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Family Meal Characteristics in Racially/Ethnically Diverse and Immigrant/Refugee Households by Household Food Security Status: A Mixed Methods Study

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Abstract

While there is some research examining frequency of family meals by food insecurity (FI) status, there is little research examining other family meal characteristics (e.g., type of food served at meal, emotional atmosphere) or parent feeding practices by FI status. If food and money is scarce, it may be that the broader family meal environment looks different in families with continuous access to food (food secure, FS) compared to families with FI. Using ecological momentary assessment (EMA) and qualitative data, this study explores meal characteristics and parent feeding practices at nearly 4,000 family meals in a low-income, racially/ethnically diverse and immigrant/refugee sample. For 8 days, participants (i.e., parents of 5–7-year-old children) completed a survey every time they shared a meal with their child. Additionally, parents completed a qualitative interview regarding family meals. There were many meal characteristics statistically correlated

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Ethics Statement

The University of Minnesota's Institutional Review Board Human Subjects Committee approved all protocols used in the *Family Matters* study. Participants were consented at the first in-home visit before any data collection.

with a family being FI, including: who prepared the meal and how the meal was prepared, the makeup of people at the meal, the meal location and meal atmosphere, and the food served at the meal. Qualitative data illuminated many of these findings from EMA meal surveys. Quantitatively, families with FI and FS reported similar parent feeding practices during family meals. Qualitatively, families with FI and FS reported differences in 1) parent feeding practices; 2) food served at family meals; 3) challenges to having family meals; and 4) adults' role in the family meal. This study provides suggestions for interventionists working with families, including helping families identify time management strategies, including fruits and vegetables into family meals on a budget, reducing screen time at family meals while improving the meal's emotional atmosphere, and developing positive parent feeding practice strategies.

Keywords

family meals; meal characteristics; food insecurity; parent feeding practices; qualitative; Ecological Momentary Assessment; mixed-methods

1. Introduction

Household food insecurity, defined as uncertain availability of food given economic or other resource constraints for a healthy life (Food Security in the U.S., n.d.), is prevalent among families in the United States (US) (Berner et al., 2008; Gundersen et al., 2011; Guthrie & Lin, 2002; Hager et al., 2010; Leung & Villamor, 2011; Park et al., 2009; Seligman & Schillinger, 2010). In 2018, the US Department of Agriculture estimated that the prevalence of food-insecure (FI) households in the US was 11.1%; the prevalence of FI households with children was 13.9% (Food Security in the U.S., n.d.). There appears to be significant racial differences in household food security status, with a larger proportion of FI families belonging to racial and ethnic minority households compared to white households (Berge et al., 2018; Gundersen et al., 2011; Seligman & Schillinger, 2010).

Exposure to food insecurity has been associated with low diet quality (e.g., fewer whole grains, more solid fats and added sugars) (Eicher-Miller et al., 2011; Gundersen et al., 2011; Kihlstrom et al., 2019; Lee et al., 2012; Park et al., 2009; Rossen & Kobernik, 2016; Sanjeevi et al., 2018), increased mental health concerns (e.g., anxiety, suicidality) (Bruening et al., 2017; Flórez et al., 2015; Johnson & Markowitz, 2018; Koyanagi et al., 2019; Maynard et al., 2018; McIntyre et al., 2013), and greater risk of experiencing a chronic disease (e.g., asthma, cardiovascular diseases) in adults and children (Gundersen et al., 2011; Kirkpatrick et al., 2010; Ryu & Bartfeld, 2012; Seligman et al., 2009; Tarasuk et al., 2013; Vercammen et al., 2019). Family meals are often thought to be protective against many of the outcomes associated with exposure to food insecurity (e.g., low diet quality). For example, increased frequency of family meals (e.g., three or more meals in the past week) has been associated with increased intake of fruits and vegetables (Christian et al., 2012; Gillman et al., 2000; Hammons & Fiese, 2011; Neumark-Sztainer et al., 2003, 2010), and decreased intake of soda (Gillman et al., 2000; Neumark-Sztainer et al., 2010; Woodruff & Hanning, 2009) and fast food (Cutler et al., 2011). In addition, more frequent family meals have been associated with positive mental health outcomes, such as fewer depressive

symptoms (Fulkerson et al., 2009; Musick & Meier, 2012), lower likelihood to engage in disordered eating (Haines et al., 2010; Hammons & Fiese, 2011; Skeer & Ballard, 2013; Wang et al., 2013), and less substance use (CASAColumbia, 2011; Hoffmann & Warnick, 2013; Musick & Meier, 2012; Sen, 2010; Skeer & Ballard, 2013; White & Halliwell, 2011).

However, little is known about the specific characteristics of family meals (e.g., who prepared the meal, number of people present at the meal) in FI households, who may struggle more than food secure (FS) households to have a family meal (Bauer et al., 2015; Berge et al., 2019; Sen, 2010). Additionally, there is limited research examining possible differences in parent feeding practices (e.g., restriction, pressure to eat) among FS and FI homes (Bauer et al., 2015), and there does not appear to be any research that looks at parent feeding practices at individual meals by food security status. While children may be protected from the impact of a low food supply in FI homes (Food Security in the U.S., n.d.), it may be that characteristics of the broader family meal environment is different than in homes with continuous access to enough food; thus exploring meal characteristics and parent feeding practices at family meals allows a deeper understanding of family meals in FI homes compared to FS homes and may be valuable for future intervention studies.

To close the gaps in our scientific understanding of meal characteristics by food security status, a mixed-methods approach was utilized. Instead of using static survey measures, this current study—which is a part of a larger cross-sectional study—examined differences in meal characteristics by household food security status using Ecological Momentary Assessment (EMA), a real-time data collection method. Participants reported on family meal characteristics through EMA multiple times throughout the day over the course of a week, providing a more complete understanding of how individual meals look in FS and FI homes. Additionally, because examining the meal characteristics of family meals by household food security status is a new area of research, qualitative data are also utilized to provide context to differences seen between FS and FI families in quantitative data.

The current study examined family meal characteristics and parent feeding practices by household food security status in a racially/ethnically diverse and immigrant/refugee sample, using EMA and qualitative data to provide context to differences/similarities observed. More specifically, the aims of this study were to: 1) identify family meal characteristics by household food security status, and 2) identify qualitative themes that provided context to the outcomes observed in the quantitative data.

