McLanahan, & Brooks-Gunn, 2011; McBride & Rane, 1998) and adopt more responsive parenting practices (Sobolewski & King, 2005). Moreover, higher coparenting quality is linked with greater cross-parent consistency in parenting strategies and positive child outcomes (Feinberg, Kan, & Hetherington, 2007). Quantitative food parenting studies to date have conceptualized the roles of mothers and fathers as parallel rather than interconnected. This may be partially driven by the lack of an appropriate measure of coparenting. We are not aware of any published measures of food parenting that measure coparenting. A number of coparenting scales, however, published in the child development literature such as the Coparenting Behaviors Questionnaire (Macie & Stolberg, 2003), the Coparenting Questionnaire (Margolin, Gordis, & John, 2001), and the Coparenting Relationships Scale (Feinberg, Brown, & Kan, 2012) could be adapted for use in food parenting research.

Finally, fatherhood research has applied a maternal measurement template to the assessment of fathering (Cabrera & Volling, 2019). That is, surveys and observational coding systems developed to measure maternal behaviors and mother–child interactions have been used to measure fathers' behaviors and father–child interactions. The same rings true for research on fathers' food parenting. There are a growing number of published measures of food parenting (e.g., the Child Feeding Questionnaire, the Comprehensive Feeding Practices Questionnaire, and the Parental Feeding Practices Questionnaire). With one exception, however, these measures have not been validated for use with fathers. The exception is a recent study which demonstrated measurement invariance for the Feeding Practices and Structure Questionnaire across mothers and fathers, indicating that the constructs measured could be interpreted equivalently for mothers and fathers (Jansen, Harris, Mallan, Daniels, & Thorpe, 2018). Similar analyses should be completed for all measures of food parenting prior to their utilization with fathers.

## Forthcoming Studies to Address Gaps

Researchers and funding agencies have begun to appreciate the importance of understanding the role that fathers play in the development of their children's eating behavior. As a result, there are a number of studies underway designed to address gaps in our understanding of fathers' involvement in food parenting practices and how this involvement influences children's diet and health outcomes.

Our team recently received a 5-year National Institutes of Health (NIH) grant (1R01HD098421-01) to establish a large, national, longitudinal cohort of biologi-

cal, adoptive, and social fathers ($n$ = 1000) with preschool-aged children. We will create this father-focused cohort using participants in the Growing Up Today Study (GUTS), which is a U.S.-based longitudinal cohort of young adults who have been followed since early adolescence with annual or biannual measures of their diet and weight status. Leveraging this cohort, and drawing on the life course perspective, we will use existing data on fathers' preconception weight-related behaviors (including diet) and compile new data on fathers' (and their coparents') weight-related parenting (including their food parenting practices), quality of the coparenting relationship, and their child's weight-related behaviors and outcomes. These data will allow us to: (a) Describe fathers' engagement in food parenting practices and how fathers' preconception diet behaviors and child (i.e., age, temperament) and family (i.e., parent work hours) factors influence father engagement; (b) Examine developmental pathways linking fathers' preconception diet behaviors, their food parenting practices, and children's diet behaviors and weight outcomes; and (c) Examine the interplay between fathers' and their coparents' weight-related parenting, including differences in fathers' and mothers' parenting practices, the combined and independent effects of fathers' and mothers' parenting practices on child behavior and weight outcomes, and how coparenting quality may influence these associations. Our study aims to provide critical information on fathers' food parenting practices, transgenerational patterns of diet behaviors, and the interplay between mothers and fathers in shaping children's diet and weight outcomes, with the long-term goal of informing the design and content of family interventions to prevent childhood obesity.

Dr. Katie Loth and her colleagues at the University of Minnesota recently embarked on an NIH-funded study (5K23HD090324-03) that will use ecological momentary assessment to explore within- and between-parent fluctuations in food parenting practices and will identify momentary influences on parents' use of food parenting practices among a sample ($n$ = 50) of mothers and fathers of preschool-aged children. This novel research will help elucidate how interactions between mothers and fathers directly influence their respective parenting practices and how these interactions and parenting practices influence eating behaviors of their children. This information is needed to ensure that family-based obesity prevention interventions appropriately accommodate the dynamic interconnected roles of parents.

