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## Variation in Associations Between Family Dinners and Adolescent Well-Being

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### Abstract

Empirical evidence and conventional wisdom suggest that family dinners are associated with positive outcomes for youth. Recent research using fixed-effects models as a more stringent test of causality suggests a more limited role of family meals in protecting children from risk. Estimates of average effects, however, may mask important variation in the link between family meals and well-being; in particular, family meals may be more or less helpful based on the quality of family relationships. Using 2 waves of the National Longitudinal Study of Adolescent Health ( $N = 17,977$ ), this study extended recent work to find that family dinners have little benefit when parent–child relationships are weak but contribute to fewer depressive symptoms and less delinquency among adolescents when family relationships are strong. The findings highlight the importance of attending to variation when assessing what helps and what hurts in families.

### Keywords

child well-being; family demography; National Longitudinal Study of Adolescent Health; parental investment/involvement

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A substantial body of research has demonstrated strong associations between the frequency of family meals and a range of positive adolescent outcomes, including healthy body weight, psychological well-being, academic achievement, and risk behavior avoidance (e.g., Center on Addiction and Substance Abuse, 2010; Eisenberg, Olson, Neumark-Sztainer, Story, & Bearinger, 2004; Hammons & Fiese, 2011). In a recent study that relied on the National Longitudinal Study of Adolescent Health (Add Health; see <http://www.cpc.unc.edu/projects/addhealth>) and fixed effects, however, we reported weaker estimated effects of family dinners on adolescent depression, substance use, and delinquency (Musick & Meier, 2012). Another study, which also relied on fixed effects but focused on a younger sample, found no evidence of a causal link between family meals and academic or behavioral outcomes (Miller, Waldfogel, & Han, 2012). This latest round of research points to weaker family dinner effects than typically assumed, but it leaves open the possibility that average associations mask important variation in family dinner experiences and their link to child well-being. For families characterized by poor quality relationships, gathering regularly around the table may produce another site for conflict, thereby dampening, eliminating, or

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reversing any good that may come of the family meal (Wilk, 2010). To our knowledge, none of the work on family meals has examined how associations with child well-being vary by the quality of family relationships. We address this gap in the literature using a nationally representative panel study of adolescents and rigorous methods for assessing causality.

## Background

Family meals may contribute to child well-being by providing a routine time for parents to connect with children, check in about achievements or problems, transmit values, establish family identity, and feed general family solidarity (Fiese, Foley, & Spagnola, 2006). But it may also be the case that families who get along are more successful in regularly bringing family members around the table—and that the meal is simply a reflection of other resources and relationships supporting child development (e.g., Resnick et al., 1997). Greater family meal frequency is indeed associated with higher quality family relationships (Musick & Meier, 2012), and part of the association between family meals and adolescent well-being has been attributed to family relationship quality (Eisenberg et al., 2004; Fulkerson et al., 2006; Musick & Meier, 2012; Sen, 2010).

Family theory and research point further to the importance of relationship quality in conditioning associations between child well-being and what families do and how they are structured. For example, prior work has demonstrated that the association between family structure and child well-being depends on the quality of parental relationships (Amato & Booth, 2001; Musick & Meier, 2010). In relation to mealtime, a handful of studies on nutrition have examined how characteristics of the meal are associated with children's eating patterns, suggesting that frequent well-managed meals may be beneficial, whereas meals characterized by negative patterns of interaction may not. In particular, meals characterized by positive atmosphere, direct communication, and role assignment were associated with better child eating behavior (Neumark-Sztainer, Wall, Story, & Fulkerson, 2004), whereas overcontrolling parenting, less positive communication, and restrictive food practices at the table were associated with overweight or obese status (Faith, Scanlon, Birch, Francis, & Sherry, 2004). Time diary data revealed that mealtime communication was associated with adolescent emotional well-being (Offer, 2013). These studies point to the possibility that more general aspects of a family's affective environment may condition the effects of family meal frequency on broader measures of adolescent well-being.

