

Original article

Family Dinner Meal Frequency and Adolescent Development: Relationships with Developmental Assets and High-Risk Behaviors

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Manuscript received August 12, 2005; manuscript accepted December 22, 2005

Abstract

Purpose: To examine associations between family meal frequency and developmental assets and high-risk behaviors among a national sample of adolescents.

Methods: Anonymous surveys were distributed to 99,462 sixth to 12th grade students from public and alternative schools in 213 cities and 25 states across the United States. Logistic regression analyses tested differences in assets and high-risk behaviors by family dinner frequency.

Results: Consistent positive associations were found between the frequency of family dinners and all developmental assets, including both external (e.g., support, boundaries and expectations; odds ratio [OR] 2.1–3.7) and internal assets (e.g., commitment to learning, positive values, social competencies, and positive identity; OR 1.8–2.6); relationships were attenuated, but remained significant after adjusting for demographics and general family communication and support. Consistent inverse relationships were found between the frequency of family dinners and all high-risk behaviors measured (i.e., substance use, sexual activity, depression/suicide, antisocial behaviors, violence, school problems, binge eating/purging, and excessive weight loss; OR .36–.58), relationships were attenuated, but remained significant after adjusting for demographics and family factors.

Conclusions: The findings of the present study suggest that the frequency of family dinner is an external developmental asset or protective factor that may curtail high-risk behaviors among youth. Creative and realistic strategies for enhancing and supporting family meals, given the context within which different families live, should be explored to promote healthy adolescent development. Family rituals such as regular mealtimes may ease the stress of daily living in the fast-paced families of today's society. © 2006 Society for Adolescent Medicine. All rights reserved.

Keywords:

Family meals; Risk behaviors; Protective factors; Adolescent health; Developmental assets; Family rituals

Healthy adolescent development is determined by a myriad of factors, including the social context of family, peers and schools, as well as personal attributes. The importance of family factors in adolescent health has been demonstrated over several decades. As expressed aptly by Garmezy and Masten [1], “Parents are one of nature’s multifaceted buffer

systems for human development,” (p. 203). Parents have positive influence through affection, consistent discipline, and supervision [1]. More recently, Resnick and colleagues [2] showed that family connectedness is associated with decreased engagement in high-risk behaviors such as substance use and violence, and fewer psychological problems, including emotional distress and suicidal thoughts.

In recent years, the influence of social relationships and personal attributes on adolescent well-being have been cast in frameworks of risk and protective factors [2–5]. Risk factor research has shown significant associations between

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feelings of disconnection from family and school with detrimental adolescent health outcomes such as substance use [6], sexual risk behaviors [7,8], delinquency or violence [9], and disordered eating [10,11]. In contrast, protective factors or assets development synthesizes contextual and personal factors that protect adolescents from health-compromising behaviors or help to foster positive developmental outcomes [5,12]. A critical difference between risk factor research and a developmental asset focus is that positive developmental assets are promoted in all children, not just those at risk [13].

Two types of assets have been described in the literature, external and internal [14]. External assets are those that are transferred from adults to youth, such as family and community support. Internal assets are those that are used by youth to guide themselves, such as a commitment to learning or social competencies. The external asset of family connectedness has been shown to be associated with decreased odds of smoking, alcohol use, sexual activity and violence among youth [15]. In addition, parental prosocial norms and school connectedness have been shown to be associated with significantly less violence perpetration among urban American Indian youth [9]. Quantity of adult support has been reported as a protective factor for risky sexual behaviors [16]. Moreover, longitudinal research identified family connectedness as a protective factor against smoking initiation [17] and the incidence of violence perpetration [18].

The internal assets of high self-esteem and a sense of purpose also have been shown to be protective against unhealthy eating behaviors, binge eating, and purging behaviors [19]. Murphy and colleagues [20] created an additive scale of assets and found inverse associations with smoking, alcohol use, binge drinking, marijuana use, sexual intercourse, and fighting behaviors among youth. Similar findings were found for tobacco use using a proportional measure of assets [21]. Thus, protective factor research has shown the utility of external and internal developmental assets in reference to healthy adolescent development.

In addition to feelings of being cared for by parents and whether youth believe they are connected emotionally to their family, there may be other indicators of positive youth development. For instance, family relationship can also be measured by how often family members spend time together, assuming that they spend time together because it is enjoyable. Eating meals with family members (i.e., family meals) can be viewed as a time for togetherness and socialization within the family. The rituals developed by families during mealtimes and the repeated behaviors over time can build a sense of unity, identity, and connectedness that may be particularly important during adolescent development [22,23]. These shared repeated rituals help to stabilize families and form a sense of tradition and structure [24].

