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## Style of meal service and feeding practices among Mexican American fathers and mothers: An analysis of video-recorded children's evening mealtime at home

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### Abstract

The aim of this study was to examine video-recorded observations of evening family mealtime at home among Mexican American children to help elucidate style of meal service, fathers' and mothers' feeding practices and child's eating behavior. Consistent with guidelines for coding behaviors, we analyzed observational data of evening mealtimes of 71 Mexican American children aged eight to 10 years. Regarding style of meal service, in almost all cases (96%), parents plated the child's food, with more available on the table or counter in 40% of the observations. Mothers almost always served the child (94%). Regarding parental feeding practices, parents used positive involvement in meals (80%), pressure to eat (42%) and restriction of food (9%). Using food as

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Authors' contributions

CP, LP and JT were responsible for the study design including questionnaire development and conceptualization of the manuscript. CP was responsible for study implementation, supervised the video recordings and drafted the manuscript. All authors contributed to the analyses, CP and JT provided guidance on the analyses and wrote much of the analysis section. All authors contributed to the writing and interpretation of the results and approved the final manuscript.

Ethics approval and consent to participate

This study was approved by the University of California and Kaiser Permanente Northern California Research Foundation institutional review boards. Trained research assistants obtained parents' written informed consent to participate in the research.

Declaration of competing interest

The authors declare that they have no competing interests.

a reward to control behavior was never used by either parent. The majority (75%) of children requested or negotiated to eat less food, or only eat certain items. In Mexican American families, both mothers and fathers play a role in family mealtimes and both use positive involvement in child's meals, and to a lesser extent pressure to eat, with their children aged eight to 10 years. To help reduce the obesity epidemic, intervention strategies are needed, which integrate the family, a plating style of meal and parental feeding practices that promote healthy eating in the home. To reduce obesity among Mexican American children, interventions that focus on parental positive involvement in child's meal and maintenance of home cooked meals could have a positive impact on the entire family.

## Keywords

Childhood obesity; Mexican American; Fathers; Video recordings; Observational data

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## 1. Introduction

Alarming, rates of overweight and obesity among Mexican American adults and children continue to increase and, without more promising interventions, are projected to near 100% prevalence by 2030 (Skinner, Ravanbakht, Skelton, Perrin, & Armstrong, 2018; Wang et al., 2020). Like their parents (Fryar, Carroll, & Afful, 2021), Mexican American children experience higher rates of obesity when compared to non-Latino groups. For example, in 2015–2018, 28% of Mexican American children ages 6–11 years were classified as obese, as defined by a body mass index (BMI) greater than or equal to the 95th percentile, compared to 23% of non-Latino Black, 16% non-Latino white and 9% of non-Latino Asian children of similar ages (Fryar, Carroll, Gu, Afful, & Ogden, 2021; Ogden et al., 2020). In the short term, obese children are at higher risk for health problems such as hypertension, type 2 diabetes, sleep disordered breathing and asthma, fatty liver disease, and abnormalities in menstruation and early menarche (2021CDC; Lobstein, Baur, & Uauy, 2004).

The development of obesity in children is due to multiple factors, including genetic, environmental and behavioral risk factors (2021CDC; Karnik & Kanekar, 2012). For example, structural and environmental factors such as the cost of food, junk food advertising, the abundance of fast food, lack of places to exercise and traffic or crime-related safety appear to influence obesity-related health disparities, especially among disadvantaged populations (Lovasi, Hutson, Guerra, & Neckerman, 2009; Mazarello Paes et al., 2015). Regarding behavioral factors, extensive research has focused on parental feeding practices (PFP) (Cardel et al., 2012; de Lauzon-Guillain et al., 2012; Eichler et al., 2019; Russell et al., 2018; Vereecken, Rovner, & Maes, 2010). PFP reflect the context in which families are embedded (Davison & Birch, 2001; Mena, Gorman, Dickin, Greene, & Tovar, 2015) and involve choices about the types of food children are offered; and when, how frequently and how much children are fed (Birch & Ventura, 2009; Fisher & Birch, 1999; Loth et al., 2013a, 2013b). Moreover, parental feeding practices are associated with Mexican American children's weight status (Penilla et al., 2017; Tschann et al., 2013, 2015). PFP are the focus of this study because they are modifiable behavioral risk factors for childhood obesity,

particularly when compared to other consistently associated parental risk factors such as genetic or environmental factors (Holland et al., 2014; Savage, Fisher, & Birch, 2007).

### 1.1. Parental feeding practices

Recent research on overweight and obesity in children suggests that prevention programs should focus on providing guidance on parental feeding practices (PFP) that foster patterns of preference and food selection in children that are more consistent with healthy diets and promote children's ability to self-regulate (Birch & Ventura, 2009; Farrow, Haycraft, & Blissett, 2015; Larsen et al., 2015; Russell & Russell, 2019; Zhou, Liew, Yeh, & Perez, 2020). This study focuses on four parental feeding practices: 1) pressure to eat, which consists of pressuring the child to eat everything on his/her plate and pressuring the child to eat more even if not hungry; 2) restriction of amount of food, which consists of limiting the amount of the child's food and not allowing the child to control snacking; 3) use of food to control behavior, which consists of offering sweets in exchange for good behavior and offering the child food when they are bored or sad even if the child is not hungry; and 4) positive involvement in child's meals, which consists of monitoring and limiting the child's unhealthy food, and encouraging the child to eat new and healthy food. In general, PFP that are high in control (i.e., pressure to eat, restriction of food and use of food to control behavior) may impede children's ability to self-regulate their food intake by shifting their focus to external cues and away from their own hunger and satiety (Birch & Ventura, 2009; Jansen et al., 2014). In the long run, these controlling PFP may increase children's risk for obesity.