In addition to epidemiologic research designed to understand fathers' role in the development of their child's eating behaviors, intervention research aimed at changing fathers' food parenting practices is also underway. Dr. Amy Mobley and her colleagues at the University of Connecticut recently completed an NIH-funded (5R21HD087817-02) pilot RCT of a father-focused nutrition and parent education intervention. The study engaged 60 low-income fathers and randomized half to receive 8, 2-h sessions focused on skill development related to food and general parenting and half to wait-list control. Although results are forthcoming, study findings are expected to provide insight into effective recruitment and retention methods for low-income fathers as well as strategies to influence fathers' food parenting and mealtime behaviors and practices.

Another forthcoming father-focused intervention study is being led by Dr. Teresia O'Connor from Baylor College of Medicine (5R34HL131726-03). Dr. Connor and colleagues are using the Healthy Dads, Healthy Kids intervention, which was originally designed and tested among Australian fathers, and adapting and testing its use among Latino fathers in the USA via a pilot RCT ($n = 40$). Based on the social cognitive theory and family systems theory, the Healthy Dad, Healthy Kids intervention engages both fathers and their school-aged children in sessions designed to improve physical activity and dietary intake. Similar to the research by Mobley and colleagues, this study will help identify strategies to support fathers' positive food parenting practices. These intervention studies will also help elucidate the mechanisms by which fathers' food parenting practices influence their children's dietary and eating behaviors and weight outcomes.

## Summary and Conclusion

Food parenting practices that foster healthy dietary behaviors in children are critical to promote optimal health and development in children. While there is a voluminous literature on mothers' food parenting, there is a clear gap in our knowledge of fathers' food parenting. Given shifting demographic trends in families with fathers playing a much larger role in caregiving today than 3 or 4 decades ago, the imbalanced focus on mothers decontextualizes this important daily parenting activity and reduces the potential efficacy of family interventions built on this knowledge base. In our ongoing scoping review, we have identified 62 studies examining fathers' food parenting, 18 of which focused specifically on fathers. From this work, we identified fundamental knowledge gaps in fathers' food parenting research and, drawing on developmental science, proposed recommendations for future research. Primary shortfalls in research to date include a lack of longitudinal studies with only 2 longitudinal studies to date, the limited use of theory—particularly developmental theory, the use of a maternal measurement template in the absence of measures validated for fathers, and the general failure to consider the role of coparenting. To address these gaps, we need longitudinal studies that use an ecological framework, as has been done in developmental science, and use measures of food parenting (and coparenting) validated in fathers. Addressing these gaps will allow us to develop interventions that appropriately engage and support fathers as primary caregivers and coparents in establishing positive food parenting practices. Practices which lead to healthier dietary behaviors in children will support optimal growth and development and minimize the risk of diet-based chronic diseases such as obesity.

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# Part IV
# Families and Food: Reflections and New Directions

# Chapter 9
# Children's Eating Behavior in Context: Family Systems and Broader Ecological Influences

**Anna K. Hochgraf and Cara F. Ruggiero**

**Abstract** The research in this volume illustrates how children's eating behaviors, attitudes, and food experiences are shaped by contextual factors, ranging from microlevel influences (e.g., family mealtime interactions) to macrolevel influences on families (e.g., economic systems). This concluding chapter features a synthesis of the research presented in the volume, guided by a family systems framework and Bronfenbrenner's bioecological model to address eating and weight-related health concerns. Finally, this concluding chapter outlines future directions to advance understanding of the intersection of families and food to prevent weight-related health concerns, including utilizing interdisciplinary research, innovative methods, and examining sociocultural processes related to eating behaviors and attitudes.

**Keywords** Ecological model · Family systems · Child eating behaviors · Parent feeding practices · Family meals · Food insecurity · Nutrition policy · Interdisciplinary research methods · Family processes

The chapters in this volume highlight how families, and the sociocultural and historical contexts in which they are embedded, shape eating behaviors, attitudes, and food experiences. The foci of these chapters range from microlevel influences, such as family dynamics, to macrolevel influences, such as government policies. Two key themes are woven throughout. First, that a systems perspective is needed to understand the development of eating behaviors. Research in this volume points to the

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utility of family systems and ecological systems frameworks to understand the ways in which individuals develop eating behaviors. Second, that a variety of research methods and perspectives are needed to advance theory and prevention efforts for eating and weight-related health concerns. In this concluding chapter, we synthesize the research presented in this volume using a family systems framework within Bronfenbrenner's bioecological model, outline interdisciplinary research and innovative methods that may advance knowledge regarding the intersection of families and food, and identify future directions.