The frequency of family meals has been shown to be associated with child and adolescent health, including pos-

itive relationships with nutritional intake [25–27], and inverse relationships with eating disturbances and unhealthy eating patterns [28]. The inverse relationships with eating pathology remained significant even after controlling for some mealtime environmental variables [28]. Moreover, Eisenberg and colleagues [29] found inverse relationships between the frequency of family meals and substance use, low grade point average, depressive symptoms, and suicide involvement. A telephone survey of almost 2000 teenagers indicated that frequent family dinners are associated with decreased risk for smoking cigarettes, drinking alcohol, and smoking marijuana [30]. Clearly, family mealtime can be seen as a positive context for emotional and physical well-being among youth [31]. However, to date, only two studies [29,30] have examined relationships between family meal frequency and psychological or psychosocial outcomes, and outcomes were limited to a few high-risk behaviors.

The purpose of the present study was to expand on previous research by 1) examining family meal frequency in a developmental asset framework, 2) examining associations between family meal frequency and a wide range of outcomes, including developmental assets and high-risk behaviors that have not been investigated previously, and 3) examining these associations in a large national sample of adolescent males and females. The present research contributes to the limited literature on family meals by examining associations between family meal frequency and 10 high-risk behaviors and 16 developmental assets in a large national sample of over 98,000 adolescents. Most of the previous studies regarding family meals focused on associations with nutritional intake and disordered eating. Moreover, analyses in the present study controlled for effects owing to general family functioning.

Methods

Subject population

The subject population consists of 99,462 sixth to 12th grade students from public and alternative schools in 213 cities and 25 states across the United States. The sample includes approximately equal numbers of males ($n = 49,138$) and females ($n = 49,620$). Sixty percent of the sample was in ninth to 12th grade, with 40% of students in sixth to eighth grade. Most students (86%) were Caucasian, followed by 5% multiracial, 4% Latino, 2% Asian-Pacific Islander, and less than 2% each African American or American Indian. About one-quarter of the sample reported living in the country or on a farm, 34% reported living in a small town (under 10,000 people), and about 35% reported living in towns or small cities of about 10,000 to 250,000 residents. A small percentage of youth (4%) reported living in a large metropolitan area (>250,000 residents). Almost 30% of youth reported that both parents had graduated from high school, and an additional 40% of youth reported that

both parents had graduated from college or graduate school. The sample was not representative because communities or school districts self-selected to administer the surveys. Students in the present study were more likely to be white, live in smaller cities or towns, and have college-educated parents. However, the sample is from one of the largest surveys conducted with adolescents, and provides data from a heterogeneous group of youth across the United States. A detailed sample description can be seen elsewhere [32]. Most participating school districts administered the survey to all eligible students; however, owing to the fact that school districts self-selected participation and had several options available for survey administration, such as random classroom selection, exact details of their survey methodology are not available. Parental consent was determined by federal, state, and local regulations. Typically, a written announcement was followed by active or passive parental consent.

Measures

Developmental assets. Based on frameworks of adolescent development and civic engagement, Search Institute developed the *Profiles of Student Life: Attitudes and Behaviors Survey* [32] to capture data related to 40 developmental assets. These assets are framed around the developmental period of middle school and high school, and the survey also assesses experiences related to two types of health outcomes: high-risk behaviors (e.g., substance use, violence, sexual intercourse, school dropout), and thriving outcomes such as school success and helping others. Many of the items were drawn from standardized, validated instruments used in other national and statewide surveys of youth [5,32]. *Developmental assets* consisted of external assets and internal assets. Most of the developmental asset items had response options with five categories (e.g., strongly agree, agree, not sure, disagree, strongly disagree). Internal consistency reliability was calculated for asset categories with three or more items. Categories of external assets were labeled Support, and Boundaries and Expectations (for more detail, see previously published descriptions [5,32]). As described in Table 1, Support included family support, positive family communication, and parental involvement in school ($\alpha = .65$). Boundaries and Expectations included items related to clear family rules and boundaries, positive adult role models, positive peer influences, and high expectations ($\alpha = .56$). Internal asset categories were labeled Commitment to Learning, Positive Values, Social Competencies, and Positive Identity. Items in the Commitment to Learning Category focused on achievement motivation, school engagement, and doing homework ($\alpha = .55$). Positive Values were exclusively reflected in restraint from sexual activity and substance use. Social Competencies items included the ability to plan ahead and make decisions, and resistance skills for negative peer pressure. Items re-

garding having a high self-esteem, a sense of purpose, and a positive view of the future make up the Positive Identity construct ($\alpha = .70$).