Consistent with this notion, aspects of the family environment may be seen as a package of family features that influence youth development, with shared meals and other family processes reinforcing each other (Furstenberg, 2011). For example, parents who maintain higher quality relationships with their children may be better at soliciting participation in mealtime conversation and checking in with children in nonthreatening ways. Conversely, gathering at dinnertime may tax strained relationships and offer little space for positive communication. As the work of family scholars suggests, the family table, like the broader household, is a potential arena of conflict (DeVault, 1991; Fulkerson, Story, Neumark-Sztainer, & Rydell, 2008).

In the present study, we contribute to the growing literature on family meals by asking whether family relationship quality spills over to the dinner table and conditions associations between family dinners and child well-being. We use our recent study (Musick & Meier, 2012) as a starting point, leveraging the same data, measures, and rigorous design to generate estimates of the causal relationship between family dinners and three dimensions of adolescent well-being: (a) depressive symptoms, (b) substance use, and (c) delinquency. We extend our prior findings by examining the extent to which the relatively weak average

effects of family dinners we reported mask variation in effects by family relationship quality.

We expected that more frequent family dinners would be associated with larger reductions in depressive symptoms, substance use, and delinquency when family relationships are strong. In the context of poor quality family relationships, we expected more frequent family dinners to be associated with smaller reductions—or perhaps even increases—in these outcomes. We tested these hypotheses in two steps. First, relying on Wave 1 of the Add Health study, we estimated models of adolescent well-being, including a rich set of controls and interactions, added each in turn, between family dinners and three indicators of family relationship quality: (a) parent–child relationship quality, (b) global family relationship quality, and (c) arguments with parents. Controls tapped potential confounders, including dimensions of parenting, family size, family structure, family income, parental education, and maternal employment. Prior research has shown, for example, less frequent family meals in lower income, single-parent, and working-mother families (Musick & Meier, 2012) and that children in turn tend to fare poorer in these families (Morrisey, Dunifon, & Kalil, 2011; Resnick et al., 1997).

In the second step of our analysis, we used Waves 1 and 2 and a fixed-effects approach to estimate change in our outcomes over the course of a year as a function of change in family dinners conditioned by Wave 1 family relationship quality. Again, we tested interactions with three indicators of family relationship quality, each entered in turn in separate models. Leveraging the panel data in this way controlled for preexisting, stable individual differences between adolescents (e.g., temperament or family ideology that may influence family meal frequency and adolescent well-being), more rigorously assessing the notion that the quality of family relationships shapes family dinner effects on trajectories of adolescent well-being.

## Method

### National Longitudinal Survey of Adolescent Health

Add Health is a nationally representative survey of U.S. adolescents who were in Grades 7 to 12 in 1994–1995. In 1995, more than 90,000 adolescents in 80 schools completed a self-administered, in-school questionnaire, and more than 20,000 students and one of their parents completed an in-home interview. The Add Health cohort has been followed into young adulthood with a total of four in-home interviews; the present study relied on the first two. The Wave 2 in-home interview was conducted in 1996 and was limited to the 14,736 students who had not yet graduated high school. We drew primarily from the adolescent in-home questionnaires, although some information (i.e., family income and parental education) was taken from the resident parent questionnaire (fielded only in Wave 1). In all analyses, we adjusted for Add Health's complex sampling design (Chantala & Tabor, 2010).

We relied on data from Add Health's probability sample, which includes 18,924 adolescents at Wave 1 (this excludes 1,850 respondents, or 9%, who were either not in the original sampling frame or selected as part of a pair in which both were not interviewed; Chantala & Tabor, 2010). In our analysis of Wave 1, we excluded adolescents not living with a parent (388, or 2% of cases) and those missing information on dependent variables of interest (559, or 3% of cases), for an analysis sample of 17,977. In our fixed-effects analysis of Waves 1 and 2, we further lost 3,294 cases (18%) due to non-follow-up, 1,669 (11%) due to nonresponse, 364 (3%) with no parent or parent figure in the household at Wave 2, and 204 (2%) with missing data on dependent variables at Wave 2, for a sample of 12,446.