2. Methods

2.1. Data Source

The current study used data from Phase I of the *Family Matters* study (Berge et al., 2017), a two-phased study designed to investigate protective and risk factors for childhood obesity in a racially/ethnically diverse sample of families. For Phase I sample recruitment, the *Family Matters* study team partnered with primary care clinics in the Minneapolis-St. Paul, MN area between the years of 2015 and 2016 to identify children with a recent (i.e., within past 6 months) well child visit and invited families to participate in the study through a letter sent to them by their primary care physician. The *Family Matters* study was specifically

interested in children at an age when they were beginning to make independent food choices and investigated how the home environment (e.g., sibling relationships, parent feeding practices) may be associated with child diet and weight outcomes. Therefore, families were eligible to participate if they had a 5 to 7-year-old child (target child) who: (1) lived full-time with the participating parent, (2) shared at least one meal per day with the participating parent, (3) had a sibling in the home ages 2–12 years, and (4) was partially away from home during the weekday (e.g., at school, daycare, or summer camp) (i.e., making independent food choices). Families (n=150) were stratified by race/ethnicity so there was an equal distribution (n=25 per group) of the following categories: Black, White, Hmong, Latino, Somali, and Native American. These specific racial/ethnic groups were chosen in order to be representative of the prominent groups in Minneapolis/St. Paul (Darboe, 2003; Pfeifer et al., 2012; Populations of Color and American Indians, n.d.); for example, Minneapolis/St Paul has the largest Somali population in the US. Thus, for recruitment purposes, families were asked to choose the race/ethnicity that best described the home environment in which their child was being raised (e.g., Black, White, Hmong, Latino, Somali, Native American). This categorization did not exclude multiracial families from participating in the study however; in the full survey parents filled out as part of the study they indicated the race/ethnicity of their child and themselves, which allowed for indicating multiple race/ethnicities. Parents needed to be able to speak and read in English, Somali, Hmong, and/or Spanish. Within each racial/ethnic group, half of the target child sample was normal weight (>5th BMI percentile and < 85th BMI percentile) and half was overweight/obese (≥ 85th BMI percentile).

2. 2. Participants

A total of 149 families participated in the present study, in which 127 families reported being FS and 27 families being food insecure. One participant did not complete the food security status questions and was therefore excluded from analysis. Demographics for the sample can be found on Table 1. FS and FI families were similar regarding most baseline demographic characteristics, except for sex of the target child (p=0.046), with 50.8% of FS children being female compared to 29.6% of FI children; child race/ethnicity (p=0.031), with a greater number of Hmong and Native American families being food insecure relative to Somali and White families; and household income levels (p=0.029), with 55.6% of FI families reporting a household income of less than $20,000. As described below, these 149 families contributed data on multiple meals across a week (n=3856 meals); the 127 food secure families reported on 3,143 meals and the 27 food insecure families reported on 713 meals.

2.3 Procedures

Data for the current study were collected during two in-home visits, with an 8-day observational period in between home visits. The full procedures, methods, and measures used in the *Family Matters* study have been published elsewhere. (Berge et al., 2017) Data collected at home visits that were included in the present study included height and weight measurements, qualitative interviews, and an online survey completed by the primary parent. In between home visits, the primary parent completed eight days of EMA surveys. The University of Minnesota's Institutional Review Board Human Subjects Committee approved

all protocols used in the *Family Matters* study. Participants were consented at the first in-home visit before any data collection.

2.4 Quantitative Measures

2.4.1 Household Food Security Status: Household food security status was measured using a 6-item validated survey tool (see Table 2 for all study measures including the references where the measures were adapted from) (Blumberg et al., 1999). Families were given a score of "1" for every question in which they responded "Yes". If families responded that they skipped meals "almost every month" or "some months but not every month", that response was also given a value of "1". Response values were then summed. For the current study, families with a sum greater than "1" (i.e., those who had experienced any food insecurity in the past year) were considered to be food insecure and families with a sum less than or equal to "1" were classified as food secure.

2.4.2 Meal Characteristics/Ecological Momentary Assessment: Parents completed eight days of EMA on a study-provided iPad. EMA is a method that allows for repeated in-the-moment (momentary) data collection from participants as they go about their day (ecological) (Shiffman et al., 2008). The benefit of EMA for the current study is the repeated assessments of family meal characteristics (e.g., Did you serve vegetables at this dinner?) rather than a static measure (e.g., In the past month, how often have you served Vegetables?). Parents were asked to complete the following types of EMA surveys: signal-contingent, event-contingent, and end-of-day (Shiffman et al., 2008). More details about how EMA was developed, tested, and utilized in the *Family Matters* study have been previously published (Berge et al., 2017). Only data from event-contingent surveys were utilized for the current study and are described here. Parents were asked to complete a survey after each meal (the "event") they shared with the target child and provide information about meal characteristics (e.g., who prepared the meal, the meal atmosphere) as well as parent feeding practices and child eating behavior at family meals. The meals could have been breakfast, lunch, dinner, or a snack. All parents were required to complete a minimum of one event-contingent (i.e., meal survey) per day; parents averaged 3.5 ± 1.1 event contingent surveys per day.

2.5 Qualitative Measures

Qualitative interviews were conducted during the second in-home visit. Interviews were conducted by a bilingual and bicultural research team, allowing interviews to be conducted in the parent's preferred language (English, Somali, Hmong, or Spanish) and by a person racially/ethnically matched to their culture. The research team of interviewers was trained in qualitative interview methods. Interview questions were guided by the following: (1) the principles of Family Systems Theory applied to family meals (Whitechurch & Constantine, 1993); (2) recommendations from previous studies showing the need to more deeply explore family meal characteristics (Berge et al., 2013; A. Trofholz et al., 2015); and (3) identifying gaps in the literature around family meals. The full research team participated in the creation of the interview guide, and the bicultural research team members provided insight on how to make interview questions relevant to the racially/ethnically diverse sample. Qualitative interviews were semi-structured and followed an interview guide (see Table 3) containing a

set of interview questions and suggested probes to ensure parents fully answered each question. All interviews were audio-recorded and transcribed; interviews conducted in Somali, Hmong, or Spanish were first translated and then transcribed into English.

2.6 Quantitative Analysis

Analysis at the meal level was conducted to take advantage of the variability in meal occasions within families over time, rather than collapsing meal characteristics to the family-level which would result in loss of precision. Ecological momentary assessment data were used to describe the characteristics of meal occasions reported by parents over the course of the day for a week, including domains of the healthfulness of meal preparation (homemade/prepared/fast food/combination), the composition of people at the meal occasion (adult and children present), activities during the meal (conversation/screentime) and where the meal was held, the composition of foods served, and the atmosphere of the meal occasion (relaxed/chaotic/enjoyable, etc.). Each domain was analyzed as categorical variables and food categories served were dummy coded in a present/absent format to account for combinations of food groups present at various meals. Tabular methods were used to describe sample characteristic differences between FS and FI households. Inferential statistical procedures were used to estimate food security status differences in meal occasion features and food-related behaviors in adjusted analyses. Generalized estimating equations, that account for family-level correlated error terms, with robust standard errors (Huber White sandwich estimator) were fitted with an independent working correlation structure, binomial variance family, and logit link (Hardin & Hilbe, 2012). Covariates in the adjusted analyses included child race, age, and sex as well as parent age and sex, and the average number of daily household meal occasions. To minimize concerns of multiple testing, the number of statistical tests were kept to a minimum. In particular, mean comparison t-tests were not performed and categorical variables were tested with tests of joint significance (adjusted Wald chi-square tests) instead of multiple pairwise t-tests. Sensitivity analyses were performed and snacking occasions were not determined to affect the generalizability of results including meal types (i.e., breakfast, lunch, and dinner). Thus, no meal occasions were omitted from the analysis. All data management and statistical procedures were performed in Stata 16.1 MP (College Station, TX).