## Family Dinners to Food Policies: Overview of Families and Food

The bioecological model of human development suggests that the development of eating behaviors is shaped by dynamic interactions between individuals and their contexts (Bronfenbrenner, 2005). Interactions between individuals and their immediate environments (i.e., microsystems, particularly family contexts) have profound effects on the development of eating and weight-related outcomes. Development is also impacted by interactions between individuals' immediate environments (i.e., mesosystems, such as communities) and between their immediate environments and environments beyond individuals' direct experiences (i.e., exosystems, such as the policy environment). Distal influences on the development of eating behavior include the macrosystem, or cultural beliefs and values, and the chronosystem, which refers to changes over time in individuals and their contexts. The chapters in this volume illustrate that proximal family processes and practices are central to the development of eating behaviors and attitudes. However, eating behaviors and attitudes are also impacted by distal processes, including economic and racial disadvantage, public policies, and changes in access to food and family structures and roles over time.

### *Microsystems: Family Interactions, Communication, and Mealtime Behaviors*

At the microsystem level, interactions among family members play an important role in youths' eating behaviors. The family systems perspective suggests that dynamics between and among all family members and patterns of family interactions are key to understanding individual functioning (Cox & Paley, 1997). Berge (Chap. 6) and Davison, Haines, Douglas, Garcia, & McBride (Chap. 8) underscored the value of looking beyond the mother-child dyad and including multiple family members in research on eating and feeding behavior. Parent feeding practices refer to behaviors performed by parents with the goal of influencing children's eating

behavior (Vaughn et al., 2016). Parents may engage in different feeding practices, change the frequency or tone of weight-related conversations, and encourage different eating and weight control behaviors depending on youth characteristics, such as gender, age, or weight status (Berge et al., 2013, 2015; Francis, Hofer, & Birch, 2001). Parent characteristics, including weight concerns and gender, may also lead to different patterns of interactions related to eating and feeding behaviors (Berge et al., 2013, 2015; Francis et al., 2001; Francis & Birch, 2005). Berge (Chap. 6) found that parents tailor feeding behaviors based on their child's weight status, age, and food preferences. Davison and colleagues (Chap. 8) emphasized the paucity of research regarding fathers' roles in food parenting and the development of children's eating behaviors. Including multiple family members in research may illuminate unique, shared, and even contradictory practices and roles of parents and siblings in youths' development of eating attitudes and behaviors. Indeed, research suggests that mothers and fathers have unique roles in shaping boys' and girls' weight concerns (Hochgraf, McHale, & Fosco, 2019; May, Kim, McHale, & Crouter, 2006), and that siblings may also have important roles in the development of eating attitudes and behaviors (Chap. 6; Berge, Hanson-Bradley, Tate, & Neumark-Sztainer, 2016).

The need to be inclusive of all family actors is also relevant for effective intervention. Most of the child feeding and obesity literature has focused on one child per family, and often on mothers. However, a recent study demonstrated that a responsive parenting intervention for firstborn children had benefits on feeding of secondborn siblings, suggesting that intervening with first time mothers and their infants will benefit other children in the household (Ruggiero, Hohman, Birch, Paul, & Savage, 2019). Expanding analyses to include fathers and siblings may yield new insights into the development of eating behavior.

### Emotional Climate and Focus of Family Communication

The emotional climate of family relationships, communication, and the specific focus of conversations have been linked to the development of weight concerns and overweight/obesity among children and adolescents. Parent-adolescent responsiveness, acceptance, and intimacy are protective against development of weight concerns, whereas parent-adolescent and interparental conflict may increase risk for weight concerns (Hochgraf et al., 2019; Hochgraf, McHale, & Fosco, 2018; Lam & McHale, 2012; May et al., 2006). Weight-focused conversations, including comments, criticism, and teasing about weight, shape, or size, as well as encouragement to lose weight (Chap. 6), are associated with increased likelihood of disordered eating behaviors among adolescents, particularly among youth with overweight or obesity (Berge et al., 2013). These conversations are distinct from health-focused conversations, which include comments and encouragement related to nutrition or physical activity that focus on health rather than weight or appearance (Chap. 6).