In contrast, positive involvement in child's meals, a type of PFP, is thought to reflect an authoritative style of parenting (Darling & Steinberg, 1993; Rollins, Savage, Fisher, & Birch, 2015) and involves both parental demandingness and responsiveness to children's needs (Hughes et al., 2013; Shloim, Edelson, Martin, & Hetherington, 2015). Authoritative parents monitor and impart clear standards for their children, are assertive but not intrusive and restrictive, and want their children to be assertive, responsible, self-regulated as well as cooperative (Baumrind, 1991; Darling, 1999). Regarding children's meals, parental monitoring of high-calorie food, encouraging and complimenting healthy eating and encouraging children to taste a variety of new foods may allow children to develop self-regulation of energy intake in response to their own internal cues of hunger and satiety. Depending on the individual child's needs, parents' positive involvement in their child's meal may include providing small servings of new foods on the child's plate (Tschann et al., 2013). Such behavior is thought to be protective against overweight and obesity (Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2010; Musher-Eizenman & Holub, 2007). For example, a study in Mexican American families found that mothers' positive involvement in child's meals, such as providing small servings of new foods on children's plates, was cross-sectionally associated with children having a lower weight status (Tschann et al., 2013), but findings were no longer seen in two-year longitudinal analyses (Tschann et al., 2015).

## 1.2. Style of meal service

Parents control children's home food environment, but it is not known if there is an optimal way of offering food to children to help them maintain a healthy weight (Conlon et al., 2019; Larson, Neumark-Sztainer, Hannan, & Story, 2007). Children's nutritional programs and supplemental food programs, such as The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and agencies such as the Food and Nutrition Service of the US Department of Agriculture, the American Academy Pediatrics and The Academy of Nutrition and Dietetics recommend the use of family-style meal service (Kleinman & Greer, 2019; USDA, FNS. *Maximizing the Message: Helping Moms and Kids Make Healthier Food Choices*, 2013). Parents are encouraged to trust children to eat what and as much as they want from what parents provide and to avoid pressure and restriction, whether direct or indirect, positive or negative (E. Satter, 2007; E. M. Satter, 2014).

For many families, family-style meal service is just one option when feeding their children. Loth, Horning, Friend, Neumark-Sztainer, and Fulkerson (2017) examined evening family mealtimes during a 7-day period among a population of mostly non-Latino white children (89%) aged eight to 12 years. Most parents (36%) reported that they used plated meal service for family meals, followed closely by family-style (29%) (Loth et al., 2017). Family-style of meal service was defined as parents provide nutritional food options and allow child to take what they want and decide how much to eat. Plated meal service was defined as all foods are put on child's plate. Other families in their study used some combination of plating and family-style (24%) or alternated during the week between plating and family-style (11%) (Loth et al., 2017).

In one study, mothers of Mexican descent reported that food preparation behaviors were learned from maternal family members (Smith, Dunton, Pinard, & Yaroch, 2016). Other salient factors influencing food preparation behaviors included preparing important cultural and familial foods, such as beans, rice, sopa, pasta, and macaroni and cheese (Smith et al., 2016). Fathers were not examined so it is unclear whether or not fathers engaged in food preparation. Typically, males in Mexican origin families are expected to be the household providers, while women are typically the gatekeepers (Abarca, 2006; Saracho & Spodek, 2008) and are expected to be the caretakers for the entire family (Diaz & Bui, 2017).

Accordingly, we theorized that cultural practices around meals in Mexican origin families may include mothers primarily plating and serving food during an evening family mealtime.

## 1.3. Style of meal service and parental feeding practices

When examining whether style of meal service was associated with parental pressure to eat and restriction of food, Loth et al. (2017), reported that parental food restriction was significantly higher among families that plated meals when compared to families using family-style meal service. No significant associations were observed between style of meal service and parental pressure to eat. Findings suggest that use of family-style meal service may be a way for parents to engage more in authoritative and responsive feeding, such as positive involvement in child's meal, and associated with healthful dietary and weight outcomes in white children. Yet, there is a dearth of research examining style of meal service and PFP in Mexican American families.