2.7 Qualitative Analysis

A hybrid deductive and inductive content analysis approach was used to code the qualitative transcripts (Elo & Kyngäs, 2008). The first twelve transcripts (two per racial/ethnic group) were reviewed by the research team—which had representation from the race/ethnicities of the study participants. This allowed for the original interview questions to guide the development of the coding tree (deductive) while also allowing unique themes to emerge from the transcripts (inductive). After the initial coding tree was developed, two research members coded the remaining transcripts using the following approach: (1) the two coders coded twenty interviews together to gain reliability; (2) after these twenty interviews, coders double coded every fifth interview; coders then met to discuss individual codes and reach 100% agreement. After this line-by-line coding was complete, the two main coders worked to organize the identified themes into sub-themes. Following this step, a culturally diverse team was assembled to identify culturally relevant overarching themes. All interviews

(n=149) were coded to ensure saturation of themes; the first author of this paper (act) was the main interview coder. Coding was completed using Nvivo 11 software. All coded transcripts achieved a kappa of 0.86.

For the current study, qualitative results were stratified by household food security status and used to provide context to the quantitative data. Analysis of the qualitative data focused on the identification of differences in the frequency of themes endorsed by FS and FI homes. Specifically, themes were discussed as qualitatively different by FS and FI groups if the endorsement rates differed by at least 15 percentage points (Crabtree & Miller, 1992; Lune & Berg, 2017; Miles & Huberman, 1994). Themes that were endorsed by both FS and FI groups at similar rates (with 15 percentage points of each other) are discussed as similarities. All names in qualitative quotes have been changed to protect participant confidentiality.

3. Results

3.1. Quantitative Results

Meal characteristics and parent feeding practices for FS and FI families are presented in Table 4 to demonstrate commonly and rarely occurring characteristics and behaviors. The majority of family meals in both FS and FI families were prepared by the primary parent (54% and 60%, respectively). The most common preparation method in both FS and FI homes is home-cooking (52% and 45%, respectively), although 38% of meals in FI families are pre-prepared where only 28% of meals in FS families are pre-prepared. Decisions about what to serve at the meal appear to be influenced by a similar spread of factors in both groups; 21% of meals in both FS and FI families were chosen because the child or family likes those foods. The majority of meals for both FS and FI families involved three or more children (53% and 45%, respectively), who were primarily siblings. The composition of adults varied, however, by food security status: meals in FS families tended to have at least two adults present (53%), whereas meals in FI families tended to only have one parent (i.e., the primary caregiver) present (59%). The common location for the meal was around a table in both families (71% (FS) and 60% (FI)), although 23% of FI meals occurred on a couch or chair in the living area while only 13% of FS meals occurred on a couch or chair. Conversation was reported as occurring at most meals (73% FS and 62% FI). Screentime activities accompanied the meals in 34% of FS meals and 48% of FI meals. Most meals in both groups were described as relaxed or enjoyable (72% of FS meals, 78% of FI meals). The types of food served at meals in both FS and FI homes appear similar except that 63% of FS meals involved fruits or vegetables compared to 52% of FI meals and only 20% of FS meals included added sugars compared to 27% of FI meals. Parents in FS families pressure the child to eat in 13% of meals and restrict the child’s eating in 12% of meals where parents in FI families pressure at 20% of meals and restrict at 15% of meals. Finally, children in FS families refuse to eat foods at 9% of meals while children in FI families refuse foods at 11% of meals.

The associations between FI status and meal characteristics and parent feeding practices, adjusted for demographic and socioeconomic characteristics, are provided in Table 5. FS and FI families significantly differed with regard to many meal characteristics examined in the current study. These characteristics included: (1) differences in the composition of people

preparing or at the meal: Compared to FS families, FI families were less likely to have (a) multiple children at the meal (p=0.030), (b) adults other than the primary guardian (p=0.021) or to have (c) someone other than the parent prepare the meal (p=0.033); (2) foods served at the meal: Compared to FS families, FI families were less likely to (a) serve homemade foods alone or in combination with non-homemade foods (p=0.009), and were (b) less likely to serve fruits and vegetables (p=0.032) and refined grains (p=0.008); (3) differences in meal atmosphere: Compared to FS families, FI families were more likely to (a) eat dinner on the couch instead of at a table (p=0.037), and (b) less likely to say their family meals were rushed compared to being relaxed (p=0.005).

3.2 Qualitative Results

Several themes related to family meals were similarly endorsed by both FS and FI families. For example, over half of FS and FI families reported serving mostly home-cooked family meals and that everyone at the meal was offered the same food. Similarly, over half of the families described dinner as their main family meal, that family meals generally included everyone in the family, and were eaten at a dinner table. The majority of FS and FI families described planning the food at the family meal on family input or family favorites and had rules that children needed to try the foods served. The majority of families also had rules about not allowing electronics at family meals; both FI and FS families endorsed adults primarily doing all work related to the family meal (e.g., cooking, cleaning up), and that busy schedules were a challenge to having family meals.

Because qualitative data can provide context for quantitative data and identify differences between FS and FI families, only themes showing differences between FS and FI families are described in more detail below. Four themes emerged from the qualitative data, which were stratified by household food security status, some of which had multiple sub-themes. Differing qualitative themes between FS and FI families included: (1) Parent feeding practices; (2) Food served at family meals; (3) Challenges to having family meals; and (4) Adults' role in the family meal. Qualitative results are presented to show the number of families (either FS or FI) who endorsed the theme divided by the total number of FS or FI families. As the number of FS and FI families differed, presenting qualitative themes in this way allows for the identification of themes where families differed by 15%. Results are presented by first discussing FS families and then FI families.

3.2.1 Parent feeding practices:

The following sub-themes emerged from the overall parent feeding practices theme, showing differences between FS and FI families: (a) Rules about trying foods at family meals; (b) Rules about finishing foods at family meals; (c) Responding to picky eating; (d) Making sure children eat at family meals; and (e) Making sure children do not eat too much at family meals.

3.2.1.1 Rules about trying foods at family meals:

About half of FS families reported having rules that the child had to try foods at the family meals (n=62/122), compared to only about one-third of FI families (n=8/27). One mother said, "We say you have to try 3 bites of your food, one for your brain, one for your belly, and one just to make sure" (Female, 43 y.o., FS). Another father said, "You have to try it, all the food on the table, before you can

leave. You don't have to finish it, but you have to try all of the dishes" (Male, 33 y.o., FI). Additional quotes regarding qualitative themes are provided in Table 6.

3.2.1.2. Rules about finishing foods at family meals: Less than one-third of FS families (37/122) reported requiring children to finish foods at family meals compared to over half of FI families (15/27). For the FI families, some reported enforcing this rule because of not wanting to waste food. One mother said, "I usually always tell them, eat what I give you and try to finish your food, because we don't like to waste food" (Female, 30 y.o., FI).

Both FS and FI families spoke about the rule as a way to encourage children to eat certain foods (e.g., vegetables). One mother said, "I don't let them choose. I get them their plates and have them work on it. If, for instance, I give my son some vegetables he doesn't like, I make him finish" (Female, 24 y.o., FS). Another said, "Got to eat, got to eat it all, your food, your vegetables…they know they have to eat everything" (Female, 42 y.o., FI).