Parent-youth weight-focused conversations are a common experience among adolescents. In a diverse sample of 2348 adolescents and 3528 parents in the

midwestern USA, approximately a third of mothers and fathers were engaging in weight-focused conversations with daughters and sons who were not overweight, and nearly two-thirds of mothers and fathers were engaging in weight-focused conversations with daughters and sons who were overweight (Berge et al., 2013). Cultural differences may shape the frequency of health- and weight-focused conversations. In a racially and ethnically diverse sample of 120 families, the prevalence of health-focused conversations was substantially higher among parents of Hispanic/Latino and Asian/Hmong adolescents than among other racial and ethnic groups, as was the prevalence of weight-focused conversations among parents of Asian/Hmong adolescents (Berge et al., 2014). Some evidence suggests that siblings, an understudied yet influential part of the family system, account for the largest proportion of weight-focused conversations within families: In a relatively small sample of predominantly African American youth and their families, 59% of children reported experiencing negative weight-based talk from a sibling, relative to the 43% of children who reported experiencing negative weight-based talk from a parent (Berge et al., 2016). The same study revealed that types of weight-focused conversations vary between family members: Mothers tended to focus on concerns about health; fathers identified particular body parts to change; and brothers and sisters teased their siblings about their weight, shape, size, or the foods they eat (Chap. 6; Berge et al., 2016).

### Family Meals, Feeding Styles, and Practices

Research included in this volume also highlights the role of family mealtime routines in fostering healthy youth development. Such routines have a regulatory function for families and youth that confers psychological and physical health benefits (Chap. 4; Hammons & Fiese, 2011). In addition, family meals represent an opportunity for parents to model healthy eating, monitor and encourage youths' consumption of healthy foods in appropriate portion sizes, and foster positive family relationships and communication. The frequency of family meals, youth involvement in meal planning and preparation, and the quality of family interactions during meals have implications for youth eating behaviors and weight (Chap. 4). Frequent family meals are linked to reduced likelihood of youth overweight, eating disorders, and consumption of unhealthy foods, as well as increased likelihood of youth consumption of healthy foods (Hammons & Fiese, 2011).

Positive family relationships and communication during family meals are linked to lower risk of obesity (Berge et al., 2014). In contrast, hostility and lecturing, whether related to food or not, are associated with increased likelihood of child obesity (Berge et al., 2014). Similarly, feeding styles, which refer to the emotional climate of meal time, may impact children's eating behaviors (Vaughn et al., 2016). Similar to general parenting styles, feeding styles vary along dimensions of demandingness (i.e., control and supervision during feeding) and responsiveness (i.e., warmth and sensitivity to child cues; Chap. 5). For example, authoritative feeding styles, which are characterized by parents' high demandingness and responsiveness

to the child's regulatory hunger and fullness cues during feeding (e.g., monitoring the child's intake but not pressuring the child to eat beyond satiation), are associated with reduced consumption of snack foods, increased consumption of nutritious foods, and lower BMI (Chap. 5; Arlinghaus et al., 2018; Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2012; Hughes, Power, Fisher, Mueller, & Nicklas, 2005). In contrast, indulgent feeding styles, characterized by low demandingness and high responsiveness by parents (e.g., allowing the child to eat as much food as she or he wants), are associated with children's selection of larger portion sizes, reduced consumption of vegetables, dairy, and fruit, increased consumption of snack foods, and overweight (Chap. 5; Hennessy et al., 2012).

Parent feeding practices are also associated with children's eating behavior. Hughes and Power (Chap. 5) summarized the history of this research and key findings on the link between parent feeding practices, child eating behavior, and weight. Leann Birch, the scientist to whom this volume is dedicated, made substantial contributions to our current understanding of parent feeding practices and the development of children's eating behaviors. Dr. Birch's work on parent feeding practices, including measurement development efforts, led to the finding that highly controlling feeding practices have adverse effects on children's eating behavior and weight (Chap. 5). For example, restrictive feeding practices aimed at limiting children's consumption of highly palatable foods can increase children's preferences for those foods, lead to overeating, result in difficulties regulating intake, and ultimately, increase risk for overweight (Birch & Fisher, 1998; Birch, Savage, & Ventura, 2007; Faith, Scanlon, Birch, Francis, & Sherry, 2004; Fisher & Birch, 1999). Importantly, and consistent with a bioecological systems perspective, some research indicates this link is bidirectional, suggesting that children influence their own development of eating behaviors (Chap. 5; Bronfenbrenner, 2005; Jansen et al., 2014). For example, parents adjust their feeding practices based on their child's weight and food fussiness (Harris, Fildes, Mallan, & Llewellyn, 2016; Jansen et al., 2014).