#### 1.4. Why include Mexican American fathers?

With the majority (66%) of Latino/a children between the ages of 0 and 17 living in two-parent households (Children who live in two-parent families, *by Race Ethnicity / KIDS COUNT Data Center*, n.d.), Mexican American fathers contribute to food-related decisions and practices (Penilla et al., 2017; Zhang, Hurtado, Flores, Alba-Meraz, & Reicks, 2018). Accordingly, it is important to understand fathers' roles in helping to prevent child obesity. Zhang et al. (2018) conducted focus groups with 26 Mexican American fathers on food-related parenting practices for their children and reported that fathers were involved in the home food environment by helping with meal planning, grocery shopping and preparing food. Regarding PFP, fathers discussed using pressure to eat, restriction of food, using food as a reward and positive involvement in child's meals. For example, 11 fathers stated that they pressured their children to do what they expected, such as pressuring their child to finish eating and not waste food, and pressuring their child to follow rules about the appropriate portions of fruits and vegetables. Regarding restriction of food, most fathers emphasized limit setting and controlling portions and frequency of consumption foods, such as sugary drinks. Regarding offering food as a reward, five fathers reported that they offered incentives, such as pizza and screen time to persuade their children to eat certain foods (Zhang et al., 2018). When discussing positive involvement in their children's meals, 15 fathers reported that they encouraged their children to eat in a healthy way, such as by talking about the benefits of good nutrition and health properties of food. Additionally, nine fathers reported that they monitored the type and quantity of both healthful and less healthful foods consumed by their children. Research on positive father involvement in child rearing indicates that monitoring, firm control and warmth are related to important developmental outcomes in children (Cruz et al., 2011; Pleck, 2010), but there is a dearth of information on the role of Mexican American fathers in child rearing, particularly parental feeding practices. Learning about both parents' style of meal service and positive involvement in their child's meals would help inform existing targeted health recommendations about how best to promote healthy eating and prevent obesity in children and families.

#### 1.5. The current study: observational research

With the goal of informing future family-level research aimed at preventing obesity among Mexican American children, the current study used an observational research approach to explore style of meal service, PFP and child's eating behaviors at evening family mealtime at home. A major strength of observational research is to shed new light on the understanding of the development of eating behaviors among children living in two-parent families, by using observed family interactions to produce insights that might otherwise not emerge in individual interviews or surveys (Pesch & Lumeng, 2017). Most studies of eating, feeding and mealtime behavior in Mexican American families have used self-report methods (Bergmeier, Skouteris, & Hetherington, 2015) with only a few exceptions (Hays, Power, & Olvera, 2001; Olvera-Ezzell, Power, & Cousins, 1990). For example, Olvera-Ezzell et al. (1990) examined the strategies used by obese Mexican American mothers and found that mothers' education was positively related to the number of healthy foods served, use of reasoning prohibitions concerning unhealthy foods, inquiries about what foods the child eats when away from home and preparation of foods that the child likes. They also found that serving and helping children with their food was associated

with food consumption compliance, and threats and bribes were negatively associated with healthful food consumption. Hays et al. (2001) examined the relationship between maternal socialization strategies and children's nutrition knowledge and behavior among 79 low-income, immigrant Mexican American mothers and their children aged four to eight years. Findings suggest that children whose mother used fewer commands and more verbal terms of affection, praise and reasoning were more likely to use illness prevention explanations when they responded to questions about the acceptability of a variety of foods (Hays et al., 2001). Children whose mothers provided them with opportunities to have input into their own eating decisions were more likely to exhibit an understanding of food components and of how these components influence their health. Children of mothers who used reasoning were more likely to give explanations regarding physical appearance and weight. Unlike surveys, interviews, and focus groups, where respondents report on or describe their behaviors, video recordings of group interactions provide another window into understanding cultural norms and behaviors that family members might not be explicitly aware of or not asked about (Bergmeier et al., 2015; Carter & Little, 2007). Conducting this study in the home allowed us to capture interactions between mother, father and child in a naturalistic environment. Another benefit of observational research is that it helps prevent the power dynamics between interviewer and interviewee that can emerge in one-to-one interviews, and encourages a flow of communication and interactions among the members in the group (Tolley, Ulin, Mack, Succop, & Robinson, 2016). For example, by allowing parents and children to talk among themselves about the child's meal, it may enable freer dynamics or conversations to emerge and give space for parents and children to agree and disagree with each other, thus potentially deepening their discussion.

The purpose of this study was to examine evening family mealtimes to provide a better understanding of style of meal service, PFP and child eating behaviors in Mexican American families. To address the gap in the literature on Mexican American parents' involvement in their child's meal (Davison & Birch, 2001; Tschann et al., 2015), fathers were included in this study in addition to mothers. Findings from this study have the potential to improve our understanding of the roles that both parents play in children's meals eaten within the home.

## 2. Methods

### 2.1. Study design

The current study used observational data of children's video-recorded evening family mealtimes from a larger study about PFP and child weight status in Mexican American families (Tschann et al., 2013). Families were eligible if the mother was of Mexican descent (born in the US or Mexico), the child was eight to 10 years of age and the child had no major illnesses that might influence their weight. Whenever available, spouses/partners who were the co-parenting figure in the children's lives were invited to participate. Members of Kaiser Permanente Northern California, an integrated healthcare delivery organization, were recruited to participate in this study. Research assistants (RA)s obtained written informed consent in the language of participants' choice (Spanish or English) that included an option to have their child's evening mealtime at home video recorded for a study about family mealtime routines. Families were reimbursed up to \$130 per participating member. Those



agreeing to participate in the mealtime study signed an additional written informed consent form to be recorded. At-home video recordings lasted approximately 45 min. This study was approved by the University of California and Kaiser Permanente Northern California Research Foundation institutional review boards.

## 2.2. Participants and procedures

A total of 322 families participated in the larger study and fathers in 174 families participated. Of these 174 participant families with mother, child and father enrolled, 41% (n = 71) agreed to have their child's evening mealtime at home recorded. In preparation for the home visit, a RA explained the video recording protocol to parents over the phone. Based on previous research in family meals, only one recording was required for each child (Rhee et al., 2015; Stark et al., 2000), but two evening mealtime dates were scheduled within the same week just in case of problems with the first date. Parents were informed that a RA would call 24 hours before the first selected date. It was emphasized that no special preparation was needed, that the food served should be typical and that whoever would normally be present at the evening meal that day could be present. Family members attending the evening meal, but not wishing to be recorded, were allowed to sit with their backs to the camera.