3.2.1.3 Responding to picky eating: Nearly one-third of FS families (n=37/122) reported providing children an alternate meal if they were being picky, compared to only a few FI families (n=4/27). Many families described the alternate meal as something quick to prepare (e.g., sandwich, snack). One mother said, "If they don't want to eat what I'm cooking, I usually offer mac and cheese or something that's fast, like noodles, eggs" (Female, 28 y.o., FS). Another said, "If I cook something that my kids don't like, they actually come and open the fridge and say that they want this. You know, like, if I cook [curry noodle soup] and she didn't want it, she would say that she would rather eat eggs and then she wants to snack on an apple before she eat her eggs then I'll cook her eggs" (Female, 25 y.o., FS).

3.2.1.4 Making sure children eat at family meals: While parents described their roles at family meals in many ways (e.g., nurturing children, serving healthy foods), qualitative differences were only seen in parents describing their role at family meals as making sure their children eat. Only a third of FS families (40/122) reported that their primary role at the family meal was to make sure their children eat compared to over half (14/27) of FI families. One mother said, "It's very important to make sure that I have enough food here for them, that they're eating three meals a day, those are really important to me" (Female, 34 y.o., FI).

3.2.1.5 Making sure children don't eat too much at family meals: Only 20 percent (25/122) of FS families reported restricting their child's eating if they felt the child was eating too much compared to nearly half of FI families (13/27). Many FI and FS families reported restricting kid's eating because they were concerned about the child's health (e.g., becoming overweight) or because the child wanted to eat too much unhealthy food (e.g., sweets). One mother said, "You have to tell them, 'Okay, you eat too much and it will do this and that.' And they have seen overweight people on TV and so they will be like, 'Oh, I don't want to be like that'" (Male, 48 y.o., FI). Another mother said, "This one eats too much. I cut them off because it's not good for their body" (Female, 30 y.o., FI).

3.2.2 Food served at family meals: Only a few FS families (5/122) reported serving pre-packaged foods or takeout for more than half of their family meals compared to twenty percent (6/27) of FI families. One mother said, "It sort of a variety, and it's usually take-

out…homemade once in a while, and then from the freezer is most of the time too" (Female, 38 y.o., FI). Another mother said, "For my kids it would probably usually be, let's see, boxed, pre meals, like macaroni and cheese, and things like that. It comes in a box and then you cook it" (Female, 24 y.o., FI).

3.2.3. Challenges to having family meals: Three sub-themes emerged regarding family's describing challenges to having family meals: (a) A shortage of money or food is a challenge to family meals; (b) Families change purchasing habits in response to family meal challenges; and (c) Families eat quickly in response to family meal challenges.

3.2.3.1 A shortage of money or food is a challenge to family meals: Few FS families (12/122) reported food or money shortages as a challenge to family meals, compared to nearly half (11/27) of FI families. One mother said, "Sometimes, sometimes [cost] is a challenge. We just have to wait to get enough to buy it. We just can't have everything" (Male, 33 y.o., FI). FS parents who endorsed this theme often discussed the higher cost of healthier foods (e.g., organic, fruits), rather than the cost of food in general. One mother said, "I am trying to cook more healthy food. Yes, organic food costs more money, and that is challenging" (Female, 42 y.o., FS).

3.2.3.2 Families change purchasing habits in response to family meal challenges: Only 7 percent (9/122) of FS families reported trying to "stretch" their money for family meals compared to a quarter (7/27) of FI families. One mother said, "Do I want to buy these fresh green beans at $2.99 per pound, or I can buy a couple of cans of beans…so sometimes that'd be the challenge right there, just budgeting and having to make that decision" (Female, 31 y.o., FI).

3.2.3.3 Families eat quickly in response to family meal challenges: In response to the challenge of having enough time to eat family meals (e.g., evening events, competing schedules), a quarter of FS families (29/122) reported eating quickly (e.g., getting take out, serving quick foods, eating on the way to events), compared to nearly half (11/27) of FI families. One mother said, "We would probably go grab something to eat so it would be faster…if [eating in the car was faster], we probably eat in the car" (Female, 29 y.o., FI). Another mother said, "I'll have them grab what they want to eat…we'll take it on the go, or just go somewhere and take it from a restaurant or something to go" (Female, 38 y.o., FI).

3.2.4 Adults' role in the family meal: Nearly one third (36/122) of FS families reported that it is the parent's role to clean up after the meal, compared to only seven percent (2/27) of FI families. FS parents generally describe doing all components of the meal (e.g., shopping, cooking, and cleaning). One mother said, "And then I cook supper for six [people]. And then we eat. And then they go off and get to go watch TV while I clean the kitchen and do dishes" (Female, 53 y.o., FS).

4. Discussion

This study explored family meal characteristics and parent feeding practices by household food security status using both quantitative and qualitative data. Overall, quantitative and

qualitative data showed many differences in *meal characteristics* by food security status. However, the quantitative data indicated no significant differences in *parent feeding practices* by food security status, while the qualitative data indicated many differences.

In the qualitative data, FS families more often reported having rules that children had to try foods at family meals where FI families more often reported having rules that children had to finish all foods at the meal. In addition, FI parents more often reported the need to make sure children ate and did not eat too much food at family meals. However, the parents did not report encouraging children in FI homes to eat more in the meals via EMA. This difference may be due to children in FI homes being aware of the rules to finish food(s), so that parents do not need to encourage them. Additionally, if parents are concerned about food waste, they may be serving only the foods that children will eat (Daniel, 2016). It also may be that parents are engaging in certain parent feeding behaviors (e.g., pressure to eat), but that the quantitative questions (e.g., Did you encourage child to eat more at this meal?) do not resonate with parents (e.g., parents require children to try foods at family meals but do not see this as an encouragement to eat more). Alternatively, it may be that the qualitative results represent parental *beliefs* about their feeding practices, not the actual practice that was captured using EMA at the end of the meal. Future research should qualitatively investigate how parents feel their parent feeding practices are influenced by food security status to help design quantitative questions, particularly ones that can be used in EMA data collection.

During interviews, many families—primarily food secure—described providing an alternative meal for picky children. Past qualitative research with low-income families has described these alternative meals as being of low-nutritional quality (e.g., hot dogs) (A. C. Trofholz, Schulte, et al., 2017); families may need assistance with strategies for handling a picky eater which results in children eating a nutritious meal without adding additional cooking burdens onto parents or relying on low-nutrient dense convenience foods.

While there were not statistically significant quantitative differences in parent feeding practices by food security status, some similarities are worth mentioning. For instance, many families (both FS and FI) reported pressuring children to eat food or restricting children's intake, which has been previously associated with several child weight-related outcomes, such as for overweight status (Birch & Fisher, 2000; Loth et al., 2013) unhealthy weight control behaviors (Loth et al., 2014), and lower diet quality (Birch & Fisher, 2000; Fisher et al., 2002). Both FS and FI families could use support in developing parent feeding practices that promote child health. Interventionists working with families around parent feeding practices should also consider parents' motives in engaging in parent feeding practices. For example, interventionists may have a different conversation with a parent pressuring their child to eat vegetables because vegetables are healthy compared to a parent pressuring vegetables because vegetables are expensive and they cannot afford to waste food.