Also consistent with a bioecological systems perspective on contextual influences, positive communication, feeding practices, and healthy eating behaviors during family mealtimes may be impeded by household chaos. Distractions during family mealtimes, such as television, mobile phones, and loud ambient noise, are associated with less responsive maternal feeding, less engagement in positive communication between family members, and greater consumption of calorie dense foods (Chap. 4; Fiese, Jones, & Jarick, 2015; Saltzman, Musaad, Bost, McBride, & Fiese, 2019).

## *Exosystems: Influences on Families' Food Insecurity*

The exosystem exerts influence on families and food through larger environments such as economic systems or government agencies which can impact a family's access to food. Research in this volume highlights the pressing need to address food insecurity or inconsistent access to sufficient food to meet nutritional needs

(Coleman-Jensen, Rabbitt, Gregory, & Singh, 2019), among families in the USA. In 2018, 11.1% of households in the USA were food insecure (Coleman-Jensen et al., 2019). Recognizing that food insecurity is impacted by distal factors such as the governing process, economic, and social policies which can affect a family's earnings, working conditions, and ability to access housing, education, and transportation, Odoms-Young (Chap. 1) called for additional innovative "upstream" strategies to tackle food insecurity and its root causes. A strategic focus on the social determinants of health, the circumstances in which people are born, grow, live, learn, work, and age (WHO, n.d.), may help in identifying areas in which to intervene.

Families experiencing food insecurity often are affected by multiple layers of disadvantage, including limited transportation, unstable housing, challenges applying for and maintaining government benefits for food or other social services, disconnected utilities, lack of access to health care and insurance, exposure to violence, limited employment opportunities, the burden of supporting other family members, and lack of family support (Chap. 1). Poverty, specifically generational poverty, is a common root cause of food insecurity (Chap. 1). Unemployment or underemployment also contribute to a family's food security status, driven by the complex role of racial, ethnic, and economic segregation, particularly in rural communities. Employment opportunities and access to resources such as healthy food can be limited by segregation and economic disinvestment in communities (Chap. 1).

Food insecurity may disrupt the routine of family meals and contribute to more negative family interactions during mealtimes (Chap. 4). Food insecurity is associated with household chaos due to parents' attempts to reduce financial strain and improve access to food (Rosemond et al., 2019). Parents in food insecure families may have inconsistent work schedules that impact the frequency and location of family meals, and food shortages and the stress experienced by parents and children during times of food scarcity may lead to negative interactions during family meals (Rosemond et al., 2019). In addition, financial and interpersonal stressors experienced by parents are associated with controlling feeding practices and unhealthy foods served at family meals (Chap. 6).

Public policies, including the Special Supplemental Nutrition Program for Women Infants and Children (WIC) and the Supplemental Nutrition Assistance Program (SNAP), have affected the way that low-income families access food. SNAP is an intergenerational program that represents a promising solution to families experiencing food insecurity throughout the USA. Although SNAP has reduced the prevalence of food insecurity in households with children (Gundersen, Kreider, & Pepper, 2017), it may be possible to enhance the program (Chap. 3). Gunderson suggests that one change to SNAP that could reduce stigma and shame, would be to make the program unrestricted—that is, to allow families to purchase anything with their SNAP dollars (Chap. 3). Such an approach stands in contrast to a program implementing *harvest boxes*—which limit families' choice and dignity. Gunderson argues that SNAP could consider targeted benefits for those most at risk of food insecurity (e.g., Native Americans, individuals with mobility disabilities; Chap. 3). In addition, asset limits should be eliminated, as they encourage families to remain in the cycle of poverty and discourage saving (Chap. 3). Another potential change to

SNAP would be to make it more accessible to immigrant populations. Some have suggested that there is fear of deportation among immigrant communities which keeps them from applying for SNAP or using food pantries. However, more research is needed to determine if there is a basis for this claim (Chap. 2), especially as immigration policy changes take effect.