Two of our control variables were missing data for more than 5% of our analysis sample: Family income was missing for 25% of respondents (ascertained in the parent interview, which 14% of our sample did not complete), and father's education was missing for 6% of cases (collected from both parents and adolescents, but disproportionately missing for respondents living apart from a father). We imputed missing data using chained equations in Stata. These were informed by our analysis variables and a small number of auxiliary variables from the Wave 1 panel, as well as by measures collected at Waves 2 and 3. The auxiliary variables included whether a parent was foreign born and did not speak English, factors associated with lower response to the parent interview (J. Tabor, personal communication, October 1, 2011). We followed Schafer and Graham's (2002) suggestion to use multiple waves of longitudinal data to impute missing values at any wave. All cases were used in the imputation, although we excluded those with imputed dependent variables from our analysis (von Hippel, 2007). We generated 25 data sets and combined estimates from the multiply imputed data using Stata's MI prefix. Our key findings appeared robust to variations in imputation model and number of data sets, consistent with Johnson and Young's (2011) sensitivity analysis, which showed few differences in findings based on a range of imputation strategies applied to large-scale family data.

## Outcomes

We examined three outcomes capturing well-being in adolescence: (a) depressive symptoms, (b) substance use, and (c) delinquency. *Depressive symptoms* were assessed at Waves 1 and 2 using nine items from the Center for Epidemiological Studies Depression Scale (Radloff, 1977). Respondents were asked, "How often was each of the following things true during the past week?" (a) you were bothered by things that usually don't bother you; (b) you felt that you could not shake the blues, even with help from family and friends; (c) you felt that you were just as good as other people; (d) you had trouble keeping your mind on what you were doing; (e) you felt depressed; (f) you felt that you were too tired to do things; (g) you enjoyed life; (h) you felt sad; and (i) you felt that people disliked you. Response options were 0 = "never or rarely," 1 = "sometimes," 2 = "a lot of the time," and 3 = "most or all of the time." We reverse-coded items c and g and averaged over all items for a scale ranging from 0 to 3, with higher scores indicating more depressive symptoms ( $\alpha = .79$  at Wave 1 and  $.80$  at Wave 2).

We used six questions at Waves 1 and 2 to measure *substance use*. Items pertained to binge drinking (five or more drinks in one sitting), cigarette smoking, marijuana, cocaine products, inhalants, and other illegal drugs. The time referent was "ever" at Wave 1 and "since date of last interview" at Wave 2. Because of the dissimilarity in response options, we followed McCarthy and Casey (2008) and constructed a binary indicator of any use across the six items.

To assess *delinquency*, we created an index from self-reports of participation in 14 delinquent activities in the past 12 months: (a) painting graffiti, (b) damaging property, (c) shoplifting, (d) stealing something worth less than \$50, (e) stealing something worth \$50 or more, (f) burglarizing, (g) using a car without the owner's permission, (h) selling drugs, (i) getting into a serious physical fight, (j) seriously injuring another person, (k) threatening to use a weapon on someone, (m) getting into a group fight, (n) pulling a knife or gun on someone, or (o) shooting or stabbing someone. Adolescents reported on the same items at both waves, and we counted the number of activities from 0 to 14 ( $\alpha = .80$  at both Waves 1 and 2). See Musick and Meier (2012) for a discussion of the substance use and delinquency indices and sensitivity analyses of their associations with family dinners.

## Family Dinners

Our key explanatory variable was *family dinners*. At Waves 1 and 2, adolescents were asked, “On how many of the past 7 days was at least one of your parents in the room with you while you ate your evening meal?” This was coded on a scale that ranged from 0 to 7. Questions about family meal frequency differ across surveys (e.g., the National Longitudinal Survey of Youth 1997 asks “In a typical week, how many days from 0 to 7 do you eat dinner with your family?”). Despite inconsistencies in wording, estimates of shared meals appear reasonably consistent across surveys, with about 60% of families eating dinner together five or more times per week (Center on Addiction and Substance Abuse, 2010; Musick & Meier, 2012; Sen, 2010).

