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## Perceptions of the Family Mealtime Environment and Adolescent Mealtime Behavior: Do Adults and Adolescents Agree?

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## Perceptions of the Family Mealtime Environment and Adolescent Mealtime Behavior: Do Adults and Adolescents Agree?

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**ABSTRACT** The family mealtime environment has great potential to affect the eating behaviors of youth in the family. It is difficult to determine the important elements of a healthy mealtime environment because a valid assessment of the family environment is so difficult to obtain. The objective of this study is to examine the level of agreement between adult and adolescent perceptions of the family mealtime environment and adolescent mealtime behavior. A telephone survey was used to query adult and adolescent family members about how they perceive the family mealtime environment and the adolescent's mealtime behavior. A convenience sample of 282 adult/adolescent pairs from four schools in the Minneapolis/St. Paul area completed the telephone surveys. Frequencies of responses and the associations between the adult and adolescent responses are presented. Pearson correlations and regression were used to examine the level of association between adult and adolescent responses. Mixed-model regression was used for the continuous variables, and mixed-model logistic regression was used for the dichotomous variables. This study showed very little concordance between adolescent and adult responses. Only one question regarding arguments about eating during mealtime showed concordance. Adults and adolescents living in the same household seem to have different perceptions of the family mealtime environment and adolescent eating patterns. Researchers need to be aware of and concerned with the validity of the use of self-report for descriptions of family mealtime. They also need to be aware of the difference in adult and adolescent perceptions and consider these differences when designing messages for the family.

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### INTRODUCTION

Research shows that dietary patterns of adolescents put them at risk for adult chronic disease<sup>1</sup> and that the family plays an important role in determining the dietary patterns

of youth.<sup>2</sup> Parents have a strong influence on food availability and eating practices of children from infancy through their adolescence.<sup>3,4</sup> A recent study of older children and adolescents demonstrated that eating meals with their family was associated with more healthful eating patterns.<sup>5</sup> It is within the context of the family environment that the adolescent learns important values and lessons about eating well and staying healthy. In a study of 9- to 15-year-old children, more than 75% cited their parents as a source of nutritional information.<sup>6</sup> These lessons may be learned in families through instruction, reinforcement, modeling, and exposure to foods.

Little is known about how family members interact with regard to food choices and dietary behaviors.<sup>2</sup> As national data show a decline in the healthfulness of children's diets<sup>7,8</sup> and as the negative health sequelae related to poor diets become more evident,<sup>9,10</sup> health professionals and researchers are increasingly interested in learning about how families influence eating behavior.

Baranowski and Hearn<sup>2</sup> proposed a model of reciprocal determinism to explain family interactions and processes involved in family dietary behaviors. Family functioning, supportive behaviors, and mechanics of food production in the home are three ways in which the family may affect dietary behaviors. More research, both quantitative and qualitative, is needed to examine how these areas interact to affect dietary behaviors and to determine how to design interventions to positively affect change.

The need for more research raises a number of methodologic questions about studying family interactions. Direct observation of the family can be intrusive, and family behavior may be influenced by the presence of observers. Furthermore, direct observation is not feasible for large studies. Yet, self-report methods are influenced by a multitude of potential biases and may not be comprehensive enough to yield accurate and reliable information. We do not know if family members will report honestly and accurately or if they are even aware of how they interact with each other. We do not know if family members share common experiences and perceptions about family functioning, supportive behaviors, and food production.

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The purpose of this article was to explore the level of concordance between adult and adolescent perceptions of the family dinner environment and adolescents' mealtime behavior. This study was part of a formative assessment for the Teens Eating for Energy and Nutrition at School (TEENS) study. The goal of TEENS is to develop, implement, and evaluate classroom, school, and family interventions to increase students' intake of fruits and vegetables and decrease their intake of fat. The first aim of this article was to examine the adults' and adolescents' perceptions of the frequencies of the following family and adolescent behaviors: meals eaten together, television watching during dinner, arguments about eating during dinner, other arguments during dinner, adolescent breakfast consumption, adolescents' assistance with making dinner, and the adolescents' preparation of dinner for himself/herself or other family members. The second aim of the article was to evaluate the level of concordance between adolescent and adult responses.