Both quantitatively and qualitatively, FI families reported serving more pre-packaged foods at family meals. FI families also reported serving fruits and vegetables at family meals less often than FS families (Dixon et al., 2001; Herman et al., 2008; Seligman et al., 2009). One possible reason for serving more pre-packaged foods may be limitations of time. FI families

more often reported qualitatively that they ate quickly (e.g., getting take out, serving quick foods) because of time constraints. Additionally, FI families may have less support (i.e., a second parent) to assist with food preparation tasks (e.g., food shopping, meal prep), as suggested in the quantitative data. It is also possible that FI families may serve fewer fruits and vegetables because the pre-packaged foods they choose do not contain fruits and vegetables. FI families reported qualitatively that money posed a challenge to having family meals (quantitative data support FI families having lower household incomes than FS families) and that they tend to change their purchasing habits (e.g., buy fewer vegetables which may be seen as too expensive) in response to financial concerns. Some FI families may benefit from assistance with developing strategies for preparing homemade meals and/or increasing the frequency of family meals, taking into account the many other competing demands (e.g., work, school-related activities). FI families may need assistance with identifying ways to more affordably incorporate fruits and vegetables into their family meals, as well as ways to prepare fruits and vegetables that are acceptable to their children as FI families qualitatively described concerns about food waste, which is supported by previous qualitative work with low-income families (A. C. Trofholz, Schulte, et al., 2017).

FI families reported via EMA eating family meals on the couch more often than FS families. Additionally, screen time activities only (i.e., no conversation) were more common in FI families (29%) compared to FS families (16%). In previous research, eating a family meal on the couch has been associated with watching television (TV) at mealtime (A. C. Trofholz et al., 2019); and TV watching during family meals has been associated with many negative outcomes such as lower intake of fruits and vegetables (Coon et al., 2001; Feldman et al., 2007; Sweetman et al., 2011) and serving family meals with lower nutritional quality (FitzPatrick et al., 2007; Fulkerson et al., 2014). Watching TV at family dinner has also been associated with a negative emotional atmosphere at the meal (A. C. Trofholz, Tate, et al., 2017); however, in the current study, a relaxed atmosphere was more commonly reported in FI families compared to FS families. FI families may be more relaxed at family meals likely because they are using screen time and not interacting with each other. This may indicate that many families need assistance with strategies that either reduce screentime at the family meal and/or improve the emotional atmosphere at family meals to ensure an experience with the full benefits of a healthy family meal environment.

There were both strengths and limitations to this study. A major strength of the study was its mixed-methods approach, using EMA data and qualitative data to provide context to EMA data. The study included a large quantitative sample; EMA measurement methods allowed a quantitative sample of nearly 4,000 family meals for data analysis. This study was also strengthened through a racially/ethnically diverse and immigrant/refugee sample. Some limitations are also noteworthy. First, while a racially/ethnically diverse sample was a strength in that results are more generalizable, the sample size of 149 families prevent us from making inferences about our observations in regards to food insecurity within any individual race/ethnic group. Second, the study eligibility criteria (e.g., the target child needing a sibling in his/her age range) may mean that results may not be generalizable to all families with young children (e.g., families with only one child or families who do not regularly attend well-child visits). Third, while 149 is a large sample for a qualitative study, the majority of the sample was FS and therefore future studies including more FI families

are warranted to support more definitive conclusions. Fourth, the online and EMA survey questions regarding household food security status and family meals were self-reported, which may have led to some measurement error. Additionally, the study was cross-sectional in design, which doesn't allow for determine temporality (e.g., families may have had established meal characteristics prior to becoming food insecure. Finally, qualitative analysis was conducted in a way to find differences between FS and FI families. There were instances where both groups may have endorsed a theme, but one group endorsed that specific theme more (i.e., >15% difference). Thus, qualitative results should be read as providing context to quantitative data and identifying differences between groups rather than as separate analyses of FS and FI families.

5. Conclusion

This mixed-methods study identified many differences in meal characteristics and parent feeding practices between FS and FI families. Results from this study will allow researchers to better develop interventions aimed at improving family meal practices and at promoting positive parenting practices—particularly in limited resources settings—for families to experience the full benefits of family meals. Many suggestions for interventionists working with families have been identified, including helping families identify time management strategies, assistance with incorporating fruits and vegetables into family meals on a budget, reducing screentime at family meals while improving the meal's emotional atmosphere, and developing positive parent feeding practice strategies. Assisting FI families with identifying these strategies may be effective in improving diet quality in both children and families. Future research should qualitatively investigate how parents are influenced by food security to assist in the development of quantitative measures and interventions relevant to food insecure parents and families.

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Table 1:

Sociodemographic Characteristics of Participants in the *Family Matters* study by Household Food Security Status

	Food Secure Families (n=122) n (%)	Food Insecure Families (n=27) n (%)	P Value
Child Sex: Female	62 (50.8)	8 (29.6)	**0.046**
Child Weight Status: Overweight/Obese	56 (45.9)	16 (59.3)	0.209
Family Race/Ethnicity:			
White	23 (18.9)	2 (7.4)	**0.031**
Black	19 (15.6)	5 (18.5)	
Hmong	17 (13.9)	8 (29.6)	
Hispanic	22 (18.0)	3 (11.1)	
Somali	24 (19.7)	1 (3.7)	
Native American	17 (13.9)	8 (29.6)	
Parent Sex: Female	111 (91)	25 (93)	0.789
Parent Weight Status: Overweight/Obese	92 (75.4)	22 (81.5)	0.501
Parent Relationship Status:			
Married	68 (55.7)	10 (37.0)	0.131
Committed dating relationship	23 (18.9)	8 (29.6)	
Casually dating	1 (1)	1 (3.7)	
Separated or Divorced	3 (2.5)	3 (11.1)	
Widowed	1 (1)	0 (0)	
Single/never married	26 (21.3)	5 (18.5)	
Parent Education:			
Middle school or junior high	13 (10.7)	2 (7.4)	0.614
Some high school	15 (12.3)	2 (7.4)	
High school or GED	46 (37.7)	14 (51.9)	
Vocational/technical	13 (10.7)	4 (14.8)	
Associate degree	8 (6.6)	3 (11.1)	
Bachelor degree	10 (8.2)	1 (3.7)	
Graduate or professional degree	13 (10.7)	1 (3.7)	
Other	4 (3.3)	0 (0)	
Parent Work Status:			
Working full-time	53 (43.4)	10 (37.0)	0.355
Working part-time	28 (23.0)	4 (14.8)	
Stay at home caregiver	21 (17.2)	4 (14.8)	
Currently unemployed, looking for work	12 (9.8)	6 (22.2)	
Not working for pay	8 (6.6)	3 (11.1)	
Household Structure:			
One parent (no other adults)	27 (22.1)	9 (33.3)	0.077
One parent (with other adults)	15 (12.3)	3 (11.1)	