High-risk behavior patterns. The categories of 10 risk behavior patterns are described in Table 1. The Alcohol Risk Pattern is based on frequency of alcohol use and drunkenness. The Tobacco Risk Pattern is based on frequency of smoking cigarettes and chewing tobacco. The Illicit Drug Risk Pattern is based on frequency of illicit drug use. The substance use items had response options of 0, 1, 2, 3–5, 6–9, 10–19, 20–39, and 40+ in the past year. The Sexual Intercourse Risk Pattern is based on sexual intercourse frequency. The Depression-Suicide Risk Pattern is based on depression frequency and/or suicide attempts. The Antisocial Risk Pattern is based on shoplifting, trouble with police, and vandalism. The Violence Risk Pattern is based on frequency of fighting, hitting, injuring a person, carrying or using a weapon, and threatening physical harm. Antisocial and violent behavior items had response options of never, once, twice, 3–4 times, and 5+ times in the past year. The School Problems Risk Pattern is based on truancy and having below a “C” average. In addition to the risk patterns, eating problems were assessed in two categories: binge/purge behaviors and excessive weight loss. Face validity of the items within asset categories was established with factor analysis [32].

Family meal frequency. To assess *family meal frequency*, students were asked “In an average week, how many times do all of the people in your family who live with you eat dinner together?” Response options included none, once, twice, three, four, five, six, and seven times a week. For analysis, responses were recoded to 0–1 time a week, 2–4 times per week, and 5–7 times per week.

Demographic variables. *Demographic variables* were self-reported by students and included grade in school, racial/ethnic identification, family composition (e.g., two-parent or single-parent home), maternal educational attainment, and type/size of community in which they live (e.g., large city, small town, farm, country, or reservation).

Procedures

Generally, entire school districts administered the survey to all of their sixth to 12th graders during the 1996–1997 academic year. The anonymous survey was administered in school classrooms. With standardized instructions, the students were asked to complete their survey and place it in a sealed envelope that was mailed to Search Institute for data processing and statistical analysis, and generation of a report to the school district.

Statistical analysis

Cross-tabulations assessed associations between the frequency of family meals and demographic characteristics,

Table 1
Description of developmental assets and high-risk behaviors

Asset/behavior name	Item description	Number of items in construct
External assets		
Support	Family support: family life provides high levels of love and support. Positive family communication: young person and her or his parent(s) communicate positively, and young person is willing to seek parent(s) advice and counsel.	3
Boundaries and expectations	Parent involvement in schooling: parent(s) are actively involved in helping young person succeed in school. Family boundaries: family has clear rules and consequences and monitors the young person's whereabouts. Adult role models: parent(s) and other adults model positive, responsible behavior. Positive peer influence: young person's best friends model positive, responsible behavior. High expectations: both parents and teachers encourage the young person to do well.	4
Internal assets		
Commitment to learning	Achievement motivation: young person is motivated to do well in school. School engagement: young person is actively engaged in learning. Homework: young person reports one or more hours of homework every school day.	3
Positive values	Restraint: young person believes it is important not to be sexually active or to use alcohol or other drugs.	1
Social competencies	Planning and decision-making: young person knows how to plan ahead and make choices. Resistance skills: young person can resist negative peer pressure and dangerous situations.	2
Positive identity	Self-esteem: young person reports having high self-esteem. Sense of purpose: Young person reports, "my life has a purpose." Positive view of personal future: Young person is optimistic about her or his personal future.	3
High-risk behavior patterns		
Alcohol	Has used alcohol three or more times in the past month. Has gotten drunk one or more times in the past two weeks.	2
Tobacco	Smokes one or more cigarettes every day. Uses chewing tobacco frequently.	2
Illicit drugs	Used illicit drugs three or more times in the past year.	6
Sexual intercourse	Has had sexual intercourse three or more times in lifetime.	1
Depression-suicide	Is frequently depressed. Has attempted suicide.	2
Antisocial	Has been involved in three or more incidents of: shoplifting, trouble with police, or vandalism in the past year.	3
Violence	Has engaged in three or more acts of: fighting, hitting, injuring a person, carrying or using a weapon, or threatening physical harm in the past year.	6
School Problems	Has skipped school two or more days in the past month and/or has below a C average.	2
Binge/purge	Engaged in binge eating (eat a lot of food in a short period of time) and then throws up or uses laxatives (once in a while, sometimes, or often).	1
Excessive weight loss	Has gone several months cutting down on how much they eat and lost so much weight or became so thin that other people became worried.	1