## METHODS

**Sample recruitment.** A convenience sample of adolescents and their parents was recruited from four junior high and middle schools in the Minneapolis/St. Paul metropolitan area. The four schools were selected from a group of 20 schools that agreed to participate in TEENS. To recruit students and their parents, research staff visited the four schools and invited all seventh and eighth graders to participate. Research staff made presentations in classrooms or auditoriums, explained the purpose of the telephone survey to the students, and passed out information sheets and consent forms. Students were told that both the student and the parent who does most of the food shopping and cooking would be interviewed separately. Students were asked to take the forms home, describe the study to their parent or guardian, and return the completed forms to designated teachers in their schools. Additional recruitment activities included having sign-up booths at school events such as band concerts and plays.

Incentives were offered both for turning in completed forms and for participating in the telephone survey. Families who returned a signed consent form were entered into a drawing for a \$15 gift certificate. All families who completed the telephone surveys also received a pair of movie tickets and were entered into a drawing for a \$50 gift certificate. The study was approved by the University of Minnesota Institutional Review Board.

**Survey development.** The TEENS adult/adolescent telephone survey was developed to assess a variety of influences on family and adolescent eating behavior. The survey was developed by the TEENS research staff, and face validity was confirmed by other researchers. The survey was pilot tested with 25 adult/adolescent pairs. Trained telephone interviewers from Data Collection and Support Services at the

University of Minnesota conducted the telephone interviews using a computer-assisted telephone interviewing system. Based on the pilot testing, language and response scales were simplified, and items were organized into topic areas to ease administration. The final version of the adult survey included 107 items and took approximately 20 minutes; the final version of the adolescent survey included 45 items and took approximately 8 minutes. Eight of the questions were identical on both surveys. Whenever possible, interviewers completed the survey with the adult first and then with the adolescent.

**Measures.** For the purposes of this study, the eight items that were identical on both the adult and adolescent surveys were chosen to evaluate the level of concordance between adult and adolescent responses about mealtime behavior. These items assessed the adult and adolescent perceptions of the family dinnertime environment and adolescent mealtime behavior.

**Perception of the dinner environment.** Both the adults and the adolescents responded to four identical questions about the frequency of eating dinner together as a family, watching television, and having arguments about eating and having arguments in general during family dinners. Response categories included (a) never, (b) one time per month or less, (c) two to three times per month, (d) one to three times per week, and (e) four or more times per week.

**Adolescent eating and mealtime behavior.** Both the adult and the adolescent responded to four questions about the frequency of the adolescent's consumption of breakfast. Response categories included (a) never, (b) one time per month or less, (c) two to three times per month, (d) one to three times per week, and (e) four or more times per week.

**Sociodemographic variables.** Adult sociodemographic variables included gender, age, ethnicity, marital status, and family socioeconomic status (SES) and were determined by self-report. For the purposes of analysis, ethnicity was dichotomized into "Caucasian" or "non-Caucasian," and marital status was dichotomized into two-parent (married or living in a marriage-type relationship) or single-parent household.

The SES categories were developed for this study by creating a 3 × 3 table using parent responses to questions on employment status and education. Families were categorized as low SES if no adult in the family had completed college and adults in the family were either unemployed or working in a clerical or trade position. Moderate SES was defined as at least one adult having some college experience and working in a clerical or trade job or at least one adult in the family having a college degree. High SES families were defined as those where at least one working adult had a college degree or at least one adult with some college was employed as a professional, executive, or administrator.

**Sample.** There were 1371 eligible adolescents and their families in the four schools. Of the 309 who agreed to participate, 287 adult/adolescent pairs completed the survey. Due to missing data, the final sample was 282 adult/adolescent pairs. Thirty-five percent of the sample came from one school, 25% each from two schools, and 15% from the fourth school. The majority of the adult sample was Caucasian (75%) and female (91%). The adolescent sample was primarily female (62%). The mean age of the adolescent and parent respondents was 13.1 and 40.4 years, respectively. The demographic characteristics of the sample are listed in Table 1.

**Statistical analysis.** All analyses were conducted using Version 6.12 of SAS.<sup>11</sup> Statistical significance was determined at  $p < .05$ . Frequencies were examined using PROC FREQ. Pearson product-moment correlations were examined using PROC CORR. Mean differences between the two sources (parent vs. adolescent) were examined using mixed-model regression analysis. Mixed-model regression extends the familiar general linear model to accommodate additional sources of random variation in addition to residual error.<sup>12</sup> The data analyzed for this article are from a cluster-sampling design, wherein the school is the cluster, crossed with the fixed effects of interest, with multiple students nested within each school.<sup>13</sup> School was included as a random effect both to account for variation due to schools and

to allow for broader inferences to other schools like those included in the study.<sup>12</sup> For dependent variables that were expected to have normally distributed residuals, we fit the mixed-model regression analyses with SAS PROC MIXED, which implements the general linear mixed model. We also confirmed the distribution of the residuals.

Two of the variables (family sit down to dinner and adolescent breakfast consumption) were negatively skewed, and one of the variables (television viewing) was bimodal. We were unable to transform these three variables to eliminate those features. To be consistent across the three variables, we dichotomized each one, assigning responses to "frequent" (four or more times per week) or "less frequent" (less than four times per week). We then fit the mixed-model regression analyses using the GLIMMIX macro.<sup>12</sup> The GLIMMIX macro implements the generalized linear mixed model. We specified a binomial error distribution and a logit link to obtain a mixed-model logistic regression analysis.

RESULTS

**Family mealtime environment.** Table 2 shows the distribution of adult and adolescent responses to the four questions assessing the mealtime environment. Over half of the adults and adolescents reported that the family sits down

**Table 1.** Demographic information of the sample (N = 282).

|  |             |
|--|-------------|
| Adult interviewed  |             |
| Mother   | 235 (83.7%) |
| Stepmother   | 7 (2.5%)    |
| Other female guardian  | 8 (2.8%)    |
| Father   | 23 (8.2%)   |
| Stepfather   | 1 (0.4%)    |
| Other male guardian  | 1 (0.4%)    |
| Gender of adolescent   |             |
| Female   | 174 (61.7%) |
| Male   | 108 (38.3%) |
| Ethnicity  |             |
| Caucasian  | 212 (75.2%) |
| Other ethnicity (African American, Hispanic, Asian, American Indian)     | 70 (24.8%)  |
| Marital status   |             |
| Two parents in household (married or living with someone)                | 197 (69.9%) |
| Single-parent household (separated, divorced, widowed, or never married) | 85 (30.1%)  |
| Family socioeconomic status  |             |
| High   | 82 (29.1%)  |
| Moderate   | 103 (36.5%) |
| Low  | 97 (34.4%)  |
| Mean age   |             |
| Adolescent   | 13.1        |
| Parent   | 40.4        |

**Table 2.** Frequencies of responses by adults and adolescents about the family mealtime environment (N = 282).

| <i>How Often Would You Say That Your Family . . .</i> |  | <i>Adult (%)</i>    | <i>Adolescent (%)</i> |      |
|---|--|---------------------|-----------------------|------|
| Sits down together for dinner?                        | Never  | 0                   | 1.1                   |      |
|   | ≤ 1 time per month   | 3.5                 | 9.6                   |      |
|   | 2–3 times per month  | 7.8                 | 13.1                  |      |
|   | 1–3 times per week   | 28.7                | 26.6                  |      |
| ≥ 4 times per week                                    |  | 59.9                | 49.6                  |      |
|   | Has arguments about eating occurring during dinner time?     | Never               | 35.5                  | 26.6 |
|   |  | ≤ 1 time per month  | 24.1                  | 37.9 |
|   |  | 2–3 times per month | 12.8                  | 14.5 |
| 1–3 times per week                                    |  | 19.1                | 17.4                  |      |
| ≥ 4 times per week                                    |  | 8.5                 | 3.5                   |      |
|   | Has arguments not about eating occurring during dinner time? | Never               | 23.4                  | 15.2 |
|   |  | ≤ 1 time per month  | 35.1                  | 29.1 |
|   |  | 2–3 times per month | 18.1                  | 23.4 |
| 1–3 times per week                                    |  | 16.0                | 26.6                  |      |
| ≥ 4 times per week                                    |  | 7.4                 | 5.7                   |      |
|   | Has the television on during dinner time?                    | Never               | 32.3                  | 24.1 |
|   |  | ≤ 1 time per month  | 4.3                   | 12.8 |
|   |  | 2–3 times per month | 5.0                   | 10.3 |
| 1–3 times per week                                    |  | 19.1                | 21.6                  |      |
| ≥ 4 times per week                                    |  | 39.4                | 31.2                  |      |

together for dinner four or more times per week. Less than 10% of the adults and adolescents reported that frequent arguments occur during dinner time. Approximately 40% of the adults and 31% of the adolescents reported that the television is on four or more times per week during dinner time, whereas 32% of the adults and 24% of the adolescents reported that the television is never on.

**Adolescent mealtime behavior.** Table 3 shows the distribution of adult and adolescent responses to questions assessing adolescents' mealtime behavior. Seventy-six percent of the adults and 60% of the adolescents reported that the adolescent eats breakfast four or more times per week. The adolescents reported participating in dinner preparation more frequently than adults reported them doing so. Less than half of the adults and adolescents reported that the adolescent helps make dinner at least once a week. Thirty-eight percent of the adults and 47% of the adolescents reported that the adolescent makes dinner for himself/herself at least once per week. Twenty-six percent of the adults and 36% of the adolescents reported that the adolescent makes dinner for at least one other family member once a week or more.

**Comparisons between adult and adolescent responses to questions about arguments during mealtimes and assistance with dinner preparation.** Table 4 summarizes the results from the mixed-model linear regression

**Table 3.** Frequencies of responses by adults and adolescents about the adolescent's mealtime behavior (N = 282).

| How Often Would You Say That the Adolescent . . .  |                     | Adult (%) | Adolescent (%) |
|--|---------------------|-----------|----------------|
| Eats breakfast?                                    | Never               | 0.4       | 0.7            |
|  | ≤ 1 time per month  | 2.1       | 5.0            |
|  | 2–3 times per month | 2.8       | 5.3            |
|  | 1–3 times per week  | 19.1      | 29.1           |
|  | ≥ 4 times per week  | 75.5      | 59.9           |
| Helps make dinner?                                 | Never               | 11.7      | 7.1            |
|  | ≤ 1 time per month  | 24.1      | 19.5           |
|  | 2–3 times per month | 22.7      | 25.2           |
|  | 1–3 times per week  | 32.6      | 34.0           |
|  | ≥ 4 times per week  | 8.9       | 14.2           |
| Makes dinner for himself/herself?                  | Never               | 14.5      | 7.1            |
|  | ≤ 1 time per month  | 24.8      | 20.2           |
|  | 2–3 times per month | 22.3      | 25.5           |
|  | 1–3 times per week  | 31.9      | 35.8           |
|  | ≥ 4 times per week  | 6.4       | 11.3           |
| Makes dinner for at least one other family member? | Never               | 21.6      | 9.6            |
|  | ≤ 1 time per month  | 30.9      | 34.4           |
|  | 2–3 times per month | 21.3      | 20.6           |
|  | 1–3 times per week  | 22.0      | 27.7           |
|  | ≥ 4 times per week  | 4.3       | 7.8            |

analyses. Paired adult and adolescent responses to the five questions retained as continuous variables were compared with one another. There were statistically significant differences between the adults' and adolescents' responses on four of the five continuous questions. In each case, the adolescents reported greater frequencies than did the adults. Pearson correlations for adult and adolescent responses ranged from a low of .14 to a high of .39. There was no significant difference between adolescent and adult responses on the question concerning the frequency of arguments about eating during dinner time.

**Comparisons between adult and adolescent responses to questions about the family sitting down to dinner, the use of the television during dinner, and the adolescent's breakfast consumption.** Table 5 summarizes the results from the mixed-model logistic regression analyses. Paired adult and adolescent responses to the three dichotomized questions were compared with one another

**Table 4.** Agreement between adult and adolescent responses to questions about family mealtime environment and adolescent eating and mealtime behavior.

|  | Means <sup>a</sup>                 | Correlation | Significance <sup>b</sup> |
|--|------------------------------------|-------------|---------------------------|
| How often do arguments about eating occur during dinner time?                                  | Adolescent = 1.37<br>Parent = 1.44 | .16         | NS                        |
| How often do other arguments, not about eating, occur during dinner time?                      | Adolescent = 1.79<br>Parent = 1.49 | .14         | p < .05                   |
| How often would you say that the adolescent helps make dinner?                                 | Adolescent = 2.27<br>Parent = 2.01 | .39         | p < .05                   |
| How often would you say that the adolescent makes dinner for himself/herself?                  | Adolescent = 2.24<br>Parent = 1.90 | .31         | p < .05                   |
| How often would you say that the adolescent makes dinner for at least one other family member? | Adolescent = 1.88<br>Parent = 1.55 | .30         | p < .05                   |

<sup>a</sup> Means represent response categories, ranging from 0 = never to 4 = 4 or more times/week.

<sup>b</sup> Significance for test of mean difference between parent and adolescent based on mixed-model regression.

**Table 5.** Adjusted odds ratios and 95% confidence intervals for frequently (4 times per week or more) sitting down to dinner, having the television on, and adolescent eating breakfast, comparing adolescent responses to adult responses.

|  | <i>Adolescent's<br/>Response</i> | <i>Adult's<br/>Response</i> |
|--|----------------------------------|-----------------------------|
| How often does your family sit down together for dinner? | .66<br>(.52-.84)                 | 1.0                         |
| How often is the television on during dinner?            | .69<br>(.53-.90)                 | 1.0                         |
| How often does the adolescent eat breakfast?             | .48<br>(.36-.63)                 | 1.0                         |

and all were found to be statistically different. Adolescents were less likely than adults to report frequent family meals and frequent use of the television during dinner. Adolescents and adults were discordant in their reports of adolescents' frequent breakfast eating, with adolescents reporting lower frequencies than adults.

## DISCUSSION

This study found that the adults and adolescents living in the same household have different perceptions of the family mealtime environment and adolescent eating patterns. Of the eight questions, only one showed statistically significant agreement between adult and adolescent perceptions: the frequency of arguments about eating. The adults in this study perceived more frequent family dinners, more arguments during dinner, more television viewing during dinner, and more frequent breakfast consumption by the teens as compared with the teens' perceptions. Teens perceived that they are more frequently involved in helping with or making dinner for themselves or other family members than adults perceive them to be.

The results on the frequency of family meals present a less favorable picture with this study sample than other national surveys. In one national telephone survey of parents of 12 to 17 year olds, 74% reported having dinner together as a family more than 4 days per week and 27% reported having dinner together one to three times per week.<sup>14</sup> Another study showed that 88% of families with children from 6 to 15 years old eat dinner together three or more times per week.<sup>15</sup> In our study, 60% of the parents reported sitting down together four or more times per week and 29% reported having dinner together one to three times per week. Discrepancies in findings may be attributed to the samples. Our sample was a convenience sample of adolescents in one geographic area, and only seventh and eighth graders were invited to participate. It is interesting that our study showed fewer parents reporting frequent meals (four or more times per week) since

the national study had a wider age range and it is expected that older adolescents would eat with the parents less frequently. This is of concern because of the association between family meals and healthful dietary patterns in adolescents.<sup>5</sup>

Our data are consistent with the literature on television use during dinner and breakfast consumption. There is very little research published on television use during dinner meals. One older study<sup>16</sup> showed that one-third of the households surveyed in a study in Minnesota had the television on most of the time during the evening meal. In our study, almost 40% of parents and 31% of adolescents reported that the television is on during dinner four or more times per week. However, approximately 20% of parents and adolescents reported that the television is on during dinner time one to three times per week. Television use during dinner may decrease family interactions and is associated with poorer eating choices.<sup>17</sup> National surveys show that approximately three-quarters of adolescents age 11 to 14 report that they consume breakfast consistently.<sup>18</sup> Our study showed that 75% of parents report that the adolescent eats breakfast four or more times per week, and 60% of adolescents report frequent breakfast consumption. This is also of concern because of the recent literature linking psychosocial and cognitive consequences with missing breakfast.<sup>10</sup>

Although this study is cross-sectional, we can hypothesize about the factors that played a role in the low level of concordance seen in this study. It appears that the adults' responses point to a more positive impression of the frequency of family dinners and the adolescents' breakfast consumption. The adolescents' responses seem to present a more positive view of their own behavior as it relates to meal preparation. It is possible that the adults and/or adolescents were vulnerable to response or social desirability biases. It is also possible that adults and adolescents remember events differently or are differentially able to estimate frequencies of activities or behaviors. The cognitive and developmental levels of the adolescent may also have played a role in the low level of concordance.<sup>19</sup>

There are a number of limitations that should be considered when evaluating this study. This study used a self-selected sample and only asked questions about a limited number of family mealtime patterns and eating behaviors. The measurement instrument does not provide a timeframe in which to evaluate these behaviors nor does it provide standard definitions for key terms, such as breakfast or helping with dinner. It is possible that adults or adolescents may be interpreting these key terms differently. In addition, the participants may have been vulnerable to a response or social desirability bias. Since this is a new field of study, qualitative research might be particularly beneficial. If open-ended questions were used, we may have been able to clarify some of the areas of disagreement.

It is also important to consider the practical significance of the differences seen in this study. There were statistically significant differences between perceptions of the parent and adolescent on seven of the eight questions evaluated.

However, the statistical difference may not represent the practicality of the data. The plots of the distributions of the responses from the adult and adolescent (see Tables 2 and 3) are similar shapes. This brings up the difficult question of practical versus statistical significance. It is possible that with a larger sample, the differences found between adult and adolescent responses would be less significant.

## IMPLICATIONS FOR RESEARCH AND PRACTICE

Our study has implications for researchers investigating family influences on eating patterns. From these data, there are a number of questions raised about how to collect reliable and valid information about family interactions. This study showed that adults and adolescents do not share similar perceptions about mealtime environment issues and raises the question of whether researchers should interview parents, adolescents, or both. However, the question of validity still remains. Short of direct observation of families, there is no criterion measure of what actually occurs in families. Even if we could accurately describe what occurs in a family, reality may not be as important as family members' perceptions of what occurs in explaining family member's eating behaviors.

This study also has interesting implications for researchers, highlighting a need to be aware of differences in adult and adolescent perceptions. For example, parents may disregard messages about increasing breakfast consumption because they believe that their adolescent is already consuming breakfast frequently. Thus, messages should be targeted to families in a manner that would address both adolescent and adult perceptions. In some cases, separate adult and adolescent messages may need to be delivered.

In conclusion, this study suggests that family members have dissimilar perceptions about many elements of the family mealtime environment and adolescent eating patterns. This discordance presents challenges for both evaluating and intervening in factors influencing family dietary behaviors.

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