## *Macrosystems: The Influence of Culture*

At the macrosystem level, food insecurity and obesity often co-occur, as both are consequences of poverty (Martin & Lippert, 2012). Social and cultural values, including a history of racism and oppression of people of color in the USA, have downstream effects on food insecurity and obesity prevalence. Obesity in the USA currently affects approximately 40% of adults, 19% of children age 2–19 years, and 9% of infants and toddlers age birth-24 months (Ogden, Carroll, Fryar, & Flegal, 2015). Lower income and minority families are disproportionately affected by obesity and its comorbidities (Ogden et al., 2015). National data reveal that the highest rates of food insecurity are in counties characterized by high poverty rates, most of which are located in rural areas in the South and populated with high concentrations of racial and ethnic minorities (Feeding America, 2019). Racial segregation persists in the USA and is higher in rural communities than in metropolitan areas (Lichter, Parisi, Grice, & Taquino, 2007). Moreover, poverty rates are higher in rural communities than metropolitan areas (Chap. 2; USDA, 2019). This may explain the finding that the prevalence of food insecurity for black and Latinx populations in the USA is double that of white populations (Coleman-Jensen et al., 2019). In an exploration of why food insecurity rates differ between rural and metropolitan areas, while paying attention to racial inequality, Bowen and colleagues (Chap. 2) identified four place-specific factors that help explain these differences. Barriers to food access include long distances to supermarkets and limited emergency food resources. Facilitators include access to community gardens and strong social support.

Whereas food insecurity may limit a family's food access, culture can influence dietary intake and parent feeding practices. For example, traditional foods and cooking methods available to slaves in the south (e.g., fried and starchy foods) have been passed down through generations (Kittler, Sucher, & Nahikian-Nelms, 2011; Semmes, 1996). This trend may lead to excess calorie intake and obesity in African-American communities. Further, both indulgent feeding styles and restrictive feeding practices are typical of African-American mothers and are associated with overweight status in children (Faith et al., 2004; Hughes, Shewchuk, Baskin, Nicklas, & Qu, 2008). Baskin, Tipre, & Richardson (Chap. 7) emphasized the importance of cultural adaptation of interventions based on Reniscow's definition of cultural tailoring (Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1999) and Suarez-Balcazar's model for promoting health in African American and Latino children (Suarez-Balcazar, Friesema, & Lukyanova, 2013). Baskin and colleagues define culturally-relevant interventions as, "those which appreciate and seek to understand the diverse

ethnic and cultural experience of the subpopulation; incorporate cultural knowledge and align content with their norms, beliefs, and attitudes into an appropriate and acceptable strategy; and motivate an effective, sustained behavioral change in the targeted context to meet the need identified (p. 146)" (Chap. 7).

Thinking more broadly in the macrosystem, globalization also has implications for family mealtimes and dietary intake. Globalization through immigration (i.e., the nutrition transition) or through the dissemination of American products and media (i.e., remote acculturation) has effects on dietary habits and mealtime practices around the world (Chap. 4). The nutrition transition (Popkin & Udry, 1998) occurs when second generation immigrants to middle- and high-income countries change from a diet of plants, grains, fruit, and meat to one with sugar sweetened beverages, processed foods, and larger portion sizes. Remote acculturation (Ferguson & Bornstein, 2012) refers to the opposite direction of effect whereby the USA and other higher income countries exert their influence in developing countries through imported goods, cable television, other media, and fast food outlets that influence dietary intake. Fiese (Chap. 4) presented a case study of this phenomenon in Jamaica and discussed an intervention utilizing media literacy as a novel approach to this problem.

## *Chronosystems: Generational Influences and Family Structure*

Turning to the chronosystem, developmental and historical time play important roles across the domains of food insecurity, family mealtimes, and food parenting. Food insecurity status may change across the life course due to life events and may persist across generations. For example, Bowen and colleagues (Chap. 2) found that families moved in and out of food insecurity as they experienced changes in employment, housing, health, family structure, and access to social assistance programs. Qualitative work on food insecurity among low-income urban caregivers suggests that hunger and violence across generations and breaking out of intergenerational patterns are key themes. Participants described how their current hardship was rooted in their childhoods and the hardships their parents experienced (Chilton, Knowles, & Bloom, 2017).