external and internal assets, and high-risk behaviors. However, statistical significance is not presented for the cross-tabulations owing to the increased chance that differences would be significant because of the large sample size. Logistic regression analyses assessed differences in assets and high-risk behaviors between adolescents who reported eating 0–1 family dinner per week compared with those who reported frequent family meals (5–7 family dinners per week). All logistic regression analyses controlled for the effects of demographic variables (gender, ethnicity, grade, maternal education, and family structure). Data for males and females is combined owing to similar patterns in the associations between family meal frequency and assets/risk factors (data not shown). Additionally, the regression analyses were also run controlling for the effects of family support and family communication to assess if family meal

frequency is primarily a proxy for general family functioning.

Results

Family dinner frequency by demographic characteristics

Family dinner meal frequency varied by demographic characteristics (Table 2). Slightly more males than females reported eating family dinner 5–7 times in an average week. More than half of younger students (6–8th graders) reported eating family dinner 5–7 times in the past week compared with slightly more than one-third of older students (9–12th graders). Almost half of students from families with two parents reported eating 5–7 dinner meals together in the past week compared with about one-third of students from families headed by single parents. Frequent

Table 2
Percentage of adolescents eating family dinner by demographic variables
(n = 98,340)

	Family dinners eaten		
	0–1 time/ week (n = 20,135) %	2–4 times/week (n = 34,145) %	5–7 times/ week (n = 44,060) %
Gender			
Male	18.9	34.1	47.0
Female	22.0	35.4	42.6
Grade in school			
Grade 6–8	15.6	29.0	55.4
Grade 9–12	23.8	38.6	37.6
Family structure			
2 parents	18.0	34.8	47.2
1 parent—mother	31.5	35.1	33.8
1 parent—father	32.7	33.1	34.2
Part-time with both	22.6	34.3	43.1
Race/ethnicity			
White	19.9	35.2	44.9
Black	34.6	33.1	32.3
Asian	22.0	31.3	46.7
American Indian	21.7	29.9	46.8
Hispanic	21.0	29.6	49.5
Multiracial	25.0	34.6	41.4
Community type			
Farm	18.4	30.6	51.0
Country	19.0	34.1	46.9
Reservation	22.0	29.9	48.1
Town (< 10,000)	21.1	34.7	44.2
City (10,000–50,000)	20.8	37.2	42.0
City (> 50,000)	22.1	34.2	43.7
Maternal education			
High school or less	24.6	34.3	41.1
Some college	20.7	37.6	41.8
College or more	16.3	35.8	47.9
Don't know	25.3	29.6	45.1

family dinner meals (5–7/week) were reported most often by Hispanic students, followed by American Indian, Asian American, white, multiracial, and black students. Half of students from farming communities reported frequent family dinners, followed by students living on reservations, and those reporting living in the country. Students with mothers who had a college education or more reported the most frequent family dinner meals.

Family dinner frequency by developmental assets

The most frequently reported external asset was family support, followed by positive peer influence (Table 3). The least often reported external asset was positive adult role models. All of the external assets regarding support and boundaries/expectations were positively related to family dinner meal frequency. The prevalence of external assets increased linearly with increased family dinner meals.

The most prevalent internal asset was having a positive view of personal future, followed by being motivated and engaged in school. Planning/decision-making was the least often reported internal asset. All of the internal assets in the categories of commitment to learning, positive values, social competencies, and positive identity were positively related to family dinner meal frequency. As with external assets, the prevalence of internal assets increased linearly with increased family dinner meals.

Family dinner frequency by high-risk behaviors

Tobacco use was the most prevalent high-risk behavior reported by youth (Table 3), followed by violent behavior. Disordered eating behaviors were the least prevalent high-risk behaviors. All high risk behaviors were inversely associated with the frequency of family dinner meals.

Comparisons of developmental assets and high-risk behavior patterns by very infrequent and very frequent family dinners

As shown in Table 4, the odds of reporting family support, positive family communication, and parental involvement in school were three times the odds for adolescents who reported eating 5–7 family dinners per week than such reporting among adolescents who reported eating one or fewer family dinners per week (the effects of demographic variables were controlled). The associations between family dinner frequency and parental involvement in school were significant even after controlling for the additional effects of family support and positive family communication.