	Food Secure Families (n=122) n (%)	Food Insecure Families (n=27) n (%)	P Value
Two parents (no other adults)	69 (56.6)	9 (33.3)	
Two parents (with other adults)	11 (9.0)	6 (22.2)	
Household Income:			
Less than $20k	35 (28.7)	15 (55.6)	**0.029**
20k-34,999k	49 (40.2)	6 (22.2)	
35k-49,999k	14 (11.5)	2 (7.4)	
50k-74,999k	8 (6.6)	4 (14.8)	
75k-99,999kk	7 (5.7)	0 (0)	
100k+	9 (7.4)	0 (0)	

Table 2:

Description of *Family Matters* Online and Ecological Momentary Assessment Measures

Online Survey Question	Response Options
Household Food Security Status	
In the last 12 months, did you (or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?	(a) Yes; (b) No
How often did this happen?	1, Almost every month | 2, Some months but not every month; (c) In only 1 or 2 months
In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?	(a) Yes; (b) No
In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?	(a) Yes; (b) No
In the last 12 months, the food that we bought just didn't last, and we didn't have money to get more.	(a) Yes; (b) No
In the last 12 months, we couldn't afford to eat balanced meals.	(a) Yes; (b) No
Ecological Momentary Assessment Survey	**Response Options**
Meal Characteristics	
1. Meal Logistics	
Who prepared the meal? [1]	(a) Myself; (b) My partner/spouse; (c) A child in the household; (d) Another adult in the household; (e) Other person(s) (e.g., potluck, visiting a friend); (f) Food establishment (e.g., fast food, restaurant, grocery store deli); (g) Other
Which best describes the type of food served? [2,3]	(a) Homemade/freshly prepared (include fresh fruits or vegetables; (b) Pre- prepared foods (e.g., macaroni and cheese, frozen meals) or purchased snacks (e.g., fruit snacks, chips, granola bars, cereal); (c) Fast food/takeout (eating at home or at a restaurant)
What most influenced your decision to offer these foods? [4]	(a) Quick and easy to make; (b) Child/family likes; (c) Child asked for a specific food or meal; (d) Desire to avoid conflict with child or a family fight; (e) It was food I had available at home; (f) It was a healthy option; (g) Stressful day/busy schedule; (h) Too tired to cook; (i) It was a planned meal; (j) It was available at the place we ate (e.g., restaurant, celebration/gathering); (k) Other
How many children were present during the meal or snack? [2,3]	1 to ≥ 10
Who were the children? [2,3]	(a) Child in the study; (b) Older sibling(s); (c) Younger sibling(s); (d) Other family members (e.g., cousin); (e) Non-family members (e.g., friend, neighbor)
How many adults were present during the meal or snack? [2,3]	1 to ≥ 10
Who were the adults? [2,3]	(a) Main parent; (b) Other caregiver (e.g., partner, spouse); (c) Other family members (e.g., grandparent, aunt, uncle); (d) Non- family members (e.g., friend, neighbor)
Where did this meal or snack take place? [2,3]	(a) Around a table or counter at home; (b) On couch/chair in living area; (c) Scattered throughout house; (d) Standing up; (e) In the car; (f) At a restaurant; (g) Other
Were any of the following foods SERVED? [5,6]	(a) Fruit; (b) Vegetables; (c) Whole grains (e.g., whole-wheat breads or cereals, brown rice, oatmeal, corn tortillas); (d) Refined grains (e.g., white bread or cereals, flour tortillas, white rice); (e) Dairy (e.g., milk, cheese, yogurt, milk alternate such as soy milk, ice cream); (f) Meal protein (e.g., chicken, beef, seafood/fish); (g) Beans, e.g.gs, seeds, nuts, tofu; (h) Sugar drinks (e.g., pop, Kool-Aid, Capri Sun, Sunny Delight, sports drinks); (i) Cake/cupcakes/cookies or other baked goods; (j) Candy (e.g., sweets, chocolate, fruit snacks)
Which of the following things were happening during the meal or snack? (Select all that apply) [7]	(a) Conversation; (b) Watching television; (c) Television on in background; (d) Playing a video game; (e) Using a cell phone; (f) Using a tablet; (g) Using a

	computer; (h) Reading/looking at a book; (i) Listening to headphones; (j) None of the above
What was the meal or snack atmosphere like? [8]	(a) Chaotic; (b) Rushed; (c) Tense; (d) Relaxed; (e) Enjoyable; (f) Neutral
2. Parent Feeding Practices and Child Eating Behavior at Family Meals (Ecological MomentaryAssessment)	
Did you have to encourage [child] to eat more at this meal? [9]	(a) Yes; (b) No
Did you have to make sure [child] didn't eat too much food at this meal? [9]	(a) Yes; (b) No
Did [child] refuse any of the food you offered him/her? [10]	(a) Yes; (b) No

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Table 3:

Interview Questions about Family Meal Characteristics from the *Family Matters* study.

Main Question	Questions to get answers to:
1. What is a usual "family meal" like for your family: (a) who is there; (b) how often do they occur; (c) when/where do they occur?	1. Who is typically present at the family meal and how often does your entire family eat a "family meal" together? 2. Which meals do you eat (count) as a "family meal"? Breakfast/ lunch/ dinner? Weekdays? Weekends? 3. How are family meals in your own family today similar or different from family meals when you were growing up?
2. What do you usually eat for a family meal?	1. How is it decided what foods each person will eat? Does everyone eat the same foods? Do parents eat different than kids? 2. Are your meals typically home-cooked, pre-prepared (frozen entrees), delivered (e.g., pizza), fast food or restaurant cooked?
3. *What "role" does each family member play in carrying out family meals? For example, who does the meal planning, buying/shopping, cooking, setting the table, cleaning up after family meals?*	1. Does one person in the family care about having family meals more than others? How do other family members react?
4. *In your opinion, what would you count as a family meal? For example, would going out to a restaurant to eat as a family count as a family meal? Or, If someone cooks a meal and everyone gets their own food and eats in different rooms, would this count? Why?*	
5. *What are some of the reasons you have family meals?*	1. What role does your partner play in the decision to have family meals (intentional vs. unintentional decision)?
6. *Many families have ways of doing things, or "rules", during family meals, such as you can't leave the table until you eat everything on your plate, or you don't have to eat everything that is served as long as you try it. What are some of your food "rules"?*	1. What if someone breaks a rule? For example, if someone doesn't want to eat what is served? 2. What happens if someone doesn't eat enough food? Or, someone eats too much food?
7. ***What types of rules does your family have about electronic devices at family meals (e.g., TV, computer games, talking on phones, texting on phones)? What happens if someone breaks one of these rules?***	

Table 4:

Family Meal Characteristics and Parent Feeding Practices by Household Food Security Status