Looking to family meals and feeding behaviors, generational time can have implications for parent feeding, and time also marks shifts in culture. Parents reported learning the importance of family meals when they were children and having a desire to pass this on to their children (Berge et al., 2018), though such intergenerational transfer varied based on time spent in the USA, race, and ethnicity. Davison and colleagues emphasized the need to consider other parental roles in feeding, as family household structures have evolved over time (Chap. 8). Due to the growing diversity in family structures, culture shifts such as fathers' increased engagement in caregiving, differences in fathers' and mothers' feeding practices (Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2013; Mallan et al., 2014), and fathers' food parenting are important foci for future research on families and food.

## Advancing Theory on Families and Food

The research in this volume exemplifies the value of employing a variety of research methods and perspectives to advance theory and prevention efforts for eating and weight-related health concerns. Dr. Birch's groundbreaking work has had a sustained impact on the field of pediatric obesity and ingestive behavior because she harnessed strengths of multiple disciplines. The field should continue to conduct interdisciplinary research, drawing on findings and methods from fields including nutrition, human development, family science, sociology, psychology, prevention science, global and public health, and medicine to improve knowledge, theories, prevention, and intervention efforts. These collaborations promise to yield multilevel research on the development of eating behaviors and prevention of eating problems that is attentive to the dynamic, interactional processes linking individual, family, and contextual forces that contribute to eating and weight-related outcomes. Results will facilitate development of interventions that address multiple ecological levels of influence or *whole of community* intervention strategies (Ewart-Pierce, Mejía Ruiz, & Gittelsohn, 2016).

Research in this volume highlights the ways in which the application of a range of methods—quantitative, qualitative, mixed methods, and innovative methods, such as ecological momentary assessment (EMA)—can be used to gain important insights about how family processes, dynamics, and larger cultural contexts shape eating and weight-related outcomes. For example, experimental designs may be used to identify factors that impact eating behavior and family interactions during mealtimes as demonstrated by Fiese (Chap. 4). Using a combination of EMA, in-home video recordings, and qualitative interviews can produce rich data on family factors associated with youth eating and weight-related behaviors (Chap. 6). The data produced via these methods lend themselves to novel intervention approaches to curb disordered eating and obesity, such as real-time mobile health interventions and family-centered prevention programs. Moving beyond the microsystem, qualitative methods can identify potential mechanisms and intervention targets related to social determinants of food insecurity (Chap. 1). Prior work contrasting food insecurity in rural and urban areas was extended by using a combination of semi-structured interviews and surveys to examine experiences of food insecurity within rural counties (Chap. 2). And, community-based participatory research may be used to ensure proper cultural adaptation of obesity prevention interventions (Chap. 7).

## Conclusions and Future Directions

As evident throughout this volume, we understand a great deal about the ways in which families shape youths' development of eating behaviors, attitudes, and food experiences. However, important questions remain. Next steps for research include involving multiple caregivers and siblings in family studies, examining heteroge-

neous family structures, and studying sociocultural processes related to development of eating behaviors. Research is needed to address changing family structures and roles (single parent households, same-sex households, more father involvement). Attention also should be given to how parent feeding practices, styles, and family mealtime interactions change across development, and when particular family processes have the strongest effect on youths' eating behaviors and attitudes. Such information can inform developmentally and culturally appropriate, family-centered interventions to prevent eating and weight-related health concerns.

In addition, interventions and policies aimed at ameliorating food insecurity need to address multiple layers of disadvantage experienced by low-income families as well as geographic differences in experiences of food insecurity (Chap. 1). Future studies should move beyond urban and rural differences to examine inequality and structural racism in the food system as well as place-specific factors within a community (e.g., community food resources, social support networks; Chap. 2).

Longitudinal research is needed to identify factors contributing to the intergenerational transmission of food insecurity resulting from intergenerational poverty so that this cycle may be interrupted. Targeting multiple caregivers and children in a household (i.e., multigenerational frameworks) may help prevent the transmission of obesity and food insecurity to subsequent generations (Shonkoff & Fisher, 2013). Policies and government programs to address obesity and/or food insecurity should consider building in evaluation of natural experiments such as when changes to existing programs (e.g., SNAP) are implemented. Finally, interdisciplinary work in these areas utilizing novel methodologies will be critical to unpacking the complexities of ecological influences on families and food.

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