## Quality of Family Relationships

We examined three measures of the quality of family relationships, assessed at Waves 1 and 2: (a) parent–child relationship quality, (b) global family relationship quality, and (c) arguments with a parent. *Parent–child relationship quality* was based on five questions addressing, in turn, adolescents’ relationships with their resident mothers and fathers. The first two items were assessed on a scale that ranged from 1 (*not at all*) to 5 (*very much*): (a) “How close do you feel to your mother/father?” and (b) “How much do you think she/he cares about you?” The next three items were assessed on a scale that ranged from 1 (*strongly agree*) to 5 (*strongly disagree*): (c) “Most of the time, your mother/father is warm and loving toward you,” (d) “You are satisfied with the way your mother/father and you communicate with each other,” and (e) “Overall, you are satisfied with your relationship with your mother/father.” We reverse-coded items so that higher values represented better relationships and separately averaged items pertaining to mothers and fathers ( $\alpha$ s = .85 and .84 for mothers’ scores and .89 and .87 for fathers’ scores at Waves 1 and 2, respectively). We took the higher of the two scores (or just one, in the case of single parents).

We measured *global family relationship quality* with an average of responses to three items, asking adolescents, “How much do you feel that....” (a) “people in your family understand you?”, (b) “you and your family have fun together?”, and (c) “your family pays attention to you?” Response options were made on a scale that ranged from 1 (*not at all*) to 5 (*very much*), with higher scores indicating better family relationships ( $\alpha$ s = .79 at Wave 1 and .70 at Wave 2).

We generated an indicator for *arguments with a parent* from adolescent reports of whether they had gotten into a serious argument about their behavior with their resident mother or father in the past 4 weeks. This was coded 1 if the adolescent reported a serious argument with either the mother or father.

## Controls

We included controls for characteristics of adolescents and their families potentially associated with both the management of a regular family dinner and child well-being: adolescent age, gender, and race and ethnicity; dimensions of parenting, including activities with a parent and parental control over adolescent decision making; and indicators of family resources, including family size, family structure, family income, parental education, and maternal employment. Descriptive statistics and coding details are included in Table 1.

## Models

The first step of our analysis used data from Wave 1 to assess variation in associations between family dinners and adolescent outcomes, including all controls and testing interactions between family dinners and our three measures of family relationship quality,



each in a separate model. We modeled outcomes using ordinary least squares (OLS) regression, which greatly facilitates the interpretation of interaction terms—a challenge with nonlinear models (Norton, Wang, & Ai, 2004). Whereas the probability of substance use and the count of delinquent acts are, in principle, better suited to nonlinear models, in practice we found little difference in estimated main effects of family dinners on these adolescent outcomes whether we used linear or nonlinear models (results available on request).

The second step of our analysis relied on Waves 1 and 2, using the same measures of adolescent outcomes, family dinners, and relationship quality at both time points. We estimated first-difference models, which are equivalent to fixed-effects models in the two-period case, running OLS models of changes in well-being on changes in family dinners and an interaction conditioning family dinners effects by Wave 1 measures of family relationship quality. We ran three models for each outcome, entering interactions between changes in family dinners and our three measures of family relationship quality in turn. Regressing change in  $y$  onto change in  $x$  eliminates bias due to time-invariant unobserved factors that might jointly determine family dinners and adolescent well-being (e.g., temperament or family ideology). Modeling changes as opposed to levels also reduces bias due to persistent reporting errors, for example, any tendency to misreport depressive symptoms, substance use, or delinquency.

Although the first-difference model reduces bias due to time-invariant factors, estimated effects may nonetheless suffer from bias due to time-varying unobservables. To reduce this possibility, we ran models controlling for changes in family resources, namely, in the number of household children, family structure, and maternal employment. Unobserved changes remain a potential source of bias, as does any change in children's behavior that might affect family dinners (Allison, 1990; Winship & Morgan, 1999).