EMA Question Asked:	Food Secure Families (3,143 meals)	Food Insecure Families (713 meals)
Who prepared the meal?		
Parent	1,696 (54%)	429 (60%)
A cook outside home (e.g. restaurant, another adult)	845 (27%)	175 (25%)
Child participant + parent/partner	602 (19%)	109 (15%)
How was the meal prepared?		
Only homemade	1,636 (52%)	319 (45%)
Only pre-prepared	882 (28%)	272 (38%)
Only fast-food	352 (11%)	88 (12%)
Combination of homemade, pre-pared, fast-food	272 (9%)	34 (5%)
What influenced the person's decision to serve the food at the meal?		
Child / family likes	657 (21%)	151 (21%)
Child asked for a specific food or meal	414 (13%)	96 (13%)
Desire to avoid conflict with child or a family tight	86 (3%)	24 (3%)
Healthy option	455 (14%)	59 (8%)
Planned meal	397 (13%)	80 (11%)
Using food available in the home	468 (15%)	107 (15%)
Quick and easy to make	351 (11%)	109 (15%)
Other	315 (10%)	87 (12%)
How many children were present?		
Child participant	364 (12%)	124 (17%)
Two children	1,124 (36%)	267 (37%)
Three children or more	1,655 (53%)	322 (45%)
Who were these children?		
Child participant	361 (12%)	124 (17%)
Child participant + siblings(s)	2,336 (74%)	479 (67%)
Child participant + siblings(s)+ others	443 (14%)	110 (15%)
Note: Others include extended family members or non-family members		
How many adults were present?		
Parent participant only	1,490 (47%)	423 (59%)
Parent participant + another adult(s)	1,653 (53%)	290 (41%)
Who were these adults?		
Parent/primary caregiver only	1,483 (47%)	422 (59%)
Parent + other family member(s)	1,535 (49%)	256 (36%)
Parent + other family member + non-family member	119 (4%)	34 (5%)
Note: Others include second caregiver and grandparents		
Where did the meal take place?		
Around the table	2.217 (71%)	430 (60%)

EMA Question Asked:	Food Secure Families (3,143 meals)	Food Insecure Families (713 meals)
On couch/chair in living area	405 (13%)	161 (23%)
Scattered throughout house or standing-up	227 (7%)	66 (9%)
Outside house (e.g. in the car, at a restaurant, other)	293 (9%)	56 (8%)
Note: Other includes at a park, school's picnic table/event, neighbor's home, relative's home, friend's home.		
What was happening during the meal or snack?		
Conversation only	1,653 (53%)	297 (42%)
Screentime activities only	500 (16%)	209 (29%)
Screentime + conversation	567 (18%)	137 (19%)
Conversation + other	73 (2%)	10 (1%)
No conversation + other	350 (11%)	60 (8%)
Note: Screentime activities include listening to headphones; playing videogames; watching TV and/or TV in background; using cell phone, computer, or tablet.		
What was the atmosphere like?		
Relaxed	864 (27%)	247 (35%)
Enjoyable	1,424 (45%)	303 (43%)
Neutral	579 (18%)	97 (14%)
Rushed	156 (5%)	19 (3%)
Chaotic	65 (2%)	34 (5%)
Tense	55 (2%)	13 (2%)
What foods were served?		
Whole Grains	1,124 (36%)	243 (34%)
Refined Grains	977 (31%)	207 (29%)
Dairy	1,404 (45%)	317 (44%)
Fruit and Vegetables	1,971 (63%)	369 (52%)
Meat, Beans, and Nuts	1,503 (48%)	353 (50%)
Added Sugar (e.g., sugary drinks, cake, candy)	644 (20%)	196 (27%)
Did you have to encourage [child] to eat more at this meal?		
No	2,719 (87%)	573 (80%)
Yes	424 (13%)	140 (20%)
Did you have to make sure [child] didn't eat too much food at this meal?		
No	2,758 (88%)	607 (85%)
Yes	385 (12%)	106 (15%)
Did [child] refuse any of the food you offered him/her?		
No	2,872 (91%)	632 (89%)
Yes	271 (9%)	81 (11%)

Table 5.

Family Meal Characteristics and Parent Feeding Practices Correlates of Food Insecurity Status

EMA Question Asked: ***Who prepared the meal?***	**Difference in Predicted Probability by Food Insecurity (95% CI)**	**Overall P Value**
Parent (ref)	--	
A cook outside home (e.g. fast food, restaurant, another adult)	−0.05 (−0.12, 0.01)	**0.033**
Child participant + parent/partner	−0.09 (−0.15, −0.02)	
How was the meal prepared?		
Only homemade (ref)	--	
Only pre-prepared	0.05 (−0.02, 0.12)	**0 009**
Only fast-food	0.07 (−0.01, 0.14)	
Combination of homemade, pre-pared, fast-food	−0.07 (−0.15, 0.01)	
What influenced the person's decision to serve the food at the meal?		
Child / family likes (ref)	--	
Child asked for a specific food or meal	−0.03 (−0.12, 0.05)	
Desire to avoid conflict with child or a family fight	0.07 (−0.14, 0.27)	
Healthy option	−0.06 (−0.17, 0.05)	0.701
Planned meal	−0.04 (−0.12, 0.03)	
Using food available in the home	−0.02 (−0.09, 0.06)	
Quick and easy to make	−0.01 (−0.1, 0.08)	
Other	−0.02 (−0.1, 0.06)	
How many children were present?		
Child participant (ref)	--	
Two children	−0.11 (−0.23, 0.01)	**0.030**
Three children or more	−0.15 (−0.28, −0.02)	
Who were these children?		
Child participant (ref)	--	
Child participant + siblings(s)	−0.14 (−0.26, −0.02)	**0.029**
Child participant + siblings(s)+ others	−0.14 (−0.26, −0.01)	
Note for others: extended family members or non-family members		
How many adults were present?		
Parent participant (ref)	--	
Parent participant + another adult(s)	−0.08 (−0.15, −0.01)	**0.021**
Who were these adults?		
Parent/primary caregiver (ref)	--	
Parent + other family member(s)	−0.09 (−0.16, −0.02)	**0.011**
Parent + other family member + non-family member	0.05 (−0.08, 0.17)	

EMA Question Asked: ***Who prepared the meal?***	**Difference in Predicted Probability by Food Insecurity (95% CI)**	**Overall P Value**
Note for other family members: second caregiver or grandparent		
Where did the meal take place?		
Around the table (ref)	--	**0.037**
On couch/chair in living area	0.1 (0.03, 0.18)	
Scattered throughout house or standing-up	0.01 (−0.08, 0.1)	
Outside house (e.g. in the car, at a restaurant, other)	0 (−0.06, 0.06)	
Note for other: at a park, school's picnic table/event, neighbor's home, relative's home, or friend's home.		
What was happening during the meal or snack?		
Conversation only (ref)	--	0.161
Screentime activities only	0.08 (−0.02, 0.18)	
Screentime + conversation	−0.03 (−0.11, 0.05)	
Conversation + other	−0.09 (−0.24, 0.05)	
No conversation + other	0 (−0.1, 0.1)	
Note for screentime activities: Listening to headphones; playing videogames; watching TV and/or TV in background; using cell phone, computer, or tablet.		
Note for other: Reading/looking at a book or none of the above		
What was the atmosphere like?		
Relaxed (ref)	--	**0.005**
Enjoyable	−0.05 (−0.12, 0.02)	
Neutral	−0.09 (−0.18, 0.01)	
Rushed	−0.11 (−0.21, −0.02)	
Chaotic	0.12 (−0.06, 0.31)	
Tense	−0.03 (−0.15, 0.09)	
What foods were served?		
Whole Grains	−0.03 (−0.08, 0.03)	0.328
Refined Grains	−0.07 (−0.13, −0.02)	**0.008**
Dairy	−0.01 (−0.06, 0.04)	0.691
Fruit and Vegetables	−0.07 (−0.12, −0.01)	**0.032**
Meat, Beans, and Nuts	−0.04 (−0.09, 0)	0.073
Added Sugar (e.g., sugary drinks, cake, candy)	0 (−0.04, 0.05)	0.865
Did you have to encourage [child] to eat more at this meal?		
No (ref)	--	0.666
Yes	0.03 (−0.1, 0.15)	
Did you have to make sure [child] didnt' eat too much food at this meal?		
No (ref)	--	0.587
Yes	−0.04 (−0.16, 0.09)	
Did [child] refuse any of the food you offered him/her?		
No (ref)	--	0.768
Yes	−0.01 (−0.11, 0.08)	