A trained RA video recorded the mealtime using a Sony HDR-CX12 digital video camera recorder, which was set up on a tripod facing the table and across from the subject child. Given the available space, cameras were placed approximately six feet away from the table. The RA began recording meals when family members began to gather around the table. The RA left the room once the meal began. Recording ended when families decided they were finished with the meal. Overall, video and audio quality were good. To help ensure the validity of each recording, at the conclusion of the meal parents were asked to complete a brief questionnaire about the meal, including: 'Was the food for tonight's meal typical of the food you usually serve?' and 'Was your child's behavior typical of the way he or she usually behaves?'. All parents (100%) in this study reported that the food served and the child's behavior during the evening mealtime were typical.

## 2.3. Generating observational data

Consistent with guidelines for developing behavioral coding and analyzing observational data, we used a multi-stage analytic process that combined deductive, inductive and verification techniques to strengthen the reliability of the behavioral coding scheme and validity of the findings (Carter & Little, 2007; Miles, Huberman, & Saldaña, 2014; Pesch & Lumeng, 2017). Only parents' and subject child's behaviors were coded (i.e., not siblings or other diners) and coding began when all family members were at the table. In the initial stages of the coding process, the three lead authors C.P., J.T. and L.P. viewed videos to assess mealtime environment (e.g., how is the food served to the child and who eats with the child), PFP (e.g., parent asks child if they like the food) and child eating behaviors (e.g., child asks for more food). During these initial stages, the lead authors decided how best to capture the information (e.g., categorically or as a count). The lead authors took notes to describe specific behavior in a detailed manner, defining specific parameters of feeding practices, as well as the type and amount of food. This level of specificity improved the



likelihood that the codes would be applied in a reliable manner (Pesch & Lumeng, 2017). Next, to refine the behavioral coding scheme, two RAs separately applied the coding scheme to each family member in 10% of randomly selected videos. Coders first scored the subject child, next the mothers and finally the fathers. The lead authors and the two RAs met after every four family meals were coded to compare notes and discuss disagreement or points of confusion, which led to modifications of the coding scheme. With regard to the deductive process, although using food as a reward to control behavior was not observed during the behavioral coding scheme development, three codes were added to assess this previously studied PFP. Style of meal service was coded using three categories: family-style (all food is on the table or counter and in serving dishes for each person to take what they want), plated (plated by adult) and combination serving style (plated by adult, with more made available on the table or counter for each person to take what they want). This iterative process led to a behavioral coding scheme with 11 codes for mealtime environment, two codes for parental pressure to eat, one code for parental restriction of food, three codes for parental use of food as a reward and eight codes for parental positive involvement in child's meal. There were six codes for child eating behaviors.

Once the coding scheme was finalized (Fig. 1), two RAs each coded half (50%) of the video recordings of evening mealtimes. To test for interrater agreement, 20% of videos were randomly selected and double-coded. Codes with less than an 80% agreement between raters were dropped from subsequent analyses (Pesch & Lumeng, 2017). Because there was low rater agreement (i.e., below 80%) for all codes assessing the frequency of parental feeding practices and child eating behaviors, all frequency codes were converted to binary (yes/no) codes. This strategy resulted in improved interrater agreement allowing us to retain eight PFP and four child eating behaviors.

The eight mealtime environment observations were: 1) style of meal service, 2) TV on, 3) music on, 4) who serves the child, 5) who is present during the evening mealtime, 6) who eats with the child 7) language spoken during the meal and 8) child ate fast food.

We retained eight behavioral codes for PFP: 1) directly commands child to eat (i.e., pressure to eat), 2) directly commands child to take or have less food (i.e., restriction of food). Positive involvement in child's meals was reflected by the remaining six PFP codes: 3) asks child if they like the food, 4) positive talk about the meal, 5) gives child permission to not eat, 6) offers/asks child if they want food or if they want more food, 7) asks child if they are done eating or full and 8) encourages child to eat.

Four child eating behavioral codes were retained: 1) positive talk about the food, 2) negative talk about the food, 3) agrees to take more food (can be non-verbal) and 4) requests or negotiates to eat less food.

Demographic characteristics were obtained as part of the larger study. Children's demographic variables included age in months and sex. Parents' and children's height and weight were measured in duplicate by trained research assistants while the participant was wearing light indoor clothing and no shoes (Lohman, Roche, & Martorell, 1988). Body mass index (BMI) was calculated [ $BMI = \text{weight (kg)}/\text{height(m)}^2$ ] for each participant.

Child BMI was converted to age and gender-specific BMI z-score using NCHS growth charts (Kuczmarski et al., 2000). Children were then classified as normal weight, overweight or obese (Kuczmarski et al., 2000; Tschann et al., 2015). Parents' demographics characteristics included age, weight status (BMI), years of education, occupational status, and Spanish and English-language acculturation. Acculturation was assessed using the Spanish and English Language Use subscales of the Bidimensional Acculturation Scale for Hispanics (BAS) (Marín & Gamba, 1996). Items are scored from *never* (=1) to *always* (=5) and had good reliabilities ( $\alpha = 0.88$ , mothers; 0.94, fathers). Higher scores on the two language acculturation scales reflected greater use of those languages. Occupational status ranged from unskilled worker (=1) to major professional (=9) (Hollingshead, 1975).

## 2.4. Analysis

Descriptive statistics were used to examine demographic characteristics and the mealtime environment, as well as PFP, style of meal service and child eating behaviors. Participant quotes were used to describe the eight parental feeding practices. Socioeconomic status (SES) is often found to be inversely associated with child obesity (Costa-Font & Gil, 2013; Davies, Fitzgerald, & Silk, 2018). Pearson's correlations were conducted to assess whether parents' level of education, an indicator of SES, was associated with PFP and child eating behaviors.

## 3. Results

### 3.1. Demographic characteristics

Sixty-two percent of mothers and 68% fathers were born in Mexico (Table 1). The majority of fathers were biological fathers (90%). Most parents were overweight (BMI  $\geq 25$  and  $< 30$ ; 43% of mothers, 42% of fathers) or obese (BMI  $\geq 30$ ; 34% of mothers, 44% of fathers). Most parents were employed (77% of mothers, 90% of fathers). On average, parents' occupational status was skilled worker (mothers:  $M = 4.0$ ,  $SD = 2.2$ ; fathers:  $M = 4.0$ ,  $SD = 1.9$ ). Parents had similar acculturation scores in Spanish (mothers:  $M = 4.0$ ,  $SD = 1.3$ ; fathers:  $M = 3.9$ ,  $SD = 1.2$ ) and in English (mothers:  $M = 3.1$ ,  $SD = 1.4$ ; fathers:  $M = 3.0$ ,  $SD = 1.1$ ). Participating children were 51% male, had an average age of 8.7 years ( $SD = 0.8$ ) and 95% had been born in the U.S. Thirteen percent of the children were overweight and 31% were obese.

Regarding education, only four of 24 correlations conducted were significant. Among mothers, more education was associated with more pressure to eat ( $r = 0.33$ ;  $p < .01$ ). Among fathers, more education was associated with more positive talk about the meal ( $r = 0.26$ ;  $p < .04$ ) and more asking the child if they were done eating or if they were full ( $r = 0.27$ ;  $p < .04$ ). Regarding child eating behaviors, more education among mothers was associated with more child requests or negotiations to eat less food, or only eat certain items ( $r = 0.25$ ;  $p < .04$ ). No associations were found between fathers' level of education and child eating behaviors.

### 3.2. Style of meal service

In the 71 families that were observed, 68 parents plated the child's food, with more available on the table or counter in 29 of the observations (combination of plating and family-style) (Table 2). Family-style of meal service was used by only 3 families. Sixty-three mothers served the child their meal and 65 ate with the child. Fathers rarely served the child their meal and 68 of the 71 fathers ate with the child. Fifty families had siblings and nine families had other family members or friends present during the child's meal and ate with the child. The TV was on at 15 and the music was on at 7 of the mealtimes. Family conversations were all or mostly in Spanish in 48 families.

## 4. Fathers' and mothers' feeding practices

1. Pressure to eat. Of the three PFP, 30 mothers and 18 fathers used pressure to eat (Table 3).  
(Mother) "Eat your green beans. Don't drop them on the floor." (Father) "Just eat your food, guys."
2. Restriction of food. Six mothers and five fathers used restriction of food.  
(Mother) "No (more garlic bread). You haven't touched your plate." (Father) "I think you've had enough [juice] ... loading up on juice ... fills your stomach."
3. Positive involvement in child's meals. In the 71 families, 57 mothers and 47 fathers used positive involvement in child's meals.  
Asks child if they like the food.  
(Mother) "Do you like the sauce? ... It's fresh tomato."  
(Father) "Who likes the rice?"  
Positive talk about the meal.  
(Mother) "Nothing is better than cold water."  
(Father) "The chicken is good, especially when mixed with the lentils."  
Gives child permission not to eat.  
(Mother) "Eat it [apple pie], but not until later, if you have room for it."  
(Father) "If you don't want it, put it to the side."  
Offers/Asks child if they want food or if they want more food.  
(Mother) "Do you want a tortilla? You went from 3 to not any."  
(Father) "Lemonade, anybody?"  
Asks child if they are done eating or full.  
(Mother) "Are you done? You have one green bean on your plate." (Father) "Have you had enough [cake]?"  
Encourages child to eat.

(Mother) “Do you want lemon on your salad? Chicken?”

(Father) “How about you eat more salad?”

#### 4.1. Child eating behaviors

Of the four child eating behaviors analyzed in the 71 families, 21 children used positive talk about the food (e.g., “I ate the spaghetti because it is my favorite.”); 11 children used negative talk about the food (e.g., “I don’t like it.”); 32 children agreed to take more food (e.g., Head nod, in response to parent offering more); and 53 children requested or negotiated to eat less food, or only eat certain items (e.g., “It’s a lot.”) (Table 4).