## Results

In Table 2 we present the results of Wave 1 OLS regression models of adolescent depressive symptoms, delinquency, and substance use. As noted, we ran three models for each of our outcomes, including our full set of controls in all models plus one of three family relationship quality interactions discussed above. In Table 2 we show results of our models only if the interaction term is statistically significant (see online Table 1A for full model results and online Figures 1A–3A for illustrations of key findings; these are on the *Journal of Marriage and Family* website: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1741-3737](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1741-3737)).

The first set of columns in Table 2 reports OLS coefficients from a model of adolescent depressive symptoms that interacts family dinner frequency with parent–child relationship quality. The interaction term coefficient was negative and statistically significant, indicating that more frequent family dinners were associated with greater declines in depressive symptoms with each unit increase in parent–child relationship quality; that is, in line with expectations, the association between family dinners and teen psychological well-being was stronger when children reported higher quality relationships with parents. There was no significant variation in associations between family dinner frequency and depressive symptoms at different levels of global family relationship quality or by recent arguments with a parent (see online Table 1A).

We calculated predicted depression scores on the basis of Model 1 (see Table 2), varying family dinners and parent–child relationship quality while holding all other variables at their mean levels (see online Figure 1A). Depressive symptoms ranged from 0 to 3, with a mean of 0.63 and standard deviation of 0.47 (see descriptives in Table 1). Parent–child

relationship quality was high, on average ( $M = 4.51$  on a scale of 1–5,  $SD = 0.57$ ). For teens who reported the maximum parent–child relationship quality, the predicted depression score was 0.67 among those who shared no family dinners, but it was 0.54 among those who had family dinners every night of the week—a difference of 0.13 points, or 28% of a standard deviation in depression symptoms. For teens who reported very low parent–child relationship quality (assessed at a score of 3, or more than 2  $SD$  below the mean), there was little difference in predicted depression scores among those who shared no family dinners versus those who ate family dinners every night of the week (0.74 vs. 0.72, respectively). And for teens who reported parent–child relationship quality at an average of 2 and below, increases in dinners were associated with increases in depressive symptoms. This suggests that family dinners may be counterproductive when relationships quality is poor, although these findings should be interpreted with caution because a small share of adolescents in our sample reported relationship quality in this range.

The second set of columns in Table 2 reports coefficients from a linear probability model of adolescent substance use. The interactions of family dinners with parent–child relationship quality (Model 1), global family relationship quality (Model 2), and arguments with a parent (Model 3) are all statistically significant in predicting substance use. As expected, more frequent family dinners were associated with a lower probability of substance use with each unit increase in parent–child relationship quality and global family relationship quality. The coefficient for the Family Dinners  $\times$  Arguments With a Parent interaction was positive, pointing to relatively higher probabilities of substance use with increases in family dinners for teens who reported a serious argument with a parent in the last month.

To demonstrate this last difference, we calculated predicted probabilities of substance use based on Model 3 (see Table 2), varying family dinners and arguments with a parent while holding all other variables at their mean levels (see online Figure 2A). Overall, 63% of teens reported substance use. For teens who reported a serious argument with a parent in the last month (38% of the sample), the predicted probability of substance use was 0.76 among those who shared no family dinners and 0.70 among those who ate family dinners every night of the week—a difference of 0.06 points. For those who reported no recent arguments, the predicted probabilities were 0.69 and 0.55 among those who shared no meals versus those who shared meals every night—a differences of 0.14 points. Family dinners in the presence of conflict were thus associated with substantially smaller reductions in substance use (although not with absolute increases in substance use).

The third set of columns in Table 2 shows OLS model results for adolescent delinquency. Here, consistent with results discussed above, family dinners appeared to be more beneficial when family relationships were strong: More frequent family dinners were associated with greater declines in delinquent acts with each unit increase in parent–child relationship quality (Model 1) and global family relationship quality (Model 2). There was no significant variation in associations between family dinner frequency and adolescent delinquency by whether the adolescent had recently argued with a parent (see online Table 1A).