[a] Statistical testing accounts for repeated measures using generalized estimating equations at $P<0.05$, and models control for the following covariates: child race/ethnic background, age, and gender; parent age and gender; household income and average number of daily EMA mealtime surveys completed.

[b] Interpretation example: *Although not individually statistically significantly different, a joint significance test indicates that the composition of homemade, pre-prepared, fast food, and partly-homemade meal occasions differed among food secure and food insecure households (p=0.009). The pattern of coefficients suggests that meals that only included pre-prepared foods (Probability Differences: 0.05; 95% CI: −0.02, 0.12) or fast food (Probability Differences: 0.07; 95% CI: −0.01, 0.14), compared with only homemade, were positively correlated with food insecure households, while meals that contained partly-homemade foods (Probability Differences: −0.07; 95% CI: −0.15, 0.01) were negatively correlated with food insecure households. The magnitudes of association indicate that, relative to homemade meal occasions, pre-prepared meal occasions were more common in food insecure households by 5 percentage points, fast food meal occasions were more common in food insecure households by 7 percentage points, and partly homemade meal occasions were less common in food insecure households by 7 percentage points, compared to food secure households.*

Table 6:

Additional Quotes About Family Meal Characteristics from the *Family Matters* study Stratified by Food Security Status

Theme and Sub-themes	Additional Quotes
Parent feeing practices	
Rules about trying foods atfamily meals	[Their dad] would like them to eat everything on their plate. But I just ask people to try things and eat, like I'll say, "Well, you have to eat a certain amount of bites of it." Then I'm okay with it. That's kind of my biggest thing. (Female, 42 y.o., FI) You have to try it before you leave it. And if you don't eat everything you can't get your dessert or nothing. (Female, 29 y.o., FS)
Rules about finish foods at family meals	They have to try everything I do. I'm really good at portioning them out, like I kind of know how much they eat, so I try not to put more on their plate than they're going to eat. (Female, 41 y.o., FI) If they don't eat enough, I would have them eat more. But if they eat too much, I wouldn't have a concern. (Female, 24 y.o., FS)
Responding to picky eating	Whatever I cook, they eat. Sometimes if they say, "No, I don't want it, I just need a sandwich," then I made a sandwich. (Female, 37 y.o., FI) If they don't like what I'm cooking that night, and they don't want to eat that, that's fine, they usually have the alternative to make a sandwich or noodles or something. (Female, 34 y.o., FS)
Making sure children eat at family meal	Is very important because I worry about them not to be hungry, so when I prepare it, is good to eat when it's ready, instead of letting it sit and cold and make sure that they eat. (Female, 27 y.o., FI) I just want everybody to, you know, sit with me and want to see how they re eating, you know? If they're cheating on their food, or they're not eating their food, you know, if they really enjoying what they're eating, so I can see what they like and what they don't like, you know. (Female, 32 y.o., FS)
Making sure children don't eat too much atfamily meals	If they're eating too much, I'll just say, "No more." But I don't think we have that problem. We do have that problem sometimes with sugar, like sweets or doughnuts, and I'll be like, "No more. You've had your day." (Female, 33 y.o., FI) And little Miss Thing over there, she can be a piggy some days, so she'll go through a lot of food. And you know, me and her don't always sit down and eat together, but usually if I'll eat, she'll eat. Sometimes I got to watch that because sometimes she eats a little bit too much. (Female, 42 y.o., FS)

Theme and Sub-themes	Additional Quotes
Food served at family meals	
More than half of family meals are takeout or pre- packaged	Well, sometimes mine are like, already made, you just got to pop them in the oven. (Female, 32 y.o., FI) Yeah, I think it's more like quick-fix food, or you know, already prepped, and you just kind of you know. Some days it's food that are just microwaveable. Really quick-fix food. (Female, 30 y.o., FS)
Challenges to having family meals	
A shortage of money or food is a challenge to family meals	Just sometimes lack of money, you know. Um, we always can't eat what we want. We don't really have a lot of choices sometimes, you know. So, like I said, I'm just starting work, you know. I have a lot of mouths to feed because I have extra people in my house now, so there's pretty much just financial situations, but that'd be the reason why, you know, we'll have problems when we have to eat not what we wanted to. (Female, 30 y.o., FI) Yeah, cost is right now, it's really struggling in my family, because my husband got cut hour and got cut raise and we don't have really much income coming, but will not qualify for welfare too, so I try to tell my kids that we're kind of poor right now. So we got rice, we have to have rice with meat, and we have to watch our portion, we cannot waste any food. So we're kind of like watching our budget right now, what is cheaper that we can afford. So the kids understand that sometime they cannot have restaurant all the time, or what they have all the time, something expensive. So I want, at least I try to have them like have vegetable and meat sometime, grain, you know. (Female, 32 y.o., FS)
Families change purchasing habits in response to family meal challenges	I feel like I work around it, or else I'll just substitute something, like the red bell pepper, I'll get the green one because it's a few cents cheaper. I mean, it's not that big of a difference, but I feel that it really adds up. (Female, 24 yo., FI) Yeah, food shelves. I get my food stamps so that helps a lot. Sometimes friends, if we're really down and out, I'll ask a friend to you know buy us some groceries. Oh, we have a store down the block that, a little store, I've known the owner for a lot of years... he'll let us get credit. So that really helps too when we need milk and stuff and bread. And I always come back with my food stamps or when I get paid from work, so that really, really helps a lot. (Female, 42 y.o., FS)
Families eat quickly in response to family meal challenges	If I'm late from work, if I come late from work, and I don't have time to cook, I'm tired. I just order pizza. Or we go to Burger King driveway and get some food. (Female, 37 y.o., FI) [If we were too busy for a family meal], we would probably go grab something to eat so it would be faster.

Theme and Sub-themes	Additional Quotes
	We'd probably eat it wherever is faster. If it was in the car, we'd probably eat in the car. (Female, 29 y.o., FS)
Adults role in the family meal	I do all of that because my kids are really little and my husband is usually at home. If I need help with something, I'll ask but for the most part I'm capable. (Female, 28 y.o., FI) Yes, the children leave their plates on the table after meals.... Usually I do everything. (Female, 35 y.o., FI)