#### 4.2. Differences between mothers and fathers

For the analysis of PFP we highlight differences of 10% or more between mothers and fathers (Table 3). A higher percent of mothers vs. fathers used pressure to eat, for example, 42% of mothers vs. 25% of fathers directly commanded their child to eat. Overall, a higher percent of mothers (80%) vs. fathers (66%) used positive involvement in the child’s meal. For example, more mothers than fathers asked the child if they were done eating or if they were full (e.g., “Are you done?”) (31% vs. 15%), and offered or asked their child if they wanted food or more food (e.g., “There is also soup, do you want soup?”) (62% vs. 48%).

### 5. Discussion

In this observational study, we examined Mexican American families’ styles of meal service, parental feeding practices (PFP) and child’s eating behavior during an evening family mealtime at home. One finding from this study is that half of Mexican American families exclusively plated food and half used a combination of plating plus family-style meal service. As expected, Mexican American mothers served the meals, but fathers were also involved in the meals. Another finding is that both mothers and fathers often showed positive involvement in their child’s meals, and children often requested or negotiated to eat less food. Finally, and contrary to the existing literature, Mexican American mothers and fathers never used food as a reward to control behavior as a type parental feeding practice. This is the first study to analyze video-based observational data of evening family mealtimes at home of Mexican American children aged eight to 10 years, which included fathers and mothers. Fathers are involved and actively participate in children’s meals. Findings from this study extend the literature through identification of specific ways that Mexican American mothers and fathers contribute to their child’s meal.

#### 5.1. Observed style of meal service

This is the first study to find that Mexican American parents plate their child’s meal during evening family mealtime. Family-style meal service is a core component of child feeding guidelines provided to families, pediatricians, nutritionists and dietician (Kleinman & Greer, 2019; *USDA, FNS. Maximizing the Message: Helping Moms and Kids Make Healthier Food Choices*, 2013), but contrary to these recommendations, the family-style of serving food was rarely used. In this study, mothers plated meals and almost never allowed children to plate their own meal. The majority of parents in this study were born in Mexico, so

plating children's meals might stem from cultural norms such as expressing love through food and gender and parenting roles in their home country or region (Abarca, 2006; Smith et al., 2016). Traditional Mexican meals are also often served hot and directly from the stove, so it is safer for the parents to serve. Parents may plate children's meals to control portions when they have a perception that their children need to eat a specific amount for healthy growth and development (Pasch et al., 2016). Another possibility is that children often eat with other family members so plating meals may allow for better parental control of portions. In families with limited amounts of food to serve, plating guarantees that everyone will get a fair share. Regarding type of food served, parents never served fast food. Parents were mostly born in Mexico which may be one reason why they were more likely to cook their evening meal rather than purchase (Martinez, Rhee, Blanco, & Boutelle, 2014).

## 5.2. Observed parental feeding practices

Findings from this observational study indicate that most Mexican American mothers and fathers engage in positive involvement in the child's meal, more often than applying pressure to eat, and that parents hardly ever use restriction of food. Furthermore, although using food as a reward to control behavior has been reported in previous studies using self-report methods (Tschann et al., 2013), it was never observed in the current investigation. These results contribute to the literature on parental feeding practices, which have primarily been assessed by self-report questionnaires. With the use of observational research methods and techniques we were able to improve our understanding of the role that both parents play in child feeding.

When comparing parents' feeding practices, mothers more often than fathers pressured their child to eat and engaged in positive involvement in child's meal. When comparing parents on the six categories of positive involvement in child's meal, mothers more often than fathers asked their children if they wanted more food, as well as whether they were done or full. In contrast, fathers, more often than mothers, had positive conversations with their children about the family meal. Together, parents are monitoring the type and quantity of food children eat, as well as encouraging and complimenting eating. These findings are encouraging, in that mothers and fathers are using positive involvement in their children's meals.

## 5.3. Observed child eating behaviors

Children most often negotiated with their parents to eat less food. It is not clear from our findings if children negotiated to eat less food due to fullness or negotiated to eat less due to a dislike of the food. Relatedly, and higher than the national rate (Ogden et al., 2020), half of the children in this study were experiencing overweight or obesity. These results suggest that children are being served and potentially consuming more than they may desire. This study used BMI, a commonly used method for assessing adiposity, only to describe the study population and to provide a context of the obesity crisis (Cole, Faith, Pietrobelli, & Heo, 2005; Fryar, Carroll, Gu, et al., 2021; Kolotourou et al., 2013). Future research should examine the potential relationship between children's requests to eat less food and their weight status.

## 5.4. Strengths and limitations

**5.4.1. Strengths**—A strength of this study is that it provides insights about an understudied population, Mexican American mothers and fathers, on practices that promote or inhibit children’s healthful eating. This is particularly important as most studies that have explored these factors have been conducted primarily in non-Latino white parents (Davison et al., 2016; Fielding-Singh, 2017). Additionally, most research focused on Mexican American families is based on data primarily in mothers. Given the increased recognition of the role that fathers play in parenting and in the health and well-being of families, this study addresses the important goal of including Latino fathers in research. Information from fathers can be useful when developing programs aimed at preventing obesity in children.

**5.4.2. Limitations**—While this study makes important contributions to our understanding of Mexican American style of meal service, parental feeding practices and child’s eating behavior, there are limitations to note. First, member checking did not occur, a process in which researchers’ interpretations of the data are presented to the participants (Birt, Scott, Cavers, Campbell, & Walter, 2016). To improve the validity and reliability of synthesized observational data, future studies should consider providing opportunities to participants to see selected film footage and related quotes to ascertain whether they resonate with their own experiences. Second, families could have been performing for the RA who was recording the meal and could have changed their mealtime behavior due to the presence of a camera. Nonetheless, this risk is outweighed by the potential for a new understanding of style of meal service, parents’ feeding practices and children’s eating behavior. Because study participants belonged to an integrated healthcare delivery organization, they represented a wide spectrum of socioeconomic circumstance. Finally, only the mealtimes of opposite-sex parents were analyzed. Future research should be conducted with single fathers and same-sex parents to broaden policy recommendations.

## 5.5. Implications and conclusions

**5.5.1. Implications for research**—Family meals included other family members, suggesting that integrating additional family, such as siblings and grandparents, into obesity prevention research could help elucidate new ways of supporting behavioral changes in children’s eating behaviors. Intervention research including siblings could make a potential impact on entire family eating behaviors, children and parents. Furthermore, families seldom had the TV or music on and never ate fast food, suggesting that the home environment provides an optimal foundation for children’s mealtimes. Parents had the purchasing power to buy fast food, but instead maintained their traditional norms to cook at home. Interventions should harness this cultural aspect to maintain this as the norm, particularly among immigrant parents.

Most parents used plated style of meal service. To improve meeting dietary recommendations among Mexican American families, future research should explore fathers’ and mothers’ preferences for style of meal service, why they use them and if they differ based on the child’s age. Parental knowledge of appropriate portion sizes for healthy child development should also be explored in this context. During the meal, both

parents often showed positive involvement in their child's meal and children often requested or negotiated to eat less food. To help further elucidate the role that mothers, fathers and children play in children's meals, future research should examine the relationship between child's portion size, parental positive involvement in child's meal and child eating behaviors, such as negotiating to eat less food due to fullness. Further, our qualitative results regarding observed mealtime behaviors can be used to enhance the quantitative PFP questionnaires that are typically used to examine parents' feeding practices. Future research could use these results to examine both mothers' and fathers' feeding practices, child behavior during mealtimes and their weight status.

**5.5.2. Implications for clinical practice**—Practitioners who provide dietary recommendations to Mexican American families regarding limiting calorically dense food and sugarsweetened beverages in the home should also encourage parents' positive involvement in child's meals, especially in promoting children to eat fruits and vegetables. Practitioners who work with parents who are immigrants should strategize or recommend maintenance of healthy home cooking. Importantly, providers should first acknowledge that plating style of meal service occurs in many Mexican American families, but also discuss recommended portion sizes that match the child's age for parents who prefer to plate children's meals. If both parents are frequently and consistently positively involved in their child's meal, such behavior could subsequently help children eat healthily and maintain a healthy weight. When working with Mexican American children of varying socioeconomic backgrounds, clinicians should not assume that all families engage in the same behaviors or hold the same values, but instead they should collaborate with parents about the best way to integrate recommended behaviors into their family routines.

## 6. Conclusions

In Mexican American families, both mothers and fathers play a role in evening family mealtimes and both use positive involvement in child's meals, and to a lesser extent pressure to eat, with their children aged eight to 10 years. To help reduce the obesity epidemic, intervention strategies are needed, which integrate the family, a plating style of meal service and parental feeding practices that promote healthy eating in the home. To reduce obesity among Mexican American families, interventions that focus on parental positive involvement in child's meal and maintenance of home cooked meals could have a positive impact on the entire family.

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## Availability of data and material

Data sharing is applicable to this article as datasets were generated or analyzed during the current study.

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|  |  |        |            |            |            |
|--|--|--------|------------|------------|------------|
| <b>Start time (child's first bite or drink)</b> _____ <b>End time (child's last swallow)</b> _____ |  |        |            |            |            |
| <b>HOME ENVIRONMENT</b>  |  |        |            |            |            |
| 1. Is TV on?   | No/Yes   |        |            |            |            |
| 2. Is music on?  | No/Yes   |        |            |            |            |
| 3. Who serves child?   | Mother, father, child, other   |        |            |            |            |
| 4. How is food served?   | Plated, family-style, combination  |        |            |            |            |
| 5. Who is present?   | Mother, father, sibling, grandparent, friend, other  |        |            |            |            |
| 6. Who eats?   | Mother, father, sibling, grandparent, friend, other  |        |            |            |            |
| 7. Amount of talking   | Child, mother, father  |        |            |            |            |
| 8. Atmosphere during meal  | Warm to Aloof  |        |            |            |            |
| 9. Language spoken   | Spanish, English, mixture of both  |        |            |            |            |
| 10. Video sound quality  | Good, some issues, poor  |        |            |            |            |
| 11. Child ate fast food  | None, some of meal, all of meal  |        |            |            |            |
| <b>PARENTAL FEEDING PRACTICES</b>  |  |        |            |            |            |
|  | <table style="margin: auto; border: none;"> <tr> <td style="padding: 0 10px;">Mother</td> <td style="padding: 0 10px;">Father</td> </tr> <tr> <td style="padding: 0 10px;">Tick Marks</td> <td style="padding: 0 10px;">Tick Marks</td> </tr> </table> | Mother | Father     | Tick Marks | Tick Marks |
| Mother   | Father   |        |            |            |            |
| Tick Marks   | Tick Marks   |        |            |            |            |
| 1. Directly command to eat   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 2. Gives more without communication  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 3. Directly command to eat less  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 4. Offers rewards for eating/finishing   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 5. Offers dessert as reward  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 6. Offers food to reward good behavior   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 7. Asks child if they like the food  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 8. Positive talk about meal  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 9. Positive statement re child' eating   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 10. Gives permission not to eat  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 11. Statement of food availability   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 12. Offers/Asks child if want more   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 13. Ask child if done/full   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 14. Encourages child to eat  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| <b>CHILD EATING BEHAVIORS</b>  |  |        |            |            |            |
|  | <table style="margin: auto; border: none;"> <tr> <td style="padding: 0 10px;">Child</td> </tr> <tr> <td style="padding: 0 10px;">Tick Marks</td> </tr> </table>  | Child  | Tick Marks |            |            |
| Child  |  |        |            |            |            |
| Tick Marks   |  |        |            |            |            |
| 1. Positive talk about food  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 100%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 2. Negative talk about food  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 100%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 3. Requests for more   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 100%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 4. Take more without communication   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 100%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 5. Agrees to take more   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 100%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |
| 6. Requests to eat less  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 100%; height: 15px;"></td></tr></table>  |        |            |            |            |
|  |  |        |            |            |            |

**Fig. 1.** Behavioral codes for generating observational data about video-recorded evening mealtimes of 71 Mexican American mothers, fathers and children.

**Table 1**

Means, standard deviations or percentages for demographic characteristics of 71 Mexican American mothers, fathers and children.

| Demographic characteristics    | Mothers               | Fathers        |
|--------------------------------|-----------------------|----------------|
|                                | N = 71                | N = 71         |
|                                | Mean (SD) or %        | Mean (SD) or % |
| Born in Mexico                 | 62%                   | 68%            |
| Born in U.S.                   |                       |                |
| Mexican origin                 | 100%                  | 77%            |
| Other Latino origin            | –                     | 18%            |
| Other/mixed race origin        | –                     | 5%             |
| Biological parent              | 100%                  | 90%            |
| Age                            | 37.1 (6.0)            | 39.2 (7.1)     |
| Normal weight                  | 23%                   | 14%            |
| Overweight                     | 43%                   | 42%            |
| Obese                          | 34%                   | 44%            |
| Education years                | 12.0 (3.2)            | 11.8 (3.1)     |
| Spanish-language acculturation | 4.0 (1.3)             | 3.9 (1.2)      |
| English-language acculturation | 3.1 (1.4)             | 3.0 (1.1)      |
| Occupational status            | 4.0 (2.2)             | 4.0 (1.9)      |
| <b>Children</b>                | <b>Mean (SD) or %</b> |                |
| Age                            | 8.7 (0.8)             |                |
| Male                           | 51%                   |                |
| Normal weight                  | 56%                   |                |
| Overweight                     | 13%                   |                |
| Obese                          | 31%                   |                |



**Table 2**

Percentages for eight evening mealtime environment characteristics of 71 Mexican American children aged eight to 10 years.

| Mealtime Environment                       | Observation  | Total % |
|--|--|---------|
| Style of meal service                      | Family-style: all food in serving dishes and child takes what they want                  | 4       |
|  | Plated: plated by parent   | 55      |
|  | Combination of plating styles: plated by parent, with more available on table or counter | 41      |
| Is TV on                                   | No   | 79      |
| Is music on                                | No   | 90      |
| Who serves the child                       | Mother   | 89      |
|  | Father   | 11      |
| Who is present during the evening mealtime | Mother   | 100     |
|  | Father   | 100     |
|  | Sister/brother   | 70      |
|  | Other family member or friend  | 13      |
| Who eats with the child                    | Mother   | 92      |
|  | Father   | 96      |
|  | Sister/brother   | 100     |
|  | Other family member or friend  | 100     |
| Language spoken during the meal            | All or mostly Spanish  | 51      |
|  | Mixture of Spanish/English   | 17      |
|  | All or mostly English  | 32      |
| Child ate fast food                        | None   | 100     |

**Table 3**

Percentages for mothers and fathers who used eight parental feeding practices in an evening mealtime of 71 Mexican American children aged eight to 10 years.

| <b>PARENTAL FEEDING PRACTICES</b>                    | <b>Mothers %</b> | <b>Fathers %</b> |
|--|------------------|------------------|
| Pressure to Eat                                      |                  |                  |
| 1. Directly commands child to eat food               | 42               | 25               |
| Restriction of Food                                  |                  |                  |
| 2. Directly commands child to take or have less food | 9                | 7                |
| Positive Involvement in Child's Meal                 |                  |                  |
| 3. Asks child if they like the food                  | 16               | 10               |
| 4. Positive talk about the meal                      | 21               | 30               |
| 5. Gives child permission not to eat                 | 13               | 11               |
| 6. Offers/Asks child if they want food or more food  | 62               | 48               |
| 7. Asks child if they are done eating or full        | 31               | 15               |
| 8. Encourages child to eat                           | 16               | 13               |

**Table 4**

Percentages for child eating behaviors during an evening mealtime of 71 Mexican American children aged eight to 10 years.

| <b>CHILD EATING BEHAVIORS</b>                                  | <b>Children %</b> |
|--|-------------------|
| 1. Positive talk about the food                                | 30                |
| 2. Negative talk about the food                                | 16                |
| 3. Agrees to take more food                                    | 45                |
| 4. Requests or negotiates to eat less food, only certain items | 75                |

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