We calculated predicted values of delinquency, here based on Model 2 (see Table 2), varying family dinners and global family relationship quality while holding all other variables at their mean levels (see online Figure 3A). Delinquency ranged from 0 to 14, with a mean of 1.77 and a standard deviation of 2.35. Global family relationship quality tended to be high ( $M = 3.76$  on a scale of 1–5,  $SD = 0.82$ ). For teens who reported the maximum global family relationship quality, the predicted count of delinquent acts was 1.55 among those who shared no family dinners and 0.94 among those who ate family dinners every night of the week—a difference of 0.61 points, or 26% of a standard deviation in delinquency. For teens who reported low parent–child relationship quality (assessed at a

score of 3, or about 1 *SD* below the mean), the predicted change in delinquency was substantially smaller (0.28 points, from 2.38 to 2.10 among those who ate no family dinners vs. those who shared dinners every night).

To summarize so far, family dinners appear to be associated with healthier adolescent outcomes when family relationships are stronger. Drawing on data from Wave 1 and a rich set of controls, we found statistically and substantively significant variation in associations between family dinners and adolescent outcomes by the quality of family relationships. This was a reasonably consistent finding across outcomes and indicators of relationship quality: In total, six of the nine interactions we tested were statistically significant, including at least one interaction for each of the outcomes assessed. Do these associations hold up to a more stringent test of causality?

We turn next to first-difference models that estimated change in adolescent well-being over the course of a year as a function of change in family dinners conditioned by Wave 1 family relationship quality. OLS results are shown in Table 3. Again, we tested interactions between family dinners and three indicators of family relationships quality, each entered into models in turn, although in Table 3 we show only models with statistically significant interactions. To reduce potential bias from time-varying factors, we included controls for changes in family size, family structure, and maternal employment. Full model results are included in online Table 2A.

Fixed-effects results in Table 3 show somewhat weaker evidence for conditional effects of family dinners as compared to findings from our Wave 1 analysis. In particular, two (vs. six) of the interactions we tested were statistically significant: the change in family dinner frequency over the course of 1 year with (a) parent–child relationship quality (for depressive symptoms) and (b) global family relationship quality (for delinquency). Consistent with cross-sectional results, an increase in family dinners decreased depressive symptoms more with each unit increase in initial parent–child relationship quality. Similarly, an increase in family dinners decreased delinquency more with each unit increase in initial global family relationship quality.

## Conclusion

Recent research has found weaker support for causal links between family meals and child well-being than suggested by either past empirical work or conventional wisdom (Miller et al., 2012; Musick & Meier, 2012). We assessed whether weak or null average estimated effects of family dinners mask variation based on the quality of family relationships. High-quality family relationships are associated with adolescent well-being; they have also been shown to condition associations between well-being and other aspects of the family environment. We proposed that the communication and monitoring thought to link family dinners and child well-being would work best in the context of high-quality family relationships—that is, that the quality of relationships likely sets the tone at the table, altering what good (or bad) may come of the shared meal.

Looking first at Add Health’s Wave 1 data including rich controls, we found that adolescents who reported high-quality relationships with a parent had lower levels of depressive symptoms, a lower probability of substance use, and fewer delinquent acts with each additional family dinner shared each week. Conversely, those with very low quality parent–child relationships appeared to benefit little from sharing meals more frequently. Indeed, we found some suggestion that family dinners were associated with detriments in adolescent well-being, although this applied to adolescents who reported parent–child relationship quality below the range of most of our sample. More frequent family dinners



were also more strongly associated with reduced substance use and delinquent acts among adolescents who reported higher global family relationship quality. Finally, in support of the notion that high-conflict families may experience the dinner table as a site for airing grievances, we found that more frequent family dinners were more strongly associated with reduced substance use among teens who reported no recent arguments with a parent. Our Wave 1 analysis found reasonably consistent evidence for statistically and substantively significant benefits of family dinners when family relationships are strong.

We next applied a more stringent test of the causal nature of these relationships, using a fixed-effects estimation strategy that relies on change over time. We examined links between changes in adolescent outcomes and changes in family dinners over the course of 1 year conditioned by initial levels of family relationship quality. Although not as consistent across outcomes and indicators as in our Wave 1 analysis, the fixed-effects approach nonetheless provided evidence for variation in family dinner effects. The interaction of family dinners with parent–child relationship quality was statistically significant in predicting depressive symptoms, as was the interaction with global family relationship quality in predicting delinquency. Family dinner effects on substance use by family relationship quality did not hold up in fixed-effects models, however; neither did any conditioning effects of arguments with a parent. Taken together, our results provide solid evidence that family dinner effects on depressive symptoms and delinquency depend on the quality of parent–child and global family relationship quality.

Our study (to our knowledge) is the first to assess the degree to which links between family meals and adolescent well-being may be conditioned by family relationship quality. As such, it extends to the study of family meals the careful attention to the conditioning role of family relationship quality paid to family transitions such as divorce. Explicitly testing the notion that family dinners may yield limited benefits—and potentially do harm—for youth with poor-quality family relationships adds important nuance to our understanding of what helps and what hurts in families. Furthermore, we applied rigorous methods to assess causality and examined adolescent well-being across internalizing and externalizing behaviors, highlighting the range of outcomes that may be influenced by family dinners.

The study also has limitations. Despite efforts to establish causal connections, family processes are difficult to disentangle. Our family dinners estimates may be upwardly biased by reverse causation, for example, capturing adolescents engaging in risky behaviors who skip the family dinner to avoid parents. At the same time, to the extent that family dinners foster high-quality family relationships, our approach may underestimate the total effect of family dinners.

We assume that family relationships manifest at the dinner table and thus matter for how the dinner translates into positive or negative outcomes for youth. Research on actual mealtime practices—and, in turn, what features of family meals are most important for child well-being—remains limited. We recently piloted a series of questions on an omnibus national survey that asked about who is present at dinnertime as well as roles, conversation, and conflict at the table. Preliminary results indicated that, in general, all family members were present (75% said “very often or always”), everyone took part in conversation (88% said “very often or always”), and disagreements were uncommon (60% responded “seldom or never”). Nonetheless, for about 10% of respondents, dinnertime disagreements happened “always or very often” (authors’ tabulations, Cornell Institute for Social and Economic Research, 2011). Future research that incorporates such measures in conjunction with broader assessments of the family environment and child well-being would allow scholars to further unpack the family meal—and potentially offer strategies to use at the table to promote adolescent health and well-being.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

## Means on Analysis Variables

Variable	<i>M</i>	<i>SD</i>	Range
Time 1 (T1) measures ( <i>N</i> = 17,977)			
Depressive symptoms	0.63	0.47	0–3
Substance use	0.63		
Delinquency	1.77	2.35	0–14
Family dinners	4.71	2.48	0–7
Parent–child relationship	4.51	0.57	1–5
Global family relationship	3.76	0.82	1–5
Arguments with parent	0.38		
Age at Wave 1	15.96	1.81	11–21
Female	0.50		
White	0.66		
Black	0.15		
Hispanic	0.12		
Asian	0.04		
Other race/ethnicity	0.04		
Activities with parent	1.74	1.14	0–5
Parental control	1.87	1.58	0–7
Family size (other children in HH)	1.21	1.24	0–11
Both parents	0.56		
Stepparent	0.16		
Single parent	0.23		
Other family structure	0.43		
Family income (thousands)	45.36	52.48	0–999
Mother <HS	0.18		
Mother HS	0.37		
Mother some college	0.20		
Mother college degree	0.25		
Father <HS	0.18		
Father HS	0.36		
Father some college	0.18		
Father college	0.28		
Mother employed full time	0.58		
Mother employed part time	0.19		
Mother not currently employed	0.23		
Change T2–T1 ( <i>N</i> = 12,466)			
Depressive symptoms	0.10	0.44	–3–3
Substance use	–0.05	0.47	–1–1

Variable	<i>M</i>	<i>SD</i>	Range
Delinquency	-0.43	2.09	-14-14
Change T2-T1 ( <i>N</i> = 12,446)			
Family dinners	-0.19	2.50	-7-7
Number of other children in HH	-0.09	0.68	-11-11
Family structure (0/1)	0.12		
Mother starts full-time employment (0/1)	0.12		
Mother stops full-time employment (0/1)	0.08		

*Note:* Data are weighted and design-adjusted descriptives obtained using svy commands in Stata 12.0. Age is measured at Wave 1 in years. Gender is coded 1 for female. Race/ethnicity is a set of mutually exclusive categories: non-Hispanic (NH) White, NH Black, Hispanic, NH Asian American, NH other. Activities with parent is a count of up to five activities done with a parent in past 4 weeks (we use the higher count of mother or father). Parental control is a count of up to seven child-related decisions on which parents (vs. children) decide. Family size is measured by the number of other children under 18 in the household (HH). Family structure is a set of four mutually exclusive categories: two biological/adoptive parents, one biological and one stepparent, single parent, or other. Family income is measured in thousands. Mother's and father's education are coded as less than high school (HS), HS graduate, some college, college graduate or higher. Mother's employment is coded as full time, part time, not employed. T2 = Time 2.



**Table 2**  
 Ordinary Least Squares Regression Models of Adolescent Depressive Symptoms, Substance Use, and Delinquency ( $N = 17,977$ )

Predictor	Depressive symptoms M1	Substance use			Delinquency	
		M1	M2	M3	M1	M2
Family dinners	0.022	0.029**	0.011	-0.020**	0.153*	0.030
Parent-child rel.	-0.035*	0.025*	-0.014	-0.011	-0.017	-0.197**
Global family rels.	-0.149**	-0.072**	-0.041**	-0.073**	-0.515**	-0.414**
Arguments with parent	0.116**	0.124**	0.123**	0.070**	0.701**	0.701**
FD × parent-child rel.	-0.008*	-0.010**			-0.047**	
FD × global family rels.			-0.007**			-0.024 <sup>†</sup>
FD × arguments with parent				0.012**		
Constant	1.126**	0.455**	0.512**	0.634**	6.468**	6.876**

Note: Coefficients are weighted and design-adjusted estimates using svy commands in Stata 12.0. All three interactions listed in Column 1 were tested in separate models for each outcome; only models with significant interactions are shown (see online Table 1A for full results). Ordinary least squares coefficients are not standardized. Controls for child's age, child's gender, race and ethnicity, parenting, family size, family structure, family income, parental education, and maternal employment are included but not shown. M1 = Model 1; M2 = Model 2; M3 = Model 3; rel. = relationship; rels. = relationships; FD = family dinners.

<sup>†</sup>  $p < .10$  (two-tailed).

\*  $p < .05$  (two-tailed).

\*\*  $p < .01$  (two-tailed).

**Table 3**First Difference Models of Depressive Symptoms and Delinquency Time 2–Time 1 (T2–T1;  $N = 12,446$ )

Variable	T2–T1 depressive symptoms	T2–T1 delinquency
Change in family dinners	0.030	0.101
$\Delta$ FD $\times$ parent–child relationship	$-0.009^{\dagger}$	
$\Delta$ FD $\times$ global family relationship		$-0.028^{\dagger}$
Constant	0.105**	$-0.427^{**}$

*Note:* Coefficients are weighted and design adjusted using svy commands in Stata 12.0. Ordinary least squares regression coefficients are not standardized. Interactions between change in family dinners and all three measures of Wave 1 family relationship quality (parent–child, global family, and arguments with parent) were entered in separate models for each outcome; only models with significant interactions are shown (see online Table 2A for full results). Controls for changes in family size, family structure, and maternal employment are included but not shown.  $\Delta$  FD = change in family dinners.

$^{\dagger}$   $p < .10$  (two-tailed).

\*\*  $p < 0.01$  (two-tailed).