Boundaries and expectations were also significantly associated with family dinner meal frequency. The odds of reporting clear family boundaries, positive adult role models, positive peer influence, and encouragement by parents and teachers to do well for adolescents who reported frequent family dinner meals were twice the odds of adolescents who reported eating 0–1 family dinners per week. Significant associations between family dinner frequency and boundaries and expectations remained significant but were attenuated after controlling for family support and family communication.

Among adolescents who reported eating frequent family meals, the odds for reporting internal assets of commitment to learning via achievement motivation, school engagement, and homework were about twice the odds as adolescents who reported eating very few or no family dinner meals. Significant associations between family dinner frequency and commitment to learning remained significant but were attenuated after controlling for family support and family communication.

A similar pattern of associations was seen between frequent family dinner meals and positive values and social competencies. Among adolescents who reported frequent family dinner meals per week, the odds of reporting restraining from high-risk behaviors, planning ahead and

Table 3
Percentage of adolescents (n = 98,340) reporting developmental assets and high-risk behaviors by family dinner frequency

	Family dinners eaten			
	Total prevalence (n = 98,340) %	0–1 time/week (n = 20,135) %	2–4 times/week (n = 34,145) %	5–7 times/week (n = 44,060) %
<i>Assets</i>				
External assets				
Support				
Family support	64.1	42.7	62.8	74.7
Positive family communication	39.4	24.6	36.6	48.3
Parent involvement in school	29.1	13.6	24.6	39.5
Boundaries and expectations				
Family boundaries	42.9	26.9	41.2	51.6
Adult role models	27.0	15.5	25.2	33.7
Positive peer influence	59.8	45.2	56.4	69.0
High expectations	41.0	28.6	38.9	48.2
Internal assets				
Commitment to learning				
Achievement motivation	63.4	51.0	62.7	69.5
School engagement	63.7	53.9	62.9	68.8
Homework	45.3	36.9	44.3	49.8
Positive values				
Restraint	42.4	27.6	37.5	52.9
Social competencies				
Planning/decision-making	28.6	21.1	26.6	33.5
Resistance skills	37.2	25.9	34.1	44.7
Positive identity				
Self-esteem	46.8	34.1	45.2	53.7
Sense of purpose	54.6	41.1	53.8	61.5
Positive view/personal future	70.4	59.2	70.1	75.6
<i>High-risk behavior patterns</i>				
Alcohol use	27.1	38.0	29.6	20.2
Tobacco use	49.5	31.4	21.1	13.0
Drug use	18.2	29.1	20.0	12.0
Sexually active	18.3	30.2	20.0	11.8
Depression/suicide risk	22.9	35.7	22.3	17.5
Anti-social behavior	22.8	33.0	23.8	17.5
Violence	33.0	41.8	32.3	29.7
School problems	19.4	30.6	19.1	14.6
Binging/Purging	12.0	16.8	12.4	9.8
Excessive weight loss	14.0	19.9	13.6	10.9

making decisions, and resisting negative peer pressure were about twice the odds as adolescents who reported 0–1 family dinner meals per week. Slight reductions in relationships were seen between these internal assets and family dinner meal frequency when family-related assets were controlled for in the analysis.

Significant relationships were also found between positive identity assets and family dinner meal frequency. Among adolescents who reported eating frequent family dinner meals, the odds of reporting high self-esteem, feeling a sense of purpose, and a positive view of the future were about twice the odds of such reporting by adolescents who reported eating few family dinner meals. All of the relationships between family dinner frequency and positive identity-related internal assets remained statistically significant, albeit not as meaningful, after controlling for the effects of family support and family communication.

Family dinner frequency and adolescent high-risk behavior patterns were significantly inversely related. Among adolescents who reported eating frequent family dinner meals, the odds of reporting use of alcohol, tobacco, and other illicit drugs; sexual intercourse; depressive symptoms or attempted suicide; antisocial behavior or violence; school problems; binge eating or purging behaviors, and losing a large amount of weight were relatively one-half the odds of such reporting among adolescents who reported eating very few family meals. These associations remained significant after controlling for family support and family communication.

Discussion

The goal of the present study was to examine associations between family dinner meal frequency and a wide

Table 4

Odds ratios and 95% confidence intervals for developmental assets and high-risk behavior patterns among adolescents who report eating 5–7 family dinners per week compared to those who report eating 0–1 family dinners per week

Variable	Odds ratio adjusted for demographic variables ^a	(95% Confidence interval)	Odds ratio adjusted for demographic and family variables ^b	(95% Confidence interval)
External assets				
Support				
Family support	3.7	(3.38, 3.94)	-	-
Positive family communication	2.8	(2.58, 3.04)	-	-
Parental involvement in school	3.5	(3.18, 3.82)	2.4	(2.14, 2.60)
Boundaries and expectations				
Family boundaries	2.6	(2.40, 2.81)	2.0	(1.84, 2.17)
Adult role models	2.5	(2.27, 2.73)	1.7	(1.53, 1.86)
Positive peer influence	2.5	(2.35, 2.73)	1.9	(1.77, 2.08)
High expectations	2.1	(1.95, 2.28)	1.5	(1.41, 1.66)
Internal assets				
Commitment to learning				
Achievement motivation	2.2	(2.01, 2.35)	1.5	(1.37, 1.63)
School engagement	2.1	(1.90, 2.22)	1.6	(1.44, 1.70)
Homework	1.8	(1.70, 1.97)	1.5	(1.43, 1.67)
Positive values				
Restraint	2.6	(2.41, 2.83)	1.8	(1.67, 1.99)
Social competencies				
Planning/decision-making	1.9	(1.76, 2.08)	1.4	(1.24, 1.48)
Social resistance skills	2.1	(1.95, 2.29)	1.5	(1.33, 1.57)
Positive identity				
Self-esteem	2.1	(1.93, 2.24)	1.4	(1.27, 1.49)
Sense of purpose	2.2	(2.05, 2.38)	1.5	(1.37, 1.61)
Positive view/personal future	2.0	(1.82, 2.13)	1.3	(1.23, 1.46)
High-risk behavior patterns				
Alcohol	.45	(.42, .49)	.57	(.52, .62)
Tobacco	.38	(.34, .41)	.48	(.43, .53)
Illicit drugs	.36	(.33, .40)	.46	(.42, .51)
Sexual intercourse	.36	(.32, .40)	.42	(.38, .47)
Depression-suicide	.42	(.38, .46)	.60	(.54, .65)
Antisocial	.46	(.42, .50)	.63	(.58, .69)
Violence	.55	(.51, .60)	.74	(.68, .81)
School problems	.40	(.36, .44)	.50	(.44, .55)
Binge/purge	.58	(.52, .65)	.71	(.63, .80)
Excessive weight loss	.51	(.46, .57)	.60	(.53, .67)

^a Gender, ethnicity, grade, maternal education and family structure.

^b Family support and family communication.

range of developmental assets and high-risk behaviors among a large national sample of adolescent males and females. Our findings showed consistent positive associations between the frequency of family dinners and all developmental assets, including both external and internal assets. Our findings also showed consistent inverse relationships between the frequency of family dinners and all high-risk behaviors.

The findings of the present study introduce family dinner frequency as a potential external developmental asset or

protective factor [31] that may curtail high-risk behaviors among youth. The significant inverse relationships between family dinner frequency and high-risk behaviors as diverse as substance use, violence, and eating problems, even after controlling for the effects of family support and communication, indicate that there is something unique about families who frequently share meals together. Our findings indicate that family meal frequency is more than just a proxy for general functioning. Perhaps a better description of how family meal frequency is related to adolescent development

is that it represents family togetherness. The strong, positive associations between family meal frequency and external assets such as family support, positive family communication, parental involvement in school, and family boundaries suggest that the dynamics of the family mealtime environment may be reflective of high-quality parent-child interactions. In addition, positive relationships between family meal frequency and internal assets such as social resistance skills, self-esteem, having a sense of purpose, and a positive view of the future suggest that adolescents may learn social skills and develop a more positive self-worth during mealtime interactions. Enhancement of external and internal developmental assets during mealtime interactions will benefit adolescent development.

The present study findings are also consistent with previous research [28,29] regarding the inverse relationships between family meal frequency and disordered eating, substance use, and depressive symptomatology/suicide risk. These similarities are intriguing given the differences in the populations surveyed. The work of Neumark-Sztainer and colleagues [28] and Eisenberg and colleagues [29] is based on surveys of an ethnically and economically diverse population of primarily urban and suburban adolescents (Project EAT) whereas the present study is based on a population of primarily Caucasian youth from educated homes in smaller cities and towns across the United States. In fact, one of the factors that needs to be considered when interpreting these findings is that the more rural population surveyed in the present study may overestimate assets and underestimate risk factors, particularly given that communities involved in Search Institute surveys may be more socially organized and involved in youth development [5]. