

Quality of Family Dinner Interactions and Child and Adolescent Well-Being

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Dedication

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Abstract

Despite evidence that predictors of family dinner quality, (e.g., atmosphere, priority and structure of shared family mealtimes) have been associated with a narrow range of child outcomes, no studies have broadly evaluated the relationship of many specific family dinner interactions across child outcomes. The current study extends existing research by testing whether a collection of 24 indicators of higher quality family dinner interactions (*quality indicators*) and a collection of 19 barriers to higher quality family dinner interactions (*quality barriers*) are associated with five child outcomes in a nationally representative sample of children. Data were obtained by The Family Room, a research firm studying children and families. Using quota sampling, a diverse nationally representative sample, consisting of 1000 children, ages 8-18, was recruited from a web-based panel.

Hierarchical linear regression analyses showed that the main hypotheses were largely supported. After controlling for sociodemographics (children's age and gender, parent's race/ethnicity and household income), as well as other contributing predictors (family dinner frequency and family closeness), both quality predictor variables were significantly associated with four of the five outcomes above and beyond sociodemographic controls. Quality indicators were associated with four outcomes, but only one, emotional and social well-being, held up after controls for family dinner frequency and family closeness; whereas, three outcomes continued to be uniquely predicted by quality barriers after all controls: emotional and social well-being, life skills and developmental assets, and frequency of nutritious food intake.

Exploratory analyses found that the strength of both quality predictor variables and outcomes were moderated by family dinner frequency for three outcome measures, with quality barriers more strongly predicting outcomes (emotional and social well-being, life skills, and level of physical activity) when children had family dinners more frequently. Age and income were significant moderators, but for only one outcome apiece.

Findings suggest that children and adolescents are particularly sensitive to quality barriers in well-being, life skills and nutritious food intake. Family dinner frequency acted as a moderating influence differently for quality indicators than for quality barriers with outcomes and deserves more attention in future research. Implications for family professionals and future research are discussed.

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Family rituals have been shown to benefit family members in many ways, serving protective functions that offset the impact of family risk factors, as well as contributing directly to developmental assets and the well-being of children and adolescents (Fiese, 2006; Fiese et al., 2002; Imber-Black, 2002). Some rituals—particularly family meals—involve interactions that are so fundamental to family functioning that they are experienced nearly universally by families across cultures and are, naturally, a central focus in the family ritual literature with contributions from disciplines including: epidemiology, nutrition, family medicine, developmental psychology, family psychology, family therapy, religion, business and communication studies.

In spite of the widespread research on family meals as rituals, studies have primarily focused on the *frequency* of family meals associated with a range of child and adolescent health outcomes, including: healthy eating patterns, nutrition and food choices, literacy and academic outcomes, socialization processes, family cohesion and a sense of belonging, social competence, patterns of communication, cognitive development and emotional well-being. Greater frequency of shared meals has consistently been related to the health and well-being of children and adolescents (Fiese et al., 2002; Fiese, Foley, & Spagnola, 2006; Hammons & Fiese, 2011). However, little attention has been given to the *quality* of the family meals and the impact across child and adolescent well-being outcomes. Studies that have included indicators of quality have been limited in scope, mostly focusing on specific populations and a narrow range of outcomes. Thus, there is a critical need to examine the impact of the quality of family

mealtime interactions on general measures of child and adolescent well-being and in representative samples.

Review of Relevant Literature

Family Ritual Outcomes

Family rituals have generally been conceptualized in the literature as repeated group activities that have an affective element and symbolic meanings (Fiese et al., 2002). After much theorizing about how family rituals organize families and integrate members as a group, a team of researchers in the 1980s were the first to operationalize, study and publish empirical results demonstrating that family rituals serve as a protective factor of individual development in high risk families (Bennett, Wolin, & Reiss, 1988; Bennett, Wolin, Reiss, & Teitelbaum, 1987). A central finding across these studies is the mitigating role that family rituals play in reducing the harmful effects of alcoholism in families. They found that when families with alcoholism managed to maintain their routines and rituals it lowered the likelihood that alcohol dependency would be transmitted to the next generation (Bennett et al., 1987; Bennett et al., 1988). Furthermore, when children found their family rituals meaningful, the effects of those rituals buffered children from the problems associated with having an alcoholic parent, such as having elevated levels of anxiety (Fiese, 1993).

The body of knowledge in this area has subsequently expanded to demonstrate that family routines and rituals serve to protect children from the harmful effects of divorce, parental depression and mental illness, and poverty (Fiese, 2006). For example, Guidubaldi, Cleminshaw, Perry, Nastasi, and Lightel (1986) found that, following a

divorce, children with consistent bedtime routines were better able to adapt in that they were more likely to perform well academically and miss fewer days in school.

Adolescents, too, benefit from predictable family routines when making adjusting to normative stressors of life cycle transitions. Henry and Lovelace (1995) found that adolescents living with a remarried parent reported greater satisfaction in their family life when there were consistent routines.

Consistency, then, is a hallmark of family rituals that may account for the degree of successful socialization of group members into behavioral and social norms. Keltner (1990) found that consistency in mealtime and bedtime rituals was associated with social competence in a sample of preschool African-American children (enrolled in Head Start).

Since family rituals are predictable patterns of interaction that carry shared symbolic meaning, it makes sense that researchers would examine the construct of congruence, or the degree of shared family consensus, in the study of family rituals. Fiese (1992) found that average health outcomes for adolescents were higher when there was congruence between those adolescents and their parents on how much they valued the practice of family rituals. Another study of married couples found that spouses were more satisfied in their marriage when they shared similar values about participating in religious holiday rituals (Fiese & Tomcho, 2001).

Family Meal Frequency Outcomes

As mentioned, there is overwhelming evidence for a positive association between the frequency of family meals and indicators of child and adolescent well-being.

Hammon and Fiese (2011) confirmed the extent of this association in their meta-analysis

of studies wherein the combined samples included over 180,000 children. They found that children who ate three or more family meals per week had 12% reduced odds of becoming overweight, 20% reduced odds of eating unhealthy food by 20%, and 24% increased odds of eating healthy foods.

Adolescents who frequently eat family meals are less likely to have problems associated with alcohol consumption, are less likely to smoke cigarettes or use marijuana. They have lower risks of developing depression or other mental health problems and more likely to have better grades (Compan, Moreno, Ruiz, & Pascual, 2002). Research conducted by the National Center on Addiction and Substance Abuse at Columbia University 2011 (CASA) has repeatedly confirmed that the more frequently adolescents have meals with their families the less likely they are to drink alcohol, smoke cigarettes and use illegal drugs. Similarly, Eisenberg, Olson, Neumark-Sztainer, Story, & Bearinger (2004) found that eating family meals together reduced the likelihood that adolescents would use drugs and alcohol, have low self-esteem, experience depression, or engage in suicidal thoughts or make suicide attempts. These effects were especially high for girls and were sustained even after family functioning and individual covariates were included.

An important limitation shared by the studies on family meals and child and adolescent well-being is that they are primarily cross-sectional and lack the kinds of controls that could establish causal mechanisms. They are therefore subject to issues of circular causality. For example, an alternative interpretation of the positive health and well-being results is that adolescents who are depressed or substance users are more

likely to feel estranged from their family and less likely to participate in frequent family meals. However, several studies have found positive effects after controlling for covariates such as family connectedness, socioeconomic status, and dimensions of the meal environment (e.g., meal priority, structure / rules, meal atmosphere) (Eisenberg et al., 2001, Fulkerson et al., 2006, White & Halliwell, 2012).

After cautioning about the problems of causality, Eisenberg et al. suggested several potential mechanisms that could account for the positive links between family meals and the reduction in risky behaviors, including increased family communication, time spent together, parents model coping skills and emotion regulation. In the same vein, Franko, Thompson, Affenito, Barton, & Striegel-Moore (2008) demonstrated in a 10 year longitudinal study of 2,379 females ages 9-19 that positive effects of more frequent family meals in the first three years of the study predicted greater family cohesion and coping skills in Year 7 and 8 which, in turn, mediated positive outcomes in reduced risk of smoking and reduced stress and disordered eating mediated by coping skills) in Year 10. They theorized that more frequent family meals transmit coping skills at a younger age through the experience of family members learning how to problem-solve together, including issues stemming from mundane conflicts. The result, they suggest, is that children and adolescents absorb positive attitudes towards physical and mental health and develop the coping skills that mediate the links between family meals and positive health outcomes.

Quality of Family Mealtime Interactions

A small but growing number of studies are widening the scope of research beyond the frequency of family meals to capture mechanisms underlying the context of mealtime dynamics. For example, recent studies examining mealtime communication patterns have shown that more positive, direct and clear communication is associated with improved management of chronic illness symptoms such as asthma (Jacobs & Fiese, 2007; Markson & Fiese, 2000), reduced risk of childhood obesity (Jacobs & Fiese, 2007; Moens, Braet, & Soetens, 2007), and overall child quality of life (Fiese, Winter & Botti, 2011). Some types of communication patterns (such as explanations and narratives) at the family dinner table have been shown to promote literacy outcomes in children (Snow & Beals, 2006). Studies that have utilized observational coding techniques have been instrumental in showing associations that positive and pleasant conversations are related to better mental (Dickstein et al., 1998) and physical (Speith et al., 2001) health in child outcomes. Conversely, family commentary and teasing about weight were predictive over time of lower self-esteem, lower body image, and higher depressive symptoms (Eisenberg, Neumark-Sztainer, Haines, & Wall, 2006). Neumark-Sztainer, Wall, Story and Fulkerson (2004) studied associations of family meal frequency and dynamics with disordered eating behaviors, finding that adolescent girls were less likely to engage in problematic weight control behaviors, binge eating, and chronic dieting when they participated in more frequent family meals, viewed family meals as important, reported enjoyable social interactions, and described a more structured dinner environment with clear expectations about eating behaviors and choices.

Other studies have examined activities in the home meal environment that negatively influence child health outcomes. Regularly viewing the television during family meals has been related to lower healthful dietary intake, such as fruits and vegetables, and higher snack food and pizza consumption (Coon, Goldberg, Rogers, & Tucker, 2001). Other mealtime dynamics related to poor health outcomes in children include playing computer games (Brunstrom & Mitchell, 2006) and being absent from the dinner table (Patton, Dolan, & Powers, 2008).

For the most part, however, studies that have examined family dinner interactions and environmental influences have been limited in samples (most not representative) and in scope. Most have used one or two items to measure quality of interactions, or have measured one or two environmental factors (Fulkerson, Strauss, Neumark-Sztainer, Story, & Boutelle, (2007), (Burnier, Dubois, & Girard, 2011; Fiese et al., 2006; Jacobs & Fiese, 2007; Moens et al., 2007). Kiser, Medoff, Black, Nurse and Fiese (2010) altered this trend by developing and testing a scale measuring the following dimensions of family meals: roles, deliberateness, atmosphere, relationships, and meaning within family meals. Anderson, Must, Curtin, & Bandini, (2012) conducted a validation study of this scale, and Czaja, Hartman, Rief, and Hilbert (2011) used it in a study of parent-child interactions and child eating behaviors.

In summary, prior research on family dinner quality and children's outcomes has been promising but most studies have been limited in scope. Specifically, no prior study has examined a wide range of both positive and negative dimensions of the quality

interactions of family dinners and investigated how these dimensions relate to child and adolescent well-being in a large, representative sample of children and adolescents.

Theoretical Framework

Family systems theory emphasizes how family interactions and meaning making shape the behavior and well-being of family members (Whitchurch & Constantine, 1993). Family meal interactions—the conversations, gestures, levels of attention and inattention around food—provide a symbolically powerful environment for shaping the emotional lives of children and adolescents. A growing body of research has demonstrated the power of family systems in promoting or undermining the health of family members. For example, qualitative research among rural families (Denham, 2002) has shown why markers of individual health such as blood pressure and weight gain may be better understood by examining the family context wherein members develop shared expectations by prescribing and following health routines. This is consistent with quantitative research wherein high rates of conflict and negativity predict compromised immune functions and altered physiological responsiveness (Kiecolt-Glaser, McGuire, Robler, & Glaser, 2002).

The predictability dimension of family meal rituals, which has been found important to health outcomes, can be explained by the family systems principle of adaptability, which represents a balance between stability and change (Olson, Russell, & Sprenkle, 1989). The regularity of high quality family meals contributes to healthy family functioning which, in turn, provides the kind of environment that fosters feelings of closeness in family members, and a child's ability to development in a healthy manner.

Human ecology theory offers another framework for understanding the effects of family dinner quality. It conceptualizes human development across multiple interrelated levels of systems and emphasizes family values interacting with environment contexts (Bubolz & Sontag, 1993). Individual development is contextual, with an evolving reciprocal interplay between individuals and their various contexts (Bronfenbrenner, 1979). In this view, systems are not only comprised of bidirectional influences, but the various levels of systems interact bidirectionally. For example, positive family dinner interactions will influence how parent and children develop, but may also be influenced by intrafamilial contextual factors like gender and age, and extrafamilial contextual factors such as socioeconomic status which may mediate the type of resources (material and emotional) that are available to family members. Three contextual factors were examined in this study for exploratory purposes: age, gender, and household income.

Research Hypotheses

In order to better understand the mechanisms of the quality of children and adolescent's experiences at family dinners, as well as how these dinner interactions are related to child and adolescent well-being, this study examined the indicators of higher quality family dinner experiences for children and adolescents, along with barriers to higher quality family dinner experiences. For this study, indicators of higher quality family dinner interactions were defined as social, environmental, and food characteristics which children and adolescents identified with feelings of closeness to their parents and barriers to higher quality family dinner dynamics were social, environmental, and food characteristics which children identified as detracting from their closeness to their

parents. Using a national sample of children ages 8-18, this study aimed to determine whether family dinner quality dynamics were associated with five aspects of child and adolescent well-being: social and emotional well-being, life skills and developmental assets, academic achievement, level of physical activity, and frequency of nutritious food intake. The central hypothesis of this study was that higher quality family dinner interactions would have a positive influence on child and adolescent outcomes, whereas barriers to higher quality family dinner interactions would have a negative influence on child and adolescent outcomes.

For this study, indicators of higher quality family dinner dynamics were examined separately from barriers to higher quality family dinner dynamics. The following two specific hypotheses were proposed:

Hypothesis 1: More indicators of higher quality family dinner interactions will be positively associated with child and adolescent well-being.

Hypothesis 2: More barriers to higher quality family dinner interactions will be negatively associated with child and adolescent well-being.

Exploratory Analyses

Because of limited prior research examining other predictive influences on the relationship between the family dinner quality dynamics and child and adolescent outcomes in the same study, this study conducted an exploratory investigation of potential moderators of the relationship between family dinner quality and outcomes. Family dinner frequency was examined to determine whether family dinner quality is moderated by family dinner frequency. In other words, does the quality of family dinner

interactions depend on the frequency of those family dinners? Because there is no prior published research on this issue, there was no hypothesis to be tested. Another area of exploratory investigation was conducted to determine whether gender, age, and household income moderate the relationship between family dinner quality and child outcomes. Since little research has been conducted with these variables, no hypotheses were tested.

Research Design and Method

Procedure

Data for this study come from an internet survey panel of 1000 children as part of the “SHARE THE TABLE™: The Barilla Family Dinner Project™.” This project was commissioned by Barilla, the Italian food manufacturer, with the goal of better understanding family practices and beliefs regarding family meals. The survey was administered by The Family Room, a research organization focused on children, adolescents and their families. The survey instrument was constructed by The Family Room with input from family scientist William J. Doherty and StrategyOne, an applied social science research firm.

The Family Room contracted with Decipher Inc., a data collection agency which specializes in recruiting respondents who agree to participate in a series of online research surveys over a period of one to two years in exchange for remuneration. Over a seven day span in August, 2010 and from this wider pool of participants, Decipher recruited a web-enabled probability sample. Quota sampling methods were employed to recruit a panel of participants designed to be representative of the U.S. population of

children in terms of geographic regions (based on four census regions) and racial / ethnic background of the parent who was screened prior to the child completing the survey (e.g., targeting 15% African American, 18% Hispanic). Quotas were also set for children's gender (50% male, 50% female), children's age (50% ages 8-12, 50% ages 13-18) and the screening parent's relationship status (75% from two-parent households, 25% from single parent households). Quota sampling was guided by 2008 U. S. Census figures.

Child participants were screened by having a parent answer several preliminary screening questions in order to ensure that children were eligible and that they met sampling quota parameters. After answering screening questions, parents were asked to allow their son or daughter to complete the rest of the survey confidentially, with instructions to only interact with their child if the child requested clarification about questions in the survey.

Participants

The sample consisted of 1000 children, ages 8-18 (see Table 1, Appendix E). The sample reflected parents' racial / ethnic diversity (although the quota goal for Hispanic was short by 2%): 63.8% were Caucasian, 16.1% were Hispanic or Latino, 15.0% were African American, 2.7% were Asian, 0.3% were Native American and 2.1% were of mixed or other race. Quota sampling resulted in the following representative characteristics: 750 children (75%) were from two-parent households (married or living with a domestic partner); 250 children (25%) were from single parent households (i.e., inclusion criteria included: “never married,” “separated,” “widowed,” or “divorced”); of the children from single parent households 200 reported living with their mother and 50

reported living with their father. Table 2 (Appendix E) indicates that child gender was balanced with approximately 50% males and 50% females within each of the child age groups, i.e., “tweens” (8-12 year olds) and “teens” (13-18 year olds).

Measures

Descriptive properties of items and scales are provided in Table 3 (Appendix E).

Predictor variables

Indicators of higher quality family dinner interactions was measured by asking, “Think of the last family dinner where you felt really close to your parent(s) and enjoyed being with each other. Which of these describe the things that happened at dinner that made you feel this way?” Children could choose from a list of twenty-nine indicators of higher quality family dinner interactions that were presented with an option to type in their own answer in a blank space. Response options included: we ate in the same room, we ate something we all like, everyone in the family was there, cell phones were not allowed, we all talked about our days, we laughed, we were not in a hurry, we all sat down until everyone finished, etc. (see Appendix A for the complete list). Scores on the individual items were summed for a total score which had a Cronbach’s alpha reliability of $\alpha = .840$.

Barriers to higher quality family dinner interactions was measured by asking, “Now think about the last time you had a family dinner when you DID NOT feel really close to your parent(s) or enjoy being with each other. Which of these describe the things that prevented you from feeling this way?” Children could choose any (or none) from a list of nineteen barriers to higher quality family dinner interactions that were presented

with an option to type in their own answer in a blank space. Response options included: we did not eat in the same room, we did not eat the same things, people got up and left before everyone was finished, child distracted by cell phone/blackberry, we didn't have a lot to talk about, we had an argument, etc. (see Appendix B for the complete list). Scores on the individual items were summed for a total score which had a Cronbach's alpha reliability of $\alpha = .716$.

Outcome variables

Emotional and social well-being. A multi-item scale, consisting of five items, was constructed to measure the emotional and social well-being of children. Four items came from a group of items in which children were asked to assess the degree to which children perceived themselves as having emotional and social attributes on eleven items (e.g., "sad," "confident," "respects others," etc.). Each item consisted of a pair of opposing descriptors (e.g., "not confident - confident") with a semantic differential checklist placed on a 7-point scale denoted by seven open check boxes and no accompanying rating terminology. Each endpoint contained one of the opposing descriptors above an open box. The proximity of responses to each endpoint represented the degree of to which they perceived themselves as agreement with that descriptor and the midpoint represented a neutral response, endorsing neither descriptor. Negative descriptors were listed on each left side endpoint and with positive descriptors listed on each right side endpoint; thus higher ratings represented more positive self-assessments of emotional well-being and vice versa. Four items were determined to have face validity to measure either a dimension of emotional or social well-being.

These four items were combined with a fifth item measuring a dimension of worry and stress. For that item children were asked, "How often does it seem like you feel worried, stressed, or have a lot on your mind?" with choices (a) Almost never / never, (b) Not very much, (c) Sometimes, (d) A lot of the time, (e) Almost all of the time. Items were reversed coded so that higher scores reflected less worry and stress, ranging from scores of 1 to 5.

The overall scale measuring emotional and social well-being was constructed by combining scores from the items just described (one item measuring worry and stress and the four opposite pair items). The scale had a Cronbach's alpha reliability of $\alpha = .752$. Ratings for the five items were summed for a total score, ranging from 5 to 33.

Level of physical activity. One item assessed level of physical activity on a 7-point scale (semantic differential checklist) in response to the following opposing pair of descriptors: "prefers relaxing over being active" to "prefers being active over relaxing."

Frequency of nutritious food intake. One item assessed frequency of nutritious food intake on a 7-point scale (semantic differential checklist) in response to the following opposing pair of descriptors: "eats junk food more often than nutritious food" to "eats nutritious food more often than junk foods."

Life skills and developmental assets was measured by asking: "A lot of different things that are important for kids as they grow up. Now we'd like to know whether you feel you have enough of these things in your life or not." Children could select from among two possible choices ("Have Enough Already" or "Wish I Had Even More") in response to the following life skills and developmental assets: (a) Positive Role Models,

(b) Empowerment, (c) Creativity / Finding Your Passion, (d) Safety / Security, (e) Empathy / Altruism, (f) Optimism, (g) Physical Health, and (h) Coping with Stress.

Scores on these eight items individual items were summed for a total score which had a Cronbach's alpha reliability of $\alpha = .76$. Items were summed for a total score, ranging from 0 to 8, with higher scores reflecting higher levels of the outcome. For the proposed study ratings will be summed for a total score.

Academic achievement was measured by asking children "What were your grades like this past year?" with choices (a) Mostly A's or 5's, (b) Mostly B's or 4's, (c) Mostly C's or 3's, (d) Mostly D's or 2's, (e) Mostly F's or 1's.

Control and other predictive variables.

Family dinner frequency. Each child was asked: "In an average week, how often do you do each of the following activities with your parent(s)?" Included in the list of activities was the item: eat dinner together (at home). There were eight response options ranging from "7 Days" to "never," which were reversed coded with a range of 0 to 7.

Family closeness. One item assessed children's perception of how close they felt to their parent(s) with the following question: "How would you describe your relationship with your parent(s)?" Would you say you were...?" Response options included: "Extremely Close," "Very Close," "Somewhat Close," "Not Very Close," and "Not At All Close."

Demographic characteristics. A parent of the child provided initial demographic information as part of the screening process. Variables used in this study included the gender and the age of the child, the racial or ethnic background of the parent answering

the screening questions, and household income which was measured by asking parents to select the income category that "best represents your annual household income before taxes" with responses ranging from "Less than \$15,000" to "\$200,000 and over" on a 10 point scale.

Data Analysis

For the main hypotheses, hierarchical multiple regression was conducted in three steps separately for each of the five child outcomes (emotional and social well-being, life skills and developmental assets, academics, physical activity level, and frequency of nutritious food intake) in order to examine the unique contribution of the predictor variables of interest. The independent variables were indicators of- and barriers to- higher quality family dinner interactions (hereafter referred to as *quality indicators* and *quality barriers*). Separate equations were computed for each of these independent variables. Using a sequential entry method, sociodemographic controls (gender, race / ethnicity, household income, age) were entered in the first step (Model 1). Model 2 added the independent variable. Step 3 added family closeness and family dinner frequency in order to determine if quality indicators and quality barriers were significant predictors of outcomes after controls for these two variables.

Results

Quality Indicators and Child Outcomes

Results are presented in Tables 5 – 9 (Appendix E).

Emotional and social well-being.

As shown in Table 5, model 2 significantly predicted 6.3% of the variance in emotional and social well-being ($F(7, 992) = 9.586, p < .001$), with a significant 4.4% increase in R^2 over the controls in model 1 (change in $F(1, 992) = 46.095, p < .001$). This indicated that quality indicators were associated with higher social and emotional well-being. In Model 3 quality indicators continued to show a significant and positive relationship with this outcome controlling for family closeness and family dinner frequency.

Life skills and developmental assets.

In Model 2, quality indicators were not significantly associated with life skills and developmental assets.

Academic achievement.

Model 2 significantly predicted 5.1% of the variance in academic achievement (grade point average) ($F(5, 994) = 10.59, p < .001$) and resulted in a significant 0.8% increase in R^2 over the controls (change in $F(1, 994) = 8.773, p < .01$). In model 3, quality indicators no longer significantly predicted academics ($p = 0.14$). Family closeness showed a significant relationship with the academics ($p < .001$), and accounted for much of the variance predicted in the model.

Level of physical activity.

Model 2 significantly predicted 1.9% of the variance in children's reported level of physical activity ($F(5, 994) = 3.777, p < .01$). The 0.9% increase in R^2 over the controls in Model 1 was significant (change in $F(1, 994) = 8.906, p < .01$). In model 3,

quality indicators were no longer significantly related, whereas family closeness showed a significant relationship with the level of physical activity ($p < .001$).

Frequency of nutritious food intake.

Model 2 significantly predicted 1.3% of the variance in children's report of the frequency of their nutritious food intake ($F(5, 994) = 2.641, p < .05$) and resulted in a significant 0.7% increase in R^2 over the controls (change in $F(1, 994) = 6.928, p < .01$). In model 3, quality indicators did not significantly predict variance in the frequency of nutritious food intake, but family closeness was significantly related to the outcome ($p < .001$).

Quality Barriers and Child Outcomes

Results are presented in Tables 10 - 14 (Appendix E).

Emotional and social well-being.

Table 10 shows that model 2 significantly predicted 5.0% of the variance in emotional and social well-being ($F(5, 994) = 10.448, p < .001$) and resulted in a significant 3.5% increase in R^2 over the controls (change in $F(1, 994) = 36.818, p < .001$). In Model 3 quality barriers continued to be significantly related, demonstrating a negative relationship with social and emotional well-being after controlling for family closeness and family dinner frequency.

Life skills and developmental assets.

Model 2 was found to significantly predict 5.6% of the variance in life skills and developmental assets ($F(5, 994) = 11.687, p < .001$) and resulted in a significant 5.2% increase in R^2 over the controls (change in $F(1, 994) = 54.263, p < .001$). In model 3

quality barriers continued to show a significant and negative relationship with life skills and developmental assets above and beyond the other significant control, family closeness.

Academic achievement.

In Model 2, quality barriers were not significantly related to academic achievement, accounting for only an additional 0.1% of variance beyond controls. Similarly in model 3, quality barriers were not significantly related to academic achievement.

Level of physical activity.

Model 2 significantly predicted 1.4% of the variance in children's reported level of physical activity ($F(5, 994) = 2.922, p < .05$). The 0.5% increase in R^2 over the controls in Model 1 was significant (change in $F(1, 994) = 4.673, p < .05$), with quality barriers demonstrating a negative relationship with the outcome. Quality barriers did not sustain a significant relationship in Model 3 where family closeness ($p < .001$) accounted for the majority of the variance explained in the model.

Frequency of nutritious food intake.

Model 2 significantly predicted 2.5% of the variance in children's report of their nutritious food frequency ($F(5, 994) = 5.073, p < .001$) and resulted in a significant 1.9% increase in R^2 over the controls (change in $F(1, 994) = 19.014, p < .001$). Quality barriers continued to demonstrate a significant and negative relationship with the frequency of nutritious food intake in Model 3, after controlling for family closeness and family dinner frequency.

Exploratory Moderator Analyses

Results for all exploratory analyses are presented in Tables 15 - 25 (Appendix E).

Moderator findings for quality indicators and family dinner frequency.

In order to test the exploratory third hypothesis that the relationship between family dinner frequency and child outcomes was moderated by the predictor variables of interest, quality indicators or quality barriers, hierarchical multiple regression was conducted in three steps separately for each of the five child outcomes. Separate equations were computed for each of the quality (indicators or barriers) independent variables. Using a sequential entry method, sociodemographic controls (gender, race / ethnicity, household income, age) were entered in the first step (Model 1). For Model 2 the quality predictor variable (indicators or barriers) was included with family dinner frequency in step 2. The interaction term (comprised of the quality variable X family dinner frequency) was added in step 3. Only step 3 findings are reported here.

For emotional and social well-being, the interaction of quality indicators and family dinner frequency was significant ($p = .034$). Quality indicators were more predictive of emotional and social well-being when children reported eating less frequent family dinners.

There were no significant interactions between family dinner frequency and quality indicators on the remaining outcomes of life skills and developmental assets, academic achievement, level of physical activity and frequency of nutritious food intake.

Moderator findings for quality barriers and family dinner frequency.

For emotional and social well-being, the interaction between family dinner frequency and quality barriers was significant ($p = .036$). Quality barriers were more predictive of emotional and social well-being when children had family dinners more frequently.

For life skills and developmental assets, the interaction of quality barriers and family dinner frequency was significant ($p = .028$). Quality barriers were more predictive of the outcome when children had family dinners more frequently.

For academic achievement, the interaction between family dinner frequency and quality barriers was not significantly related to the outcome.

For the level of physical activity, the interaction of quality barriers and family dinner frequency was significant ($p = .021$). Quality barriers were more predictive of the outcome when children had family dinners more frequently.

For frequency of nutritious food intake, interaction of quality barriers and family dinner frequency was not significantly related to the outcome.

Moderator findings for gender, age, and household income. Gender, age (recoded into two groups: children ages 8-12 and children ages 13-18), and household income were examined as potential moderators between dinner quality and the outcomes. Since low income families were a particular interest, household income was group by \$0-\$34,999 annually and \$35,000 and greater). In step 1, sociodemographic controls (omitting the control under examination as a moderator) were entered (Model 1). The quality predictor variable (indicators or barriers) was included with family dinner

frequency in step 2. The interaction term was included in step 3 to determine if the control showed a significant moderating influence on the relationship between the independent variable and outcomes. Analyses were conducted only when the results of the main analyses for Hypotheses 1 and 2 indicated that family dinner quality had an independent relationship with outcomes.

There were no significant interactions with gender.

There was one significant interaction involving age and quality indicators. Age interacted significantly with quality indicators ($p = .045$) with younger children showing a stronger relationship between quality indicators and emotional and social well-being than older children. There were no other significant interactions by age.

For household income, there was one significant interaction involving the outcome of emotional and social well-being. Income interacted significantly with quality indicators ($p < .001$), with children from households with lower annual income showing a weaker relationship between quality indicators and emotional and social well-being than children in higher income households. There were no other significant interactions by household income.

Discussion

Results of this study largely supported the main hypotheses. Family dinner quality predictors--which assessed positive and negative aspects of the family dinner experience--were found to be associated with a wide range of child outcomes. Although the present study cannot demonstrate a causal relationship between family dinner quality

and child outcomes, these findings do suggest that family dinner quality makes a distinctive contribution to the well-being of children.

The pattern of the findings suggest that the negative aspects of family dinners, operationalized here as quality barriers, may be particularly important. Although quality indicators, the positive measure of family dinner quality, was associated with four of the five child outcomes as a main effect, only one association, that with emotional and social well-being, held up after controls for family closeness and dinner frequency. But three outcomes were predicted by quality barriers after the controls, specifically, emotional and social well-being, life skills and developmental assets, and frequency of nutritious food intake. This suggests that children may have a special sensitivity to negative aspects of the family dinner experience, and that positive dinner experiences may be part of a general dimension of family closeness.

The exploratory analyses involving family dinner frequency yielded some interesting results. The positive link between family dinner quality and child outcomes was moderated by the frequency of family dinners for three of the five outcome measures. The strongest findings again were for quality barriers, which showed that the negative aspects of family meals appear to matter more when families have more frequent dinners. One explanation is that greater frequency of family dinners gives children more exposure to the negative aspects of the dinner experience when these barriers are present. However, this explanation is speculative, especially in light of the finding for positive quality indicators, which had a stronger relationship with social and emotional well-being when family dinners were less frequent. Perhaps positive quality

interactions are more important when families do not eat together very often. What can be concluded is that the relationship between frequency and quality of family dinners is an area that deserves more attention in future research.

The exploratory analyses, involving an examination of gender, age and household income as potential moderators resulted in few significant relationships across the five child outcomes. Only one interaction involving socioeconomic status was significant. It suggested the possibility that negative aspects of family dinner interactions are not as important for low income families. This is consistent with a study of mealtime arguments by Burnier et al. (2011) which found that while mealtime arguments were nearly equally represented across socioeconomic levels, parents in very low-income families had significantly fewer arguments than parents in with higher levels of income (i.e., greater than \$20,000).

Age was a significant moderator for one outcome and one quality variable, but otherwise showed no other significant interactions. The one significant moderator effect found that among younger children there was a stronger relationship between quality indicators and emotional and social well-being.

There were no significant interactions by gender which is mostly consistent with studies in the literature. Although most studies of family meal environment dynamics with representative samples of children (excluding clinical or problem-focused studies) have not found gender differences, White and Halliwell (2012) recently reported that females experienced greater benefits in reducing risk behaviors when they also reported more positive meal atmosphere and higher priority for meals.

This study further extends family ritual research past its primary focus on the effects of family dinner frequency. These findings are consistent with the limited prior research on meal quality and children's outcomes, and it advances this literature by including multiple outcome variables and having both positive and negative dimensions of meal quality, and by having a large, diverse sample as opposed to smaller, more homogeneous, and often problem-focused samples. With the exception of Fiese et al.'s (2011) family meal observational study of children ages 5 to 12, the present study is one of the first to include direct data from children as young as ages 8-10 and is the first to include the full spectrum of children and adolescents through age 18.

This study also contributes by being one of the few studies of family meal quality to control for both family dinner frequency and family closeness. White and Halliwell (2012) also examined the predictors of perceived priority, atmosphere and structure of mealtimes to assess their unique contribution beyond family meal frequency and family connectedness to predict alcohol consumption in 550 males and females ages 11-16. Their findings emphasizing the role of adolescents' positive perceptions of the mealtime atmosphere lends support for the findings of this study, especially because the two studies share controls for family closeness and family meal frequency.

The findings in this study associated with quality barriers interactions suggest that quality barriers could be a powerful predictor of dynamics in the family dinner environment. Quality barriers were significantly related to a variety of different child outcomes which demonstrate the strength of their influence on children's health. This supports and broadens the link Jacobs and Fiese (2007) reported between negative family

meal environment and poor outcomes. They found that poorly regulated mealtime routines and indirect patterns of communication were strongly associated parents' difficulty managing children's behavior and efforts to regulate their emotions. Members of these families also showed less genuine interest in each other's daily activities. This suggests that negative family interactions around dinner may be especially important factors in children's well-being.

The findings of this study are consistent with family systems theory, which emphasizes the importance of how families organize behavior and how they function with underlying boundaries (engaged / disengaged), adaptability (rigid / flexible), their degree of coordination of shared activities (cohesion), their power hierarchies and alliances, and how they reinforce values. Family dinner interactions can be viewed as template on which these family dynamics play out and influence the outcomes of children.

Findings on the contextual factors of age, gender and family income were not as strong as the main findings, but nevertheless suggest that further research using an ecological conceptual lens, using other types of measures, might be fruitful.

Limitations

Several limitations must be recognized when interpreting this study's findings. A major limitation is the cross-sectional and correlational design which makes it impossible to establish causal links between dinner quality and child outcomes. They may both be products of other family or environmental factors, although this study did control for a measure of family closeness. Another limitation is that all measures were completed by

the children, with no collateral reports from parents or other adults. Furthermore, since the children completed the survey at home, there is no way to know how much their responses were influenced by their parents, although efforts were made to reduce this risk. The sample, while representative of a number of demographic characteristics of U. S. children, was limited to families with home access to the Internet. Some of the measures were scales constructed for this study and—although they demonstrated adequate internal consistency—their validity has not been well-established. Finally, the item measuring race/ethnicity was a self-report response of the screening parent and does not directly measure children's racial/ethnic background.

Implications for Family Professionals

This study has several implications for therapists and educators who work with families. The most important implication is that families should be informed about the strong relationship between the quality of the family dinner environment on emotional and social well-being of children ages 8 to 18, as well as the link demonstrated by Dickstein and Martin (2002) between the influence of mealtime environment with emotional and social competence in early childhood (ages 0 to 3).

The second implication is that professionals should assess quality before promoting quantity of family meals. Previous studies showing positive benefits in child and adolescent outcomes associated with more frequent family dinners have generally recommended that clinicians work with families to increase the number of family meals together, but this study demonstrated that the presence of quality barriers at more

frequent family dinners could adversely influence child and adolescent emotional, social, and physical health, as well as developmental assets and life skills.

Third, this study has shown the value of assessing children and adolescents directly rather than rely solely on parents' assessment of their perspectives. Clinicians would obtain valuable insights into family dinner interactions if they include children and adolescents in their assessments.

Fourth, family professionals should pay particular attention to negative features of family dinners. Although the mean number of quality barriers in this study was low, children and adolescent were found to be especially sensitive to quality barriers. Since this study demonstrated that even a few quality barriers can significantly impact child outcomes, professionals should be particularly attentive to assess for these negative dinner interactions. Interventions to strategize with families to reduce quality barriers could be especially helpful in improving child outcomes. Clinicians should work with families to customize strategies aimed at reducing quality barriers to incorporate into each family's dinner rituals. Therapists could look for hints of how to intervene based on how families have responded to improve similar negative interaction patterns in other areas of family functioning.

Future Directions for Research

Now that correlational evidence is growing for the importance of family dinner quality for children's outcomes, longitudinal and intervention studies are needed to demonstrate whether these associations are causal, and if so, whether they can be enhanced by psychoeducational interventions. Future research can also isolate the most

influential aspects of dinner quality, examining specific interactions or environmental factors that make a difference.

The exploratory findings involving interactions of demographic variables may potentially open up new inquiries for future research. Future studies could more closely examine family dinner dynamics over the developmental transition to adolescence. Future studies could also continue to explore contextual factors that might be involved in the relationship between family dinner experiences and children's outcomes, including how family structure and race and ethnicity might play roles in this area.

Conclusion

Over the last two decades researchers have found strong evidence for the positive effects of more frequent family dinners on child outcomes. This study adds to newer body of research showing that family dinner quality has unique importance, beyond dinner frequency, to predict a broad range of child outcomes. Furthermore, this study offer evidence that both positive and negative aspects of family dinner quality are important to consider, along with the intriguing possibility that reducing negative features of family meals may be even more important than increasing positive ones.

References

- Anderson, S. E., Must, A., Curtin, C., & Bandini, L. G. (2012). Meals in our household: Reliability and initial validation of a questionnaire to assess child mealtime behaviors and family mealtime environments. *Journal of the Academy of Nutrition and Dietetics*, *112*(2), 276-284.
- Bennett, L. A., Wolin, S. J., & Reiss, D. (1988). Deliberate family process: A strategy for protecting families of alcoholics. *British Journal of Addiction*, *83*, 821-829.
- Bennett, L. A., Wolin, S. J., Reiss, D., & Teitelbaum, M. A. (1987). Couples at risk for transmission of alcoholism: Protective influences. *Family Process*, *26*, 111-129.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments in nature and design*. Cambridge, MA: Harvard University Press.
- Brunstrom, J. M., & Mitchell, G. M. (2006). Effects of distraction on the development of satiety. *British Journal of Nutrition*, *96*, 761-769.
- Bubolz, M. M. & Sontag, M. S. (1993). *Human ecology theory*. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R., Schumm, S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 419-448). New York, NY: Plenum Press.
- Burnier, D., Dubois L., & Girard, M., (2011). Arguments at mealtime and child energy intake. *Journal of Nutrition Education and Behavior*, *43*, 473-481.
- CASA (National Center on Addiction and Substance Abuse at Columbia University). (2011). The importance of family meals VII. Retrieved May 25, 2012, from <http://www.casacolumbia.org/upload/2011/2011922familydinnerVII.pdf>.

- Compan, J., Moren, M. T., Ruiz, M. T., & Pascual, R. E., (2002). Doing things together: Adolescent health and family rituals. *Journal of Epidemiological Community Health, 56*(2), 89-94.
- Coon, K. A., Goldberg, J., Rogers, B. L., & Tucker, K. L. (2001). Relationships between use of television during meals and children's food consumption patterns. *Pediatrics, 107*, e7.
- Czaja, J., Hartmann, A. S., Rief, W., & Hilbert, A. (2011). Mealtime family interactions in home environments of children with loss of control eating. *Appetite, 56*, 587-593.
- Denham, S. A. (2002). Family routines: A structural perspective for viewing family health. *Advances in Nursing Science, 24*(4), 60-74.
- Dickstein, S. & Martin, S. E. (2002). What's for dinner? Family functioning, maternal depression, and early childhood outcomes. *Zero to Three, 22*, 21-28.
- Dickstein, S., Seifer, R., Hayden, L. C., Schiller, M., Sameroff, A. J., Keitner, G. I., (1998). Levels of family assessment II. Impact of maternal psychopathology on family functioning. *Journal of Family Psychology, 12*, 23-40.
- Eisenberg, M. E., Neumark-Sztainer, D., Haines, J., & Wall, M. (2006). Weight-teasing and emotional well-being in adolescents: Longitudinal findings from Project EAT. *Journal of Adolescent Health, 38*, 675-683.
- Eisenberg, M. E., Olson, R. E., Neumark-Sztainer, D., Story, M., & Bearinger, L. H. (2004). Correlations between family meals and psychosocial well-being among adolescents. *Archives of Pediatric and Adolescent Medicine, 158*, 792-796.

- Fiese, B. H. (1992). Dimensions of family rituals across two generations: Relation to adolescent identity. *Family Process, 31*, 151–162.
- Fiese, B. H. (1993). Family rituals in alcoholic and nonalcoholic households: Relations to adolescent health symptomatology and problem drinking. *Family Relations, 42*, 187-192.
- Fiese, B. H. (2006). *Family routines and rituals*. New Haven, CT: Yale University Press.
- Fiese, B. H. (2007). Routines and rituals: Opportunities for participation in family health. *Occupation, Participation, and Health, 27*, 415-495.
- Fiese, B. H., Foley, K. P., & Spagnola, M. (2006). Routine and ritual elements in family mealtimes: Contexts for child wellbeing and family identity. *New Directions for Child and Adolescent Development, 111*, 67-90.
- Fiese, B. H. & Tomcho, T. J. (2001). Finding meaning in religious practices: The relation between religious holiday rituals and marital satisfaction. *Journal of Family Psychology, 15*(4), 597-609.
- Fiese, B. H., Tomcho, T., Douglas, M., Josephs, K., Poltrock, S., & Baker, T. (2002). Fifty years of research on naturally occurring rituals: Cause for celebration? *Journal of Family Psychology, 16*, 381-390.
- Fiese, B. H., Winter, M. A., & Botti, J. C. (2011). The ABC's of family mealtimes: Observational lessons for promoting healthy outcomes for children with persistent asthma. *Child Development, 82*, 133-145.

Franko, D. L., Thompson, D., Affenito, S. G., Barton, B. A., & Striegel-Moore, R. H.

(2008). What mediates the relationship between family meals and adolescent health issues? *Health Psychology, 27*(Suppl. 2), S109–S117.

Fulkerson, J. A., Story, M., Mellin A., Leffert, N., Neumark-Sztainer, D., & French, S. A.

(2006). Family dinner meal frequency and adolescent development: Relationships with developmental assets and high-risk behaviors. *Journal of Adolescent Health, 39*, 337–345.

Fulkerson, J. A., Strauss, J., Neumark-Sztainer, D., Story, M., Boutelle, K. (2007).

Correlates of psychosocial well-being among overweight adolescents: The role of the family. *Journal of Consulting and Clinical Psychology, 75*(1), 181-186.

doi: [10.1037/0022-006X.75.1.181](https://doi.org/10.1037/0022-006X.75.1.181)

Guidubaldi, J., Cleminshaw, H. K., Perry, J. D., Nastasi, B. K., & Lightel, J. (1986). The

role of selected family environment factors in children's post-divorce adjustment. *Family Relations, 35*, 141–151.

Hammons, A. & Fiese, B. H. (2007). Family mealtime interactions and overweight

children with asthma: Potential for compounded risks? *Journal of Pediatric Psychology, 32*, 64-68.

Henry, C. S., & Lovelace, S. G. (1995). Family resources and adolescent family life

satisfaction in remarried family households. *Journal of Family Issues, 16*, 765–786.

- Imber-Black, E. (2002). Family rituals—from research to the consulting room and back again: Comment on the special section. *Journal of Family Psychology, 16*, 445–446.
- Jacobs, M. P., & Fiese, B. H. (2007). Family mealtime interactions and overweight children with asthma: Potential for compounded risks? *Journal of Pediatric Psychology, 32*, 64-68.
- Keltner, B. (1990). Family characteristics of preschool social competence among Black children in a Head Start program. *Child Psychiatry and Human Development, 21*(2), 95- 108.
- Kiecolt-Glaser, J. K., McGuire, L., Robles, T. F., & Glaser, R. (2002). Psychoneuroimmunology: Psychological influences on immune function and health. *Journal of Consulting and Clinical Psychology, 70*, 537-547.
- Kiser, L. J., Medoff, D., Black, M. M., Nurse, W., & Fiese, B. H. (2010). Family mealtime Q-Sort: A measure of mealtime practices. *Journal of Family Psychology, 24*(1), 92-96.
- Markson, S., & Fiese, B. H. (2000). Family rituals as a protective factor for children with asthma. *Journal of Pediatric Psychology, 25*, 471–479.
- Moens E, Braet, C., & Soetens, B. (2007). Observation of family functioning at mealtime: A comparison between families of children with and without overweight. *Journal of Pediatric Psychology, 32*(1):52-63.

- Neumark-Sztainer, D., Wall, M., Story, M., & Fulkerson, J. A. (2004). Are family meal patterns associated with disordered eating behaviors among adolescents? *Journal of Adolescent Health, 35*, 350–359.
- Olson, D.H., Russell, C.S. & Sprenkle, D.H. (1989). *Circumplex Model: Systemic assessment and treatment of families*. New York: Haworth Press.
- Patton, S. R., Dolan, L. M., & Powers, S. W. (2008). Differences in family mealtime interactions between young children with Type 1 diabetes and controls: Implications for behavioral intervention. *Journal of Pediatric Psychology, 33*, 885–893.
- Snow, C. E., & Beals, D. E. (2006). Mealtime talk that supports literacy development. In R. W. Larson, A. R. Wiley, & K. R. Branscomb (Eds.), *Family mealtime as a context of development and socialization*. (No. 111 of series “New Directions for Child and Adolescent Development,” pp. 51–66). San Francisco: Jossey-Bass.
- Speith, L. E., Stark, L. J., Mitchell, M. J., Schiller, M., Cohen, L. L., & Mulvihill, M. (2001). Observational assessment of family functioning at mealtime in preschool children with cystic fibrosis. *Journal of Family Psychology, 26*, 215–224.
- Whitchurch G.G. & Constantine L.L. (1993). *Systems theory*. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R., Schumm, S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 325-352). New York, NY: Plenum Press.

White & Halliwell (2012). Alcohol and tobacco use during adolescence: The importance of the family mealtime environment. *Journal of Health Psychology*, 15(4), 526-532.

Appendix A

Response Options for *Indicators of Higher Quality Family Dinner Interactions*

- We ate in the same room
- We ate the same things
- We all sat down at the table at the same time
- We all sat down until everyone finished
- We ate something we all like
- We tried something new/different
- Everyone in the family was there
- Everyone talked / was part of the conversation
- Cell phones were not allowed
- TV was shut off
- We did not answer the phone
- We had a good conversation about a serious topic
- We had a good conversation about a non-serious topic
- We used “conversation starters” (ex., “The best part of my day today was.....”)
- We laughed
- We chose the meal together
- We prepared the meal together
- We did the “clean up” together
- We were all relaxed
- We were not in a hurry
- We played music that we all like
- We celebrated something special
- We scheduled the time in advance
- We invited friends, neighbors or relatives
- Other (specify) _____
- None of these

Appendix B

Response Options for *Barriers to Higher Quality Family Dinner Interactions*

- We did not eat in the same room
- We did not eat at the same time
- We did not eat the same things
- We all sat down at different times
- People got up and left before everyone was finished
- Not everyone liked what we ate
- Not everyone in the family was there
- Parent(s) distracted by cell phone / blackberry
- Child distracted by cell phone/blackberry
- Family member(s) were watching TV
- Family member(s) were playing video games
- Family member(s) were using the computer/Internet
- My child's friends were there
- We didn't have a lot to talk about
- We had an argument or disagreement
- We were rushed
- We were tired
- The phone rang
- Kids were out of their seats
- Other (specify) _____
- None of these

Appendix C
Outcome Variables

5 Items for *Emotional and Social Well-Being* scale

(Q.22) Please use the following scales to help describe the type of person you are today.

b. Sad

Happy

c. Not confident

Confident

h. Disrespects others

Respects Others

j. Breaks the rules

Follows the rules

(Q.25) How often does it seem like you feel worried, stressed, or have a lot on your mind? (Select one answer.)

- Almost all of the time
- A lot of the time
- Sometimes
- Not very much
- Almost never / never

Academic Achievement.

(Q23) What were your grades like this past year? (Select one answer.)

- Mostly A's or 5's
- Mostly B's or 4's
- Mostly C's or 3's
- Mostly D's or 2's
- Mostly F's or 1's

Level of Physical Activity.

(Q.22)

k. Prefers relaxing
over being active

Prefers being active
over relaxing

Frequency of Nutritious Food Intake.

(Q.22)

1. Eats junk food more often than nutritious food

Eats nutritious food more often than junk food

8 Items for *Life Skills and Developmental Assets* scale

(Q.19) Experts say that there are a lot of different things that are important for kids as they grow up. Now we'd like to know whether you feel you have enough of these things in your life or not.

Please go through the items on this list and for each one, tell us if you think you have enough of it, or if you wish you could have even more.

Kid Wording	Have Enough Already	Wish I Had Even More
Adults or grown-ups in your life that you can look up to, go to for advice, and that listen to you.		
Chances to make your own choices, speak up about things that are not fair, and get involved in decisions that are important to you.		
Chances to be creative, try new things, and find things that you really love to do.		
Feelings of being safe, supported and cared for by my family, friends, teachers or neighbors		
Chances to help others and show you care about animals, people, or places.		
Good and hopeful feelings about what your life will be like when you grow up.		
Chances to be healthy by having good things to eat, having time to exercise and be active, and staying clean.		
Ways to make yourself feel better when you are worried, stressed or have a lot on your mind.		

Appendix D
Control Variables.

Family Dinner Frequency.

(Q.9a) In a typical week, how many days do you do the following activities with your parent(s)?

(Choose one answer for each item on the list.)

Eat dinner together (at home):

7 Days 6 Days 5 Days 4 Days 3 Days 2 Days 1 Day Never

Family Closeness.

(Q.26) How would you describe your relationship with your parent(s)? Would you say you were.....? (Select one answer.)

- Extremely Close
- Very Close
- Somewhat Close
- Not Very Close
- Not At All Close

Age and Gender.

(After a parent responded to screening questions and filled out the chart in Q.4, the eligible children who would qualify to fill sampling quotas were determined and parents were asked to select from one child from the age and gender range determined by quota parameters in Q.6).

(Q.4) How many children in each of the following age ranges are living in your household? Again, by living in your household, we mean those children who are in your home at least 3 nights per week. (Please enter a whole number in each space provided.)

<u>Age of Children</u>	<u># Boys</u>	<u># Girls</u>
Less than 12 months old		
1 year old		
2 years old		
3 years old		
4 years old		
5 years old		
6 years old		
7 years old		
8 years old		
9 years old		

10 years old		
11 years old		
12 years old		
13 years old		
14 years old		
15 years old		
16 years old		
17 years old		
18 years old		

(Q.6) Today we would like to get the opinions of a child living in your household between the ages of 8 and 18 about some activities that your family might do together. Please select which child is available and interested participate in the survey at this time.

- (Child(ren) meeting quota parameters were then listed)

Racial or Ethnic Background (of the parent answering the screening questions)

(Q.7) Which of the following groups best represents your racial or ethnic background? (Select one answer.)

- White or Caucasian (not Hispanic or Latino)
- Black or African-American (not Hispanic or Latino)
- Asian/Pacific Islander
- Native American, Alaska Native, Aleutian
- Hispanic or Latino (White or Caucasian)
- Hispanic or Latino (Black or African-American)
- Hispanic or Latino (all other races/multiple races)
- Other

Household Income.

(C.2) Which of the following income categories best represents your annual household income before taxes? (Select one answer.)

- Less than \$15,000
- \$15,000 - \$24,999
- \$25,000 - \$34,999
- \$35,000 - \$49,999
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$124,999
- \$125,000-\$149,999
- \$150,000-\$199,999
- \$200,000 and over

Appendix E
Tables

Table 1: Demographics

Variable	Parental Respondent
Ethnicity	
Caucasian (Not Hispanic or Latino)	638 (63.8%)
Black or African-American (Not Hispanic or Latino)	150 (15.0%)
Asian-Pacific Islander	27 (2.7%)
Hispanic or Latino	161 (16.1%)
Other	24 (2.4%)
Marital Status	
Married	672 (67.2%)
Single (Widowed)	12 (1.2%)
Single (Divorced)	143 (14.3%)
Single (Never Married)	95 (9.5%)
Living with domestic partner	78 (7.8%)
Highest Completed Level of Education	
< High School	92 (9.2%)
High School Graduate or GED	213 (21.3%)
Technical-Trade School	48 (4.8%)
Some College, But No Degree	304 (30.4%)
College Graduate	279 (27.9%)
Graduate School - Advanced Degree	64 (6.4%)
Employment Status	

Work full-time (35 hours per week or more)	434 (43.5%)
Work part-time (less than 35 hours per week)	131 (13.1%)
Not currently employed, but looking for work	51 (5.1%)
Not currently employed	59 (5.9%)
Homemaker-Stay at home parent	209 (20.9%)
Retired	33 (3.3%)
Student	83 (8.3%)
Total Household Income	
Less than \$34,999	317 (31.7%)
\$35,000 - \$49,999	206 (20.6%)
\$50,000 - \$74,999	219 (21.9%)
\$75,000 and over	258 (25.8%)

Table 2: Demographics, Age/Gender of Child Respondent

Age/Gender of Child Respondent	n (%)
8 year old male	46 (4.6%)
8 year old female	49 (4.9%)
9 year old male	55 (5.5%)
9 year old female	57 (5.7%)
10 year old male	40 (4.0%)
10 year old female	44 (4.4%)
11 year old male	59 (5.9%)
11 year old female	49 (4.9%)
12 year old male	50 (5.0%)
12 year old female	51 (5.1%)
13 year old male	60 (6.0%)

13 year old female	58 (5.8%)
14 year old male	45 (4.5%)
14 year old female	32 (3.2%)
15 year old male	52 (5.2%)
15 year old female	52 (5.2%)
16 year old male	36 (3.6%)
16 year old female	37 (3.7%)
17 year old male	35 (3.5%)
17 year old female	47 (4.7%)
18 year old male	22 (2.2%)
18 year old female	24 (2.4%)

Table 3: Descriptives for Independent and Dependent Variables (n=1000 for all variables)

Variable	Mean (SD)	Range
Quality Indicators	9.517 (4.820)	0 - 24
Quality Barriers	2.786 (2.654)	0 - 19
Family Dinner Frequency	5.441 (1.686)	0 - 7
Family Closeness	4.150 (.808)	1 - 5
Well-being	25.804 (4.692)	8 - 33
Life skills	5.421 (2.228)	0 - 8
Academics	4.282 (.754)	1 - 5
Physical Activity	4.83 (1.838)	1 - 7
Frequency Nutritious Intake	4.52 (1.599)	1 - 7

Table 4: Intercorrelations between IV's and Controls

	Quality Indicators	Quality Barriers	Family dinner frequency	Family Closeness	Well-being	Life skills	Academics	Physical Activity	Freq Nutritious intake
Quality Indicators	1	.197*	.159*	.286*	.208*	.072*	.110	.090*	.085*
Quality Barriers		1	-.049	.156*	-.183*	-.231*	-.031*	-.069*	-.134*
Family dinner frequency			1	.292*	.169*	.102*	.115*	.052	.069*
Family Closeness				1	.480*	.230*	.177*	.191*	.182*
Well-being					1	.322*	.248*	.431*	.368*
Life skills						1	.107*	.139*	.166*
Academics							1	.099*	.175*
Physical Activity								1	.388*
Freq Nutritious intake									1

Table 5:HLR table for Main Analyses (Hypothesis 1), Well-being and Quality Indicators

Variable	Model 1		Model 2		Model 3	
	R ² =.015; F=3.722*		ΔR ² = .043; F Change= 45.231*		ΔR ² = .183; F Change= 119.141*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	26.771*	.365	24.749*	.467	14.365*	.838
Age By Year	-0.177*	0.050	-.160	.049	-.056	.045
Gender	-0.048	0.295	-.153	.290	-.212	.260
Race	0.592	0.417	.801	.409	.546	.369
Income	-0.140	0.320	-.082	.313	-.086	.282
Family Dinner Quality Indicators			.203*	.030	.078*	.028
Family Closeness					2.589*	.175
Family Dinner Freq at Home					.058	.083

Table 6:HLR table for Main Analyses (Hypothesis 1), Life Skills and Quality indicators

Variable	Model 1		Model 2		Model 3	
	R ² =.004; F=.990		ΔR ² =.005; F Change= 5.466*		ΔR ² =.052; F Change=27.254*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.588*	.174	5.246*	.227	2.491*	.443
Age By Year	.000	.024	.003	.024	.034	.024
Gender	-.215	.141	-.233	.141	-.250	.137
Race	-.027	.199	.009	.199	-.038	.195
Income	-.180	.153	-.171	.153	-.179	.149
Family Dinner Quality Indicators			.034*	.015	.002	.015
Family Closeness					.615*	.092
Family Dinner Freq at Home					.065	.044

Table 7:HLR table for Main Analyses (Hypothesis 1), Academics and Quality indicators

Variable	Model 1		Model 2		Model 3	
	R ² =.042; F=10.956*		ΔR ² =.008; F Change=8.773*		ΔR ² =.021; F Change=11.173*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.449*	.058	4.305*	.075	3.700*	.149
Age By Year	.032*	.008	-.031*	.008	-.023*	.008
Gender	.170*	.047	.163*	.047	.159*	.046
Race	-.100	.066	-.085	.066	-.092	.066
Income	-.186 *	.051	-.182*	.051	-.185*	.050
Family Dinner Quality Indicators			.014*	.005	.007	.005
Family Closeness					.125*	.031
Family Dinner Freq at Home					.021	.015

Table 8:HLR table for Main Analyses (Hypothesis 1), Physical Activity and Quality indicators

Variable	Model 1		Model 2		Model 3	
	R ² =.010; F=2.475*		ΔR ² =.009; F Change=8.906*		ΔR ² =.027; F Change=14.166*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.156*	.143	4.797*	.187	3.300*	.368
Age By Year	-.037	.019	-.034	.019	-.021	.020
Gender	-.248	.116	-.266	.116	-.274	.114
Race	.204	.164	.241	.163	.196	.162
Income	-.062	.126	-.051	.125	-.049	.124
Family Dinner Quality Indicators			.036*	.012	.018	.012
Family Closeness					.402*	.077
Family Dinner Freq at Home					-.012	.036

Table 9:HLR table for Main Analyses (Hypothesis 1), Freq Nutritious Intake and Quality indicators

Variable	Model 1		Model 2		Model 3	
	R ² =.006; F=1.560		ΔR ² =.007; F Change=6.928*		ΔR ² =.025; F Change=12.649*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.773*	.125	4.497*	.163	3.212*	.322
Age By Year	-.040 *	.017	.037*	.017	-.025	.017
Gender	-.072	.101	-.086	.101	-.093	.100
Race	-.039	.143	-.010	.143	-.043	.141
Income	.033	.110	.041	.109	.041	.108
Family Dinner Quality Indicators			.028*	.011	.012	.011
Family Closeness					.326*	.067
Family Dinner Freq at Home					.004	.032

Table 10:HLR table for Main Analyses (Hypothesis 2), Well-being and Quality Barriers

Variable	Model 1		Model 2		Model 3	
	R ² =.015 F=3.722*		ΔR ² =.035; F Change=36.818*		ΔR ² =.197; F Change=129.678*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	26.771*	.365	27.670*	.388	15.538*	.872
Age By Year	-.177*	.050	-.186*	.049	-.065	.045
Gender	-.048	.295	.030	.291	-.127	.259
Race	.592	.417	.611	.409	.481	.366
Income	-.140	.320	-.021	.315	-.037	.281
Family Dinner Quality Barriers			-.333*	.055	-.201*	.050
Family Closeness					2.606*	.170
Family Dinner Freq at Home					.070	.082

Table 11:HLR table for Main Analyses (Hypothesis 2), Life Skills and Quality Barriers

Variable	Model 1		Model 2		Model 3	
	R ² =.004; F=.990		ΔR ² =.052; F Change=54.263*		ΔR ² =.042; F Change=22.895*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.588*	.174	6.105*	.184	3.337*	.453
Age By Year	.000	.024	-.005	.023	.026	.023
Gender	-.215	.141	-.171	.138	-.207	.135
Race	-.027	.199	-.016	.194	-.027	.190
Income	-.180	.153	-.112	.149	-.122	.146
Family Dinner Quality Barriers			-.191*	.026	-.163*	.026
Family Closeness					.532*	.089
Family Dinner Freq at Home					.061	.043

Table 12:HLR table for Main Analyses (Hypothesis 2), Academics and Quality Barriers

Variable	Model 1		Model 2		Model 3	
	R ² =.042 F=10.956*		ΔR ² = .001; F Change=1.090		ΔR ² = .026; F Change= 13.985	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.449*	.058	4.474*	.063	3.721*	.156
Age By Year	-.032*	.008	-.032*	.008	-.023*	.008
Gender	.170*	.047	.173*	.047	.163*	.046
Race	-.100	.066	-.099	.066	-.100	.065
Income	-.186*	.051	-.183*	.051	-.186*	.050
Family Dinner Quality Barriers			-.009	.009	-.002	.009
Family Closeness					.136*	.030
Family Dinner Freq at Home					.023	.015

Table 13:HLR table for Main Analyses (Hypothesis 2), Physical Activity and Quality Barriers

Variable	Model 1		Model 2		Model 3	
	R ² =.010; F=2.475*		ΔR ² = .005; F Change= 4.673*		ΔR ² = .031; F Change=16.085*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.156*	.143	5.283*	.155	3.470*	.385
Age By Year	-.037	.019	-.039*	.019	-.022	.020
Gender	-.248*	.116	-.237*	.116	-.260*	.114
Race	.204	.164	.206	.163	.179	.161
Income	-.062	.126	-.045	.126	-.045	.124
Family Dinner Quality Barriers			-.047*	.022	-.027	.022
Family Closeness					.416*	.075
Family Dinner Freq at Home					-.008	.036

Table 14:HLR table for Main Analyses (Hypothesis 2), Freq Nutritious Intake and Quality Barriers

Variable	Model 1		Model 2		Model 3	
	R ² = .006; F=1.560		ΔR ² = .019; F Change= 19.014*		ΔR ² = .024; F Change= 12.257*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.773*	.125	4.996*	.134	3.581*	.334
Age By Year	-.040*	.017	-.042*	.017	-.028	.017
Gender	-.072	.101	-.053	.100	-.071	.099
Race	-.039	.143	-.034	.141	-.051	.140
Income	.033	.110	.063	.109	.061	.108
Family Dinner Quality Barriers			-.083*	.019	-.067*	.019
Family Closeness					.309*	.065
Family Dinner Freq at Home					.004	.031

Table 15:HLR table for Exploratory Analyses, Well-being and Quality Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.015; F=3.722*		ΔR ² = .055; F Change= 29.078*		ΔR ² = .004; F Change= 4.509*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	26.771*	.365	24.083*	.501	23.376*	.601
Age By Year	-0.177*	0.050	-.118*	.050	-.117*	.050
Gender	-0.048	0.295	-.155	.288	-.169	.287
Race	0.592	0.417	.845	.407	.921*	.408
Income	-0.140	0.320	-.141	.312	-.137	.312
Family Dinner Freq at Home			1.064*	.302	2.284*	.649
Family Dinner Quality Indicators			.187*	.030	.267*	.048
Family Dinner Freq * Quality Indicators					-.131*	.062

Table 16:HLR table for Exploratory Analyses, Life Skills and Quality Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.004; F=.990		ΔR ² = .012; F Change=6.267*		ΔR ² =.000; F Change=.005	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.588*	.174	5.001*	.245	4.990*	.294
Age By Year	.000	.024	.019	.024	.019	.024
Gender	-.215	.141	-.234	.141	-.234	.141
Race	-.027	.199	.025	.198	.026	.199
Income	-.180	.153	-.192	.152	-.192	.152
Family Dinner Freq at Home			.391*	.147	.411	.317
Family Dinner Quality Indicators			.029*	.015	.030	.024
Family Dinner Freq * Quality Indicators					-.002	.003

Table 17:HLR table for Exploratory Analyses, Academics and Quality Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.042; F=10.956*		ΔR ² = .014; F Change= 7.114*		ΔR ² = .000; F Change= .507	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.449*	.058	4.234*	.081	4.195*	.098
Age By Year	.032*	.008	-.026*	.008	-.026*	.008
Gender	.170*	.047	.163*	.047	.162*	.047
Race	-.100	.066	-.080	.066	-.076	.066
Income	-.186 *	.051	-.188*	.051	-.188*	.051
Family Dinner Freq at Home			.144*	.049	.180	.105
Family Dinner Quality Indicators			.013*	.005	.017*	.008
Family Dinner Freq * Quality Indicators					-.007	.010

Table 18:HLR table for Exploratory Analyses, Physical Activity and Quality Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.010; F=2.475*		ΔR ² = .009; F Change= 4.498*		ΔR ² = .001; F Change= 1.365*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.156*	.143	4.820*	.202	4.664*	.242
Age By Year	-.037	.019	-.036	.020	-.036	.020
Gender	-.248	.116	-.266*	.116	-.269*	.116
Race	.204	.164	.239	.164	.256	.164
Income	-.062	.126	-.049	.126	-.048	.126
Family Dinner Freq at Home			-.038	.122	.233	.261
Family Dinner Quality Indicators			.037*	.012	.054*	.019
Family Dinner Freq * Quality Indicators					-.029*	.025

Table 19:HLR table for Exploratory Analyses, Freq Nutritious Intake and Quality Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.006; F=1.560		ΔR ² = .008; F Change= 3.928*		ΔR ² = .000; F Change= .115	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.773*	.125	4.433*	.176	4.394*	.211
Age By Year	-.040 *	.017	-.033	.017	-.033	.017
Gender	-.072	.101	-.086	.101	-.087	.101
Race	-.039	.143	-.006	.143	-.002	.143
Income	.033	.110	.035	.109	.036	.110
Family Dinner Freq at Home			.102	.106	.171	.228
Family Dinner Quality Indicators			.026*	.011	.031	.017
Family Dinner Freq * Quality Indicators					-.007*	.022

Table 20:HLR table for Exploratory Analyses, Well-being and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.015 F=3.722*		ΔR ² =.050; F Change=26.588*		ΔR ² = .004; F Change= 4.412*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	26.771*	.365	26.701*	.456	26.367*	.482
Age By Year	-.177*	.050	-.137*	.050	-.142*	.050
Gender	-.048	.295	.014	.288	-.002	.288
Race	.592	.417	.678	.407	.693	.406
Income	-.140	.320	-.088	.313	-.048	.313
Family Dinner Freq at Home			1.195*	.301	1.819*	.422
Family Dinner Quality Barriers			-.315*	.055	-.196*	.079
Family Dinner Freq at Home * Quality Barriers					-.034*	.016

Table 21:HLR table for Exploratory Analyses, Life Skills and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.004; F=.990		ΔR ² = .057; F Change= 30.262*		ΔR ² = .005; F Change= 4.832*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.588*	.174	5.821*	.217	5.655*	.229
Age By Year	.000	.024	.009	.024	.007	.024
Gender	-.215	.141	-.176	.137	-.182	.137
Race	-.027	.199	.004	.193	.011	.193
Income	-.180	.153	-.132	.149	-.111	.149
Family Dinner Freq at Home			.350*	.143	.661*	.201
Family Dinner Quality Barriers			-.186*	.026	-.127*	.037
Family Dinner Freq at Home * Quality Barriers					-.017*	.008

Table 22:HLR table for Exploratory Analyses, Academics and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.008 F=4.058*		ΔR ² = .001; F Change= .727		ΔR ² = .000; F Change= .494	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.449*	.058	4.369*	.074	4.347*	.078
Age By Year	-.032*	.008	-.027*	.008	-.027*	.008
Gender	.170*	.047	.171*	.047	.170*	.047
Race	-.100	.066	-.092	.066	-.091	.066
Income	-.186*	.051	-.190*	.051	-.187*	.051
Family Dinner Freq at Home			.129*	.049	.170*	.069
Family Dinner Quality Barriers			-.007	.009	.000	.013
Family Dinner Freq at Home * Quality Barriers					-.002	.003

Table 23:HLR table for Exploratory Analyses, Physical Activity and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² =.010; F=2.475*		ΔR ² = .005; F Change=2.336		ΔR ² = .005; F Change= 7.628*	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.156*	.143	5.288*	.183	5.141*	.194
Age By Year	-.037	.019	-.039	.020	-.041 *	.020
Gender	-.248*	.116	-.236*	.116	-.242* *	.116
Race	.204	.164	.206	.164	.212	.163
Income	-.062	.126	-.044	.126	-.026	.126
Family Dinner Freq at Home			-.006	.121	.270	.170
Family Dinner Quality Barriers			-.047*	.022	.005	.032
Family Dinner Freq at Home * Quality Barriers					-.015*	.006

Table 24:HLR table for Exploratory Analyses, Freq Nutritious Intake and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .006; F=1.560		ΔR ² = .020; F Change= 10.002*		ΔR ² = .001; F Change= .743	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.773*	.125	4.912*	.159	4.959*	.168
Age By Year	-.040*	.017	-.038 *	.017	-.037*	.017
Gender	-.072	.101	-.054	.100	-.052	.100
Race	-.039	.143	-.028	.141	-.030	.141
Income	.033	.110	.057	.109	.051	.109
Family Dinner Freq at Home			.104	.105	.015*	.147
Family Dinner Quality Barriers			-.081*	.109	-.098*	.027
Family Dinner Freq at Home * Quality Barriers					.005	.006

Table 25:HLR table for Exploratory Analyses, Well-Being, Gender and Quality Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .012; F=4.959*		ΔR ² = .043; F Change= 22.629*		ΔR ² = .000; F Change= .024	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	26.749*	.337	24.749*	.467	24.791*	.539
Age By Year	-.177*	.050	-.160*	.049	-.160*	.049
Race	.590	.416	-.082*	.313	.802*	.409
Income	-.142	.320	-.153	.290	-.084	.314
Family Dinner Quality Indicators			.203*	.030	-.241	.642
Gender					.198*	.042
Quality Indicators * Gender					.009	.060

Table 26:HLR table for Exploratory Analyses, Well-Being, Gender and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .121; F=4.959*		ΔR ² = .035; F Change= 18.423*		ΔR ² = .000; F Change= .032	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	26.749*	.337	27.670*	.388	27.697*	.418
Age By Year	-.177*	.050	-.186*	.049	-.186*	.049
Race	.590	.416	.611	.409	.613	.410
Income	-.142	.320	-.021	.315	-.022	.316
Family Dinner Quality Barriers			.030	.291	-.024	.421
Gender			-.333*	.055	-.343*	.079
Quality Barriers * Gender					.019	.110

Table 27:HLR table for Exploratory Analyses, Life Skills, Gender and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .002; F=2.694		ΔR ² = .054; F Change= 28.359*		ΔR ² = .000; F Change= .127	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.487*	.161	6.105*	.184	6.079*	.198
Age By Year	.000	.024	-.005	.023	-.005	.023
Race	-.034	.199	-.016	.194	-.017	.194
Income	-.188	.153	-.112	.149	-.111	.149
Family Dinner Quality Barriers			-.171	.138	-.119	.199
Gender			-.191*	.026	-.182*	.037
Quality Barriers * Gender					-.019	.052

Table 28:HLR table for Exploratory Analyses, Physical Activity, Gender and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .006; F=1.913		ΔR ² = .019; F Change= 9.764*		ΔR ² = .001; F Change= .651	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.740*	.115	4.996*	.134	5.039*	.144
Age By Year	-.040*	.017	-.042*	.017	-.042*	.017
Race	-.041	.142	-.034	.141	-.031	.141
Income	.030	.110	.063	.109	.060	.109
Family Dinner Quality Barriers			-.053	.100	-.137	.145
Gender			-.083*	.019	-.098*	.027
Quality Barriers * Gender					.031	.038

Table 26:HLR table for Exploratory Analyses, Well-Being, Age and Quality Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .006; F=1.560		ΔR ² = .003; F Change= 2.798		ΔR ² = .016; F Change= 16.140	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	25.769*	.235	24.375*	.399	24.935*	.487
Gender	-.061	.297	-.163	.239	-.165	.289
Race	.598	.419	.777	.408	.804*	.408
Income	-.077	.322	-.087	.313	-.082	.313
Family Dinner Quality Indicators			-1.052*	.289	-2.194*	.638
Age 2 Groups			.205*	.030	.026	.094
Age 2 Groups * Quality Indicators					.120*	.060

Table 25:HLR table for Exploratory Analyses, Well-Being, Age and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .002; F=.691		ΔR ² = .048; F Change= 25.323*		ΔR ² = .002; F Change= 2.145	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	25.769*	.235	27.197*	.310	26.969*	.346
Gender	-.061	.297	.017	.290	.018	.290
Race	.598	.419	.584	.409	.568	.409
Income	-.077	.322	-.023	.315	-.049	.315
Family Dinner Quality Barriers			-1.132*	.290	-.686	.421
Age 2 Groups			-.329*	.055	-.084	.176
Age 2 Groups * Quality Barriers					-.161	.110

Table 27:HLR table for Exploratory Analyses, Life Skills, Age and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .004; F=1.321		ΔR ² = .052; F Change= 27.111*		ΔR ² = .000; F Change= .194	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.590*	.112	6.070*	.147	6.037*	.164
Gender	-.215	.141	-.171	.138	-.171	.138
Race	-.027	.199	-.015	.194	-.107	.194
Income	-.181	.153	-.109	.149	-.113	.150
Family Dinner Quality Barriers			.013	.138	.067	.199
Age 2 Groups			-.191*	.026	-.156	.083
Age 2 Groups * Quality Barriers					-.023	.052

Table 28:HLR table for Exploratory Analyses, Physical Activity, Age and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .006; F=2.061		ΔR ² = .007; F Change= 3.723*		ΔR ² = .000; F Change= .235	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.944*	.092	5.167*	.124	5.198*	.138
Gender	-.250	.116	-.239*	.116	-.239*	.116
Race	.205	.164	.202	.163	.204	.164
Income	-.048	.126	-.043	.126	-.040	.126
Family Dinner Quality Barriers			-.202	.116	-.261	.168
Age 2 Groups			-.046*	.022	-.079	.070
Age 2 Groups * Quality Barriers					.021	.044

Table 25:HLR table for Exploratory Analyses, Well-Being, Income and Quality Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .015; F=4.902*		ΔR ² = .015; F Change= 16.363		ΔR ² = .015; F Change= 16.363	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	26.726*	.350	24.749*	.467	23.922*	.506
Age By Year	-.052	.295	-.153	.290	-.120	.287
Gender	.570	.413	.801*	.409	.846*	.406
Race	-.176*	.049	-.160*	.049	-.163*	.048
Family Dinner Quality Indicators			-.082	.313	2.312*	.669
Income			.203*	.030	.288*	.037
Income * Quality Indicators					-.255*	.063

Table 25:HLR table for Exploratory Analyses, Well-Being, Income and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .015; F=4.902*		ΔR ² = .035; F Change= 18.508*		ΔR ² = .001; F Change= .626	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	26.726*	.350	27.670*	.388	27.760*	.404
Age By Year	-.052	.295	.030	.291	.026	.291
Gender	.570	.413	.611	.409	.618	.409
Race	-.176*	.049	-.186*	.049	-.184*	.049
Family Dinner Quality Barriers			-.021	.315	-.273	.449
Income			-.333*	.055	-.371*	.073
Income * Quality Barriers					.088	.111

Table 25:HLR table for Exploratory Analyses, Life Skills, Income and Quality Barriers, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .003; F=.855		ΔR ² = .053; F Change= 27.865*		ΔR ² = .001; F Change= 1.492	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	5.530*	.167	6.105*	.184	6.170*	.191
Age By Year	-.221	.141	-.171	.138	-.173	.138
Gender	-.055	.197	-.016	.194	-.010	.194
Race	.002	.024	-.005	.023	-.003	.023
Family Dinner Quality Barriers			-.112	.149	-.296	.212
Income			-.191*	.026	-.219*	.034
Income * Quality Barriers					.064	.052

Table 25:HLR table for Exploratory Analyses, Physical Activity, Income and Barriers Indicators, Interaction

Variable	Model 1		Model 2		Model 3	
	R ² = .006; F=1.596		ΔR ² = .019; F Change= 9.553*		ΔR ² = .000; F Change= .017	
	Beta	S.E.	Beta	S.E.	Beta	S.E.
Constant	4.784*	.120	4.996*	.134	4.991*	.140
Age By Year	-.071	.101	-.053	.100	-.052	.100
Gender	-.033	.141	-.034	.141	-.034	.141
Race	-.040*	.017	-.042*	.017	-.042*	.017
Family Dinner Quality Barriers			.063	.109	.077	.155
Income			-.083*	.019	-.080*	.025
Income * Quality Barriers					-.005	.038

Appendix F
Dissertation Proposal

Quality of Family Dinner Interactions and Child and Adolescent Well-Being

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Author's Note

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This manuscript is a Dissertation Proposal.

Family rituals have been shown to benefit family members in many ways, serving both protective functions to offset the impact of other family risk factors, as well as contributing factors to developmental assets and the well-being of children and adolescents (Fiese, 2006; Fiese et al., 2002; Imber-Black, 2002). Some rituals—particularly family meals—involve interactions that are so fundamental to family functioning that they are experienced nearly universally by families across cultures and are, naturally, a central focus in the family ritual literature with contributions from disciplines including: epidemiology, nutrition, family medicine, developmental psychology, family psychology, family therapy, religion, business and communication studies.

In spite of the widespread research on family meals as rituals, studies have primarily focused on the *frequency* of family meals associated with a range of child and adolescent health outcomes, including: healthy eating patterns, nutrition and food choices, literacy and academic outcomes, socialization processes, family cohesion and a sense of belonging, social competence, patterns of communication, cognitive development and emotional well-being. Greater frequency of shared meals has consistently been related to the health and well-being of children and adolescents (Fiese, et al., 2002; Fiese, Foley, & Spagnola, 2006; Hammons & Fiese, 2011). However, **little attention** has been given to the *quality* of the family meals and the impact across child and adolescent well-being outcomes. Studies that have included indicators of quality have been limited in scope, mostly focusing on specific populations and a narrow range

of outcomes. Thus, there is a **critical need** to examine the impact of the quality of family mealtime interactions on general measures of well-being and in representative samples.

The *long term goal* of this study is to understand the mechanisms of social interactions that promote or hinder higher quality family dinners and to assess how these social interactions are related to child and adolescent well-being. The *primary objective* of this proposal is to examine the indicators of- and barriers to- higher quality family dinner interactions and to determine whether they are associated with child and adolescent well-being in the following domains: social and emotional attributes, life skills and developmental assets, academic achievement, and healthy habits. Data will be taken from a web-based panel of nationally representative sample of children, ages 8-18, which has separate measures of higher quality family dinner interactions and barriers to higher quality family dinner interactions. The *central hypothesis* is that higher quality family dinner interactions will have a positive influence on child and adolescent well-being outcomes, whereas barriers to higher quality family dinner interactions will have a negative influence on child and adolescent well-being outcomes.

The *secondary objective* of this proposal is to explore potential moderators of the relationship between the quality of family dinner interactions and child and adolescent outcomes. These potential moderator variables are the frequency of family dinners, gender, age, and household income. Because there is no prior published research on this issue, there are no hypotheses will be tested.

In order to accomplish the proposed goal and objectives, this study seeks to achieve the following three *specific aims*:

Main Analyses (Hypothesis 1): Determine whether there is a positive relationship between indicators of higher quality family dinner interactions and child and adolescent well-being in order to test the hypothesis that:

- Hypothesis 1: More indicators of higher quality family dinner interactions will be positively associated with child and adolescent well-being.

If this hypothesis is confirmed, the indicators of higher quality family dinner interactions will be tested separately in order to determine which are related to child and adolescent well-being.

Main Analyses (Hypothesis 2): Determine whether there is a negative relationship between barriers to higher quality family dinner interactions and child and adolescent well-being in order to test the hypothesis that:

- Hypothesis 1: More barriers to higher quality family dinner interactions will be negatively associated with child and adolescent well-being.

Exploratory Analyses: Determine whether the relationship between indicators of- and barriers to- higher quality family dinner interactions and child and adolescent well-being is moderated by any of the following: frequency of family dinners, gender, age, and household income. This is an exploratory aim that will examine whether the relationship between indicators of- and barriers to- higher quality family dinner interactions and child outcomes is strengthened or reduced at different levels of other predictor variables.

Review of Relevant Literature

Family Ritual Outcomes

Family rituals have generally been conceptualized in the literature as repeated group activities that have an affective element and symbolic meanings (Fiese et al., 2002). After much theorizing about how family rituals organize families and integrate members as a group, a team of researchers in the 1980s were the first to operationalize, study and publish empirical results demonstrating that family rituals serve as a protective factor of individual development in high risk families (Bennett, Wolin, & Reiss, 1988; Bennett, Wolin, Reiss, & Teitelbaum, 1987). A central finding across these studies is the mitigating role that family rituals play in reducing the harmful effects of alcoholism in families. They found that when families with alcoholism managed to maintain their routines and rituals it lowered the likelihood that alcohol dependency would be transmitted to the next generation (Bennett et al., 1987; Bennett et al., 1988). Furthermore, when children found their family rituals meaningful, the effects of those rituals buffered children from the problems associated with having an alcoholic parent, such as having elevated levels of anxiety (Fiese, 1993).

The body of knowledge in this area has subsequently expanded to demonstrate that family routines and rituals serve to protect children from the harmful effects of divorce, parental depression and mental illness, and poverty (Fiese, 2006). For example, Guidubaldi, Cleminshaw, Perry, Nastasi, and Lightel (1986) found that, following a divorce, children with consistent bedtime routines were better able to adapt in that they were more likely to perform well academically and miss fewer days in school. As well,

adolescents benefit from predictable family routines when making adjusting to normative stressors of life cycle transitions. Henry and Lovelace (1995) found that adolescents living with a remarried parent reported greater satisfaction in their family life when there were consistent routines.

Consistency is another hallmark of family rituals, which may account for the degree of successful socialization of group members into behavioral and social norms. Keltner (1990) found that consistency in mealtime and bedtime rituals were indicators associated with social competence in a sample of preschool African-American children (enrolled in Head Start).

Since family rituals are predictable patterns of interaction that carry shared symbolic meaning, it makes sense that researchers would examine the construct of congruence in the study of family rituals. Fiese (1992) found that average health outcomes for adolescents were higher when there was congruence between those adolescents and their parents on how much they valued the practice of family rituals. Another study of married couples found that spouses were more satisfied in their marriage when they shared similar values about participating in religious holiday rituals (Fiese & Tomcho, 2001).

Family Meal Frequency Outcomes

As mentioned, there is overwhelming evidence for a positive association between the frequency of family meals and indicators of child and adolescent well-being. Hammon and Fiese (2011) confirmed the extent of this association in their meta-analysis of studies wherein the combined samples included over 180,000 children. They found

that children who ate three or more family meals per week had reduced by 12% their odds of becoming overweight, reduced their chances of eating unhealthy food by 20%, and increased their chances of eating healthy foods by 24%. Adolescents who frequently eat family meals are less likely to have problems associated with alcohol consumption, are less likely to smoke cigarettes or use marijuana. They have lower risks of developing depression or other mental health problems and more likely to have better grades (Compan, Moreno, Ruiz, & Pascual, 2002). Research conducted by the National Center on Addiction and Substance Abuse at Columbia University 2011 (CASA) has repeatedly confirmed that the more frequently adolescents have meals with their families the less likely they are to drink alcohol, smoke cigarettes and use illegal drugs. Similarly, Eisenberg, Olson, Neumark-Sztainer, Story, & Bearinger (2004) found that eating family meals together reduced the likelihood that adolescents would use drugs and alcohol, have low self-esteem, experience depression, or engage in suicidal thoughts or make suicide attempts. These effects were especially high for girls and were sustained even after family and individual covariates were included.

An important limitation shared by the studies on family meals and child and adolescent well-being is that they are primarily cross-sectional and lack the kinds of controls that could establish causal mechanisms. They are therefore subject to issues of circular causality, i.e. a common alternative interpretation of many of the positive health and well-being results is that adolescents who are depressed or substance users are more likely to feel estranged from their family and less likely to participate in frequent family meals. However, the positive effects found by Eisenberg et al. (2004) and Fulkerson et

al. (2006) were still significant even after controlling for family covariates such as family connectedness and socioeconomic status. After cautioning about the problems of causality, Eisenberg et al. suggested several potential mechanisms that could account for the positive links between family meals and the reduction in risky behaviors, including: increased family communication, time spent together, parents model coping skills and emotion regulation. In the same vein, Franko, Thompson, Affenito, Barton, & Striegel-Moore (2008) have theorized that positive effects of frequent family meals might be linked to the coping skills that are transmitted through the experience of family members learning how to problem-solve together, even issues stemming from mundane conflicts. The result, they suggest, is that children and adolescents absorb positive attitudes towards physical and mental health and develop the coping skills that mediate the links between family meals and positive health outcomes.

Quality of Family Mealtime Interactions

A growing number of studies are widening the scope of research beyond the frequency of family meals to capture mechanisms underlying the context of mealtime dynamics. For example, recent studies examining mealtime communication patterns have shown that more positive, direct and clear communication is associated with improved management of chronic illness symptoms such as asthma (Jacobs & Fiese, 2007; Markson & Fiese, 2000), reduced risk of childhood obesity (Jacobs & Fiese, 2007; Moens, Braet, & Soetens, 2007), and overall child quality of life (Fiese, Winter & Botti, 2011). Some types of communication patterns (such as explanations and narratives) at the family dinner table have been shown to promote literacy outcomes in children (Snow

& Beals, 2006). Studies that have utilized observational coding techniques have been instrumental in showing associations that positive and pleasant conversations are related to better mental (Dickstein et al., 1998) and physical (Speith et al., 2001) health in child outcomes. Conversely, family commentary and teasing about weight were predictive over time of lower self-esteem, lower body image, and higher depressive symptoms (Eisenberg, Neumark-Sztainer, Haines, & Wall, 2006). Neumark-Sztainer, Wall, Story and Fulkerson (2004) studied associations of family meal frequency and dynamics with disordered eating behaviors and found that adolescent girls were less likely to engage in problematic weight control behaviors, binge eating, and chronic dieting when they participated in more frequent family meals, viewed family meals as important, reported enjoyable social interactions, and described a more structure dinner environment with clear expectations about eating behaviors and choices.

Other studies have examined activities in the home meal environment that negatively influence child health outcomes. Regularly viewing the television during family meals has been related to lower healthful dietary intake, such as fruits and vegetables, and higher snack food and pizza consumption (Coon, Goldberg, Rogers, & Tucker, 2001). Other mealtime dynamics related to poor health outcomes in children include playing computer games (Brunstrom & Mitchell, 2006) and being absent from the dinner table (Patton, Dolan, & Powers, 2008).

For the most part, however, studies that have examined family interaction or environmental influences have been limited in scope. Most have used one or two items to measure quality of interactions and family cohesion or have measured one or two out

of the full spectrum of environmental factors, including: general perceptions about family atmosphere, eating behavior commentary (Fulkerson, Strauss, Neumark-Sztainer, Story, & Boutelle, (2007), positive emotions, and patterns of communication (Burnier, Dubois, & Girard, 2011; Fiese et al., 2006; Jacobs & Fiese, 2007; Moens et al., 2007). Kiser, Medoff, Black, Nurse and Fiese (2010) altered this trend by developing and testing a scale measuring the following dimensions of family meals: roles, deliberateness, atmosphere, relationships, and meaning within family meals. Anderson, Must, Curtin, & Bandini, (2012) conducted a validation study and Czaja, Hartman, Rief, and Hilbert (2011) used it in a family comparison study that examined parent-child interactions and child eating behaviors.

No study has examined a wide range of quality indicators of family dinners and their relationship to child and adolescent well-being in a large, representative sample of children and adolescents.

Theoretical Framework

Family systems theory emphasizes how family interactions and meaning making shape the behavior and well-being of family members (Whitchurch & Constantine, 1993). Family meal interactions—the conversations, gestures, levels of attention and inattention around food—provide a symbolically powerful environment for shaping the emotional lives of children and adolescents. A growing body of research has demonstrated the power of family systems in promoting or undermining the health of family members. For example, qualitative research among rural families (Denham, 2002) has shown why markers of individual health such as blood pressure and weight

gain may be better understood by examining the family context wherein members develop shared expectations by prescribing and following health routines. This is consistent with quantitative research wherein high rates of conflict and negativity predict compromised immune functions and altered physiological responsiveness (Kiecolt-Glaser, McGuire, Robler, & Glaser, 2002).

The predictability dimension of family meal rituals, which has been found important to health outcomes, can be explained by the family systems principle of adaptability, which represents a balance between stability and change (Olson, Russell, & Sprenkle, 1989) The regularity of high quality family meals contributes to healthy family functioning which, in turn, provides the kind of environment that fosters feelings of closeness in family members, and a child's ability to development in a healthy manner.

Human ecology theory offers another framework for understanding the effects of family dinner quality. It conceptualizes human development across multiple interrelated levels of systems and emphasizes family values interacting with environment contexts (Bubolz & Sontag, 1993). Individual development is contextual, with an evolving reciprocal interplay between individuals and their various contexts (Bronfenbrenner, 1979). In this view, systems are not only comprised of bidirectional influences, but the various levels of systems interact bidirectionally. For example, positive family dinner interactions will influence how parent and children develop, but may also be influenced by intrafamilial contextual factors like gender and age, and extrafamilial contextual factors such as socioeconomic status which may mediate the type of resources (material

and emotional) that are available to family members. Three contextual factors will be examined in this study for exploratory purposes: age, gender, and household income.

Research Design and Method

Procedure

Data for this study come from an internet survey panel of 1000 children as part of the “SHARE THE TABLE™: The Barilla Family Dinner Project™.” This project was commissioned by Barilla, the Italian food manufacturer, with the goal of better understanding family practices and beliefs regarding family meals. The survey was administered by The Family Room, a strategic research organization focused exclusively on toddlers to teens and their families. The survey instrument was constructed by The Family Room with input from family scientist, William J. Doherty, and StrategyOne, an applied social science research firm.

The Family Room implemented data collection over a seven day span in August, 2010 with a probability sample of participants of a web-enabled panel, which is designed to be representative of the U.S. population. Quota sampling methods were employed to recruit participants representing diverse geographic regions (based on four census regions) and ethnic / racial backgrounds. Quota sampling was guided by 2008 U. S. Census figures.

Child participants were screened by having a parent answer several preliminary screening questions in order to ensure that children were eligible and that they met sampling quota limits. After answering screening questions parents were instructed to let

their son or daughter complete the rest of the survey confidentially with instructions to only interact with their child if asked to clarify questions.

Participants

The sample consisted of 1000 children, ages 8-18, from across four national regions. The sample reflected parents' racial / ethnic diversity: 63.8% were Caucasian, 16.1% were Hispanic or Latino, 15.0% were African American, 2.7% were Asian, 0.3% were Native American and 2.1% were of mixed or other race. Quota sampling resulted in the following representative characteristics: 750 children (75%) were from two-parent households (married or living with a domestic partner); 250 children (25%) were from single parent households (i.e., inclusion criteria included: “never married,” “separated,” “widowed,” or “divorced”); of the children from single parent households 200 reported living with their mother and 50 reported living with their father. Child gender was balanced with approximately 50% males and 50% females within each of the child age groups, i.e., “tweens” (8-12 year olds) and “teens” (13-18 year olds).

Measures

Predictor variables.

Indicators of higher quality family dinner interactions was measured by asking, “Think of the last family dinner where you felt really close to your parent(s) and enjoyed being with each other. Which of these describe the things that happened at dinner that made you feel this way?” Children could choose from a list of twenty-four indicators of higher quality family dinner interactions that were presented with an option to type in their own answer in a blank space. Response options included: we ate in the same room,

we ate something we all like, everyone in the family was there, cell phones were not allowed, we all talked about our days, we laughed, we were not in a hurry, we all sat down until everyone finished, etc. (see Appendix A for the complete list). For the proposed study a multi-item scale will be constructed by summing the ratings for a total score. Internal consistency will be assessed by calculating a Cronbach's alpha coefficient.

Barriers to higher quality family dinner interactions was measured by asking, "Now think about the last time you had a family dinner when you DID NOT feel really close to your parent(s) or enjoy being with each other. Which of these describe the things that prevented you from feeling this way?" Children could choose from a list of nineteen barriers to higher quality family dinner interactions that were presented with an option to type in their own answer in a blank space. Response options included: we did not eat in the same room, we did not eat the same things, people got up and left before everyone was finished, child distracted by cell phone/blackberry, we didn't have a lot to talk about, we had an argument, etc. (See Appendix B for the complete list). For the proposed study a multi-item scale will be constructed by summing the ratings for a total score. Internal consistency will be assessed by calculating a Cronbach's alpha coefficient.

Outcome variables.

Emotional and social well-being. Each child was asked to assess the degree to which they perceived themselves as having emotional and social attributes that described them (e.g., "shy," "confident," "follows the rules," etc.). The measure consisted of a semantic differential checklist which included ten pairs of opposing descriptors, e.g., shy

- outgoing, not confident - confident, breaks the rules - follows the rules, etc. (see Appendix C for the complete list) placed on a 7-point scale denoted by seven open boxes and no accompanying rating terminology. Each endpoint contained one of the opposing descriptors above an open box. The proximity of responses to each endpoint represented the degree of to which they perceived themselves as agreement with that descriptor and the midpoint represented a neutral response, endorsing neither descriptor. Negative descriptors were listed on each left side endpoint and with positive descriptors listed on each right side endpoint; thus higher ratings represented more positive self-assessments of emotional well-being and vice versa. For the proposed study all but two items will be included for the measure of emotional well-being (the two omitted items pertained to physical health and are conceptually distinct as a separate variable). For the proposed study a multi-item scale will be constructed by summing the ratings of the eight items for a total score. Internal consistency will be assessed by calculating a Cronbach's alpha coefficient.

Healthy habits. This variable consists of the two items omitted from the emotional well-being variable. Children were asked to self-assess their degree of agreement in response to two attributes of physical health on a 7-point semantic differential scale containing pairs of opposite descriptors. For the proposed study healthy habits will be assessed by responses to two of these opposite descriptor pairs: (a) "Eats Junk Food More Often Than Nutritious Foods" and "Eats Junk Food More Often Than Nutritious Foods" and (b) "Prefers relaxing over being active" and "Prefers being active over relaxing." For the proposed study a two-item scale will be constructed by summing

the ratings for a total score (see Appendix C for a complete list of items in the scale).

Internal consistency will be assessed by calculating a Cronbach's alpha coefficient.

Life skills and developmental assets was measured by asking: "A lot of different things that are important for kids as they grow up. Now we'd like to know whether you feel you have enough of these things in your life or not." Children could select from among two possible choices ("Have Enough Already" or "Wish I Had Even More") in response to the following life skills and developmental assets: (a) Positive Role Models, (b) Empowerment, (c) Creativity / Finding Your Passion, (d) Safety / Security, (e) Empathy / Altruism, (f) Optimism, (g) Physical Health, and (h) Coping with Stress. For the proposed study a multi-item scale will be constructed by summing the responses of the eight items for a total score, ranging from 0 to 8 with higher scores reflecting higher levels of the outcome. Internal consistency will be assessed by calculating a Cronbach's alpha coefficient.

Academic achievement was measured by asking children "What were your grades like this past year?" with choices (a) Mostly A's or 5's, (b) Mostly B's or 4's, (c) Mostly C's or 3's, (d) Mostly D's or 2's, (e) Mostly F's or 1's. Items will be reversed coded with a range of 1 to 5 with higher scores reflecting greater academic achievement.

Control and other predictive variables.

Family dinner frequency. Each child was asked: "In an average week, how often do you do each of the following activities with your parent(s)?" Included in the list of activities was the item: eat dinner together (at home). There were eight response options

ranging from “7 Days” to “never.” Responses were reversed coded with a range of 0 to 7 with higher scores reflecting a greater frequency of family dinners.

Family closeness. One item assessed children’s perception of how close they felt to their parent(s) with the following question: “How would you describe your relationship with your parent(s)?” “Would you say you were...?” Response options included: “Extremely Close,” “Very Close,” “Somewhat Close,” “Not Very Close,” and “Not At All Close.” Items will be reversed coded with a range of 1 to 5 which higher scores reflecting greater closeness.

Demographic characteristics. A parent of the child provided initial demographic information as part of the screening process. Variables used in this study included the gender and the age of the child, the racial or ethnic background of the parent answering the screening questions, and household income which was measured by asking parents to select the income category that “best represents your annual household income before taxes” with responses ranging from “Less than \$15,000” to “\$200,000 and over” on a 10 point scale.

Analysis Plan

Statistical Procedures

Descriptive statistics will be run first and then parameter assumptions, such as multicollinearity, will be tested. Correlations between all independent variables will be assessed to determine if any of the predictor or control variables are highly correlated. If they are, then consideration will be made to determine if it makes conceptual sense to

discard items or take highly correlated items and combine them to construct an index.

Distributions will be assessed for normality and adequate variability on all items.

Cronbach's alpha reliability statistics will be computed on the summed variables to ensure adequate internal consistency. If alpha reliability levels are not adequate, individual items will be examined.

Multiple linear regression will be used to find the best fitting linear model in a stepwise process. In the first step control variables will be entered, including child (age, gender, racial / ethnic background) and parent (highest level of education and marital status) variables. In the second step the two main predictor variables will be entered: indicators of high quality and indicators of barriers. Finally, two covariates—frequency of family meals and family closeness—will be entered to determine if the quality measures account for independent variance after controls for frequency and family closeness.

To examine possible moderator influences, multiple linear regression will be used to find the best fitting linear model in a stepwise process. In the first step control variables will be entered, including child (age, gender, racial / ethnic background) and parent (highest level of education and marital status) variables (excluding the control if it is included in the interaction term). In the second step the two interaction terms will be entered into the equation. The third step will include the interaction term: predictor variable (family dinner frequency, gender, age, or household income) x quality variable.

Standardized beta coefficients will be assessed for strength of association. The R squared values will be identified in order to determine the effect size of the association between independent and dependent variables.

References

- Anderson, S. E., Must, A., Curtin, C., & Bandini, L. G. (2012). Meals in our household: Reliability and initial validation of a questionnaire to assess child mealtime behaviors and family mealtime environments. *Journal of the Academy of Nutrition and Dietetics*, *112*(2), 276-284.
- Bennett, L. A., Wolin, S. J., & Reiss, D. (1988). Deliberate family process: A strategy for protecting families of alcoholics. *British Journal of Addiction*, *83*, 821-829.
- Bennett, L. A., Wolin, S. J., Reiss, D., & Teitelbaum, M. A. (1987). Couples at risk for transmission of alcoholism: Protective influences. *Family Process*, *26*, 111-129.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments in nature and design*. Cambridge, MA: Harvard University Press.
- Brunstrom, J. M., & Mitchell, G. M. (2006). Effects of distraction on the development of satiety. *British Journal of Nutrition*, *96*, 761-769.
- Bubolz, M. M. & Sontag, M. S. (1993). *Human ecology theory*. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R., Schumm, S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 419-448). New York, NY: Plenum Press.
- Burnier, D., Dubois L., & Girard, M., (2011). Arguments at mealtime and child energy intake. *Journal of Nutrition Education and Behavior*, *43*, 473-481.
- CASA (National Center on Addiction and Substance Abuse at Columbia University). (2011). The importance of family meals VII. Retrieved May 25, 2012, from [http:// www.casacolumbia.org/upload/2011/2011922family dinnerVII.pdf](http://www.casacolumbia.org/upload/2011/2011922family_dinnerVII.pdf).

- Compan, J., Moreno, M. T., Ruiz, M. T., & Pascual, R. E., (2002). Doing things together: Adolescent health and family rituals. *Journal of Epidemiological Community Health, 56*(2), 89-94.
- Coon, K. A., Goldberg, J., Rogers, B. L., & Tucker, K. L. (2001). Relationships between use of television during meals and children's food consumption patterns. *Pediatrics, 107*, e7.
- Czaja, J., Hartmann, A. S., Rief, W., & Hilbert, A. (2011). Mealtime family interactions in home environments of children with loss of control eating. *Appetite, 56*, 587-593.
- Denham, S. A. (2002). Family routines: A structural perspective for viewing family health. *Advances in Nursing Science, 24*(4), 60-74.
- Dickstein, S., Seifer, R., Hayden, L. C., Schiller, M., Sameroff, A. J., Keitner, G. I., (1998). Levels of family assessment II. Impact of maternal psychopathology on family functioning. *Journal of Family Psychology, 12*, 23-40.
- Eisenberg, M. E., Neumark-Sztainer, D., Haines, J., & Wall, M. (2006). Weight-teasing and emotional well-being in adolescents: Longitudinal findings from Project EAT. *Journal of Adolescent Health, 38*, 675-683.
- Eisenberg, M. E., Olson, R. E., Neumark-Sztainer, D., Story, M., & Bearinger, L. H. (2004). Correlations between family meals and psychosocial well-being among adolescents. *Archives of Pediatric and Adolescent Medicine, 158*, 792-796.
- Fiese, B. H. (1992). Dimensions of family rituals across two generations: Relation to adolescent identity. *Family Process, 31*, 151-162.

- Fiese, B. H. (1993). Family rituals in alcoholic and nonalcoholic households: Relations to adolescent health symptomatology and problem drinking. *Family Relations*, *42*, 187-192.
- Fiese, B. H. (2006). *Family routines and rituals*. New Haven, CT: Yale University Press.
- Fiese, B. H., Foley, K. P., & Spagnola, M. (2006). Routine and ritual elements in family mealtimes: Contexts for child wellbeing and family identity. *New Directions for Child and Adolescent Development*, *111*, 67-90.
- Fiese, B. H. & Tomcho, T. J. (2001). Finding meaning in religious practices: The relation between religious holiday rituals and marital satisfaction. *Journal of Family Psychology*, *15*(4), 597-609.
- Fiese, B. H., Tomcho, T., Douglas, M., Josephs, K., Poltrock, S., & Baker, T. (2002). Fifty years of research on naturally occurring rituals: Cause for celebration? *Journal of Family Psychology*, *16*, 381-390.
- Fiese, B. H., Winter, M. A., & Botti, J. C. (2011). The ABC's of family mealtimes: Observational lessons for promoting healthy outcomes for children with persistent asthma. *Child Development*, *82*, 133-145.
- Franko, D. L., Thompson, D., Affenito, S. G., Barton, B. A., & Striegel-Moore, R. H. (2008). What mediates the relationship between family meals and adolescent health issues? *Health Psychology*, *27*(Suppl. 2), S109–S117.
- Fulkerson, J. A., Story, M., Mellin A., Leffert, N., Neumark-Sztainer, D., & French, S. A. (2006). Family dinner meal frequency and adolescent development: Relationships

with developmental assets and high-risk behaviors. *Journal of Adolescent Health*, 39, 337–345.

Fulkerson, J. A., Strauss, J., Neumark-Sztainer, D., Story, M., Boutelle, K. (2007).

Correlates of psychosocial well-being among overweight adolescents: The role of the family. *Journal of Consulting and Clinical Psychology*, 75(1), 181-186.

doi: [10.1037/0022-006X.75.1.181](https://doi.org/10.1037/0022-006X.75.1.181)

Guidubaldi, J., Cleminshaw, H. K., Perry, J. D., Nastasi, B. K., & Lightel, J. (1986). The role of selected family environment factors in children's post-divorce adjustment.

Family Relations, 35, 141–151.

Hammons, A. & Fiese, B. H. (2007). Family mealtime interactions and overweight

children with asthma: Potential for compounded risks? *Journal of Pediatric Psychology*, 32, 64-68.

Henry, C. S., & Lovelace, S. G. (1995). Family resources and adolescent family life

satisfaction in remarried family households. *Journal of Family Issues*, 16, 765–786.

Imber-Black, E. (2002). Family rituals—From research to the consulting room and back

again: Comment on the special section. *Journal of Family Psychology*, 16, 445–446.

Jacobs, M. P., & Fiese, B. H. (2007). Family mealtime interactions and overweight

children with asthma: Potential for compounded risks? *Journal of Pediatric Psychology*, 32, 64-68.

- Keltner, B. (1990). Family characteristics of preschool social competence among Black children in a Head Start program. *Child Psychiatry and Human Development*, 21(2), 95- 108.
- Kiecolt-Glaser, J. K., McGuire, L., Robles, T. F., & Glaser, R. (2002). Psychoneuroimmunology: Psychological influences on immune function and health. *Journal of Consulting and Clinical Psychology*, 70, 537-547.
- Kiser, L. J., Medoff, D., Black, M. M., Nurse, W., & Fiese, B. H. (2010). Family mealtime Q-Sort: A measure of mealtime practices. *Journal of Family Psychology*, 24(1), 92-96.
- Markson, S., & Fiese, B. H. (2000). Family rituals as a protective factor for children with asthma. *Journal of Pediatric Psychology*, 25, 471–479.
- Moens E, Braet, C., & Soetens, B. (2007). Observation of family functioning at mealtime: A comparison between families of children with and without overweight. *Journal of Pediatric Psychology*, 32(1):52-63.
- Neumark-Sztainer, D., Wall, M., Story, M., & Fulkerson, J. A. (2004). Are family meal patterns associated with disordered eating behaviors among adolescents? *Journal of Adolescent Health*, 35, 350–359.
- Olson, D.H., Russell, C.S. & Sprenkle, D.H. (1989). *Circumplex Model: Systemic assessment and treatment of families*. New York: Haworth Press.
- Patton, S. R., Dolan, L. M., & Powers, S. W. (2008). Differences in family mealtime interactions between young children with Type 1 diabetes and controls:

Implications for behavioral intervention. *Journal of Pediatric Psychology*, 33, 885–893.

- Snow, C. E., & Beals, D. E. (2006). Mealtime talk that supports literacy development. In R. W. Larson, A. R. Wiley, & K. R. Branscomb (Eds.), *Family mealtime as a context of development and socialization*. (No. 111 of series “New Directions for Child and Adolescent Development,” pp. 51–66). San Francisco: Jossey-Bass.
- Speith, L. E., Stark, L. J., Mitchell, M. J., Schiller, M., Cohen, L. L., & Mulvihill, M. (2001). Observational assessment of family functioning at mealtime in preschool children with cystic fibrosis. *Journal of Family Psychology*, 26, 215–224.
- Whitchurch G.G. & Constantine L.L. (1993). *Systems theory*. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R., Schumm, S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 325-352). New York, NY: Plenum Press.

Appendix A

Response Options for *Indicators of Higher Quality Family Dinner Interactions*

- We ate in the same room
- We ate the same things
- We all sat down at the table at the same time
- We all sat down until everyone finished
- We ate something we all like
- We tried something new/different
- Everyone in the family was there
- Everyone talked / was part of the conversation
- Cell phones were not allowed
- TV was shut off
- We did not answer the phone
- We had a good conversation about a serious topic
- We had a good conversation about a non-serious topic
- We used “conversation starters” (ex., “The best part of my day today was.....”)
- We laughed
- We chose the meal together
- We prepared the meal together
- We did the “clean up” together
- We were all relaxed
- We were not in a hurry
- We played music that we all like
- We celebrated something special
- We scheduled the time in advance
- We invited friends, neighbors or relatives
- Other (specify) _____
- None of these

Appendix B

Response Options for *Barriers to Higher Quality Family Dinner Interactions*

- We did not eat in the same room
- We did not eat at the same time
- We did not eat the same things
- We all sat down at different times
- People got up and left before everyone was finished
- Not everyone liked what we ate
- Not everyone in the family was there
- Parent(s) distracted by cell phone / blackberry
- Child distracted by cell phone/blackberry
- Family member(s) were watching TV
- Family member(s) were playing video games
- Family member(s) were using the computer/Internet
- My child's friends were there
- We didn't have a lot to talk about
- We had an argument or disagreement
- We were rushed
- We were tired
- The phone rang
- Kids were out of their seats
- Other (specify) _____
- None of these

(Q.22)

1. Eats junk food more often than nutritious food

Eats nutritious food more often than junk food

8 Items for *Life Skills and Developmental Assets* scale

(Q.19) Experts say that there are a lot of different things that are important for kids as they grow up. Now we'd like to know whether you feel you have enough of these things in your life or not.

Please go through the items on this list and for each one, tell us if you think you have enough of it, or if you wish you could have even more.

Kid Wording	Have Enough Already	Wish I Had Even More
Adults or grown-ups in your life that you can look up to, go to for advice, and that listen to you.		
Chances to make your own choices, speak up about things that are not fair, and get involved in decisions that are important to you.		
Chances to be creative, try new things, and find things that you really love to do.		
Feelings of being safe, supported and cared for by my family, friends, teachers or neighbors		
Chances to help others and show you care about animals, people, or places.		
Good and hopeful feelings about what your life will be like when you grow up.		
Chances to be healthy by having good things to eat, having time to exercise and be active, and staying clean.		
Ways to make yourself feel better when you are worried, stressed or have a lot on your mind.		

Appendix D
Control Variables.

Family Dinner Frequency.

(Q.9a) In a typical week, how many days do you do the following activities with your parent(s)?

(Choose one answer for each item on the list.)

Eat dinner together (at home):

7 Days 6 Days 5 Days 4 Days 3 Days 2 Days 1 Day Never

Family Closeness.

(Q.26) How would you describe your relationship with your parent(s)? Would you say you were.....? (Select one answer.)

- Extremely Close
- Very Close
- Somewhat Close
- Not Very Close
- Not At All Close

Age and Gender.

(After a parent responded to screening questions and filled out the chart in Q.4, the eligible children who would qualify to fill sampling quotas were determined and parents were asked to select from one child from the age and gender range determined by quota parameters in Q.6).

(Q.4) How many children in each of the following age ranges are living in your household? Again, by living in your household, we mean those children who are in your home at least 3 nights per week. (Please enter a whole number in each space provided.)

<u>Age of Children</u>	<u># Boys</u>	<u># Girls</u>
Less than 12 months old		
1 year old		
2 years old		
3 years old		
4 years old		
5 years old		
6 years old		
7 years old		
8 years old		
9 years old		

10 years old		
11 years old		
12 years old		
13 years old		
14 years old		
15 years old		
16 years old		
17 years old		
18 years old		

(Q.6) Today we would like to get the opinions of a child living in your household between the ages of 8 and 18 about some activities that your family might do together. Please select which child is available and interested participate in the survey at this time.

- (Child(ren) meeting quota parameters were then listed)

Racial or Ethnic Background (of the parent answering the screening questions)

(Q.7) Which of the following groups best represents your racial or ethnic background? (Select one answer.)

- White or Caucasian (not Hispanic or Latino)
- Black or African-American (not Hispanic or Latino)
- Asian/Pacific Islander
- Native American, Alaska Native, Aleutian
- Hispanic or Latino (White or Caucasian)
- Hispanic or Latino (Black or African-American)
- Hispanic or Latino (all other races/multiple races)
- Other

Household Income.

(C.2) Which of the following income categories best represents your annual household income before taxes? (Select one answer.)

- Less than \$15,000
- \$15,000 - \$24,999
- \$25,000 - \$34,999
- \$35,000 - \$49,999
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$124,999
- \$125,000-\$149,999
- \$150,000-\$199,999
- \$200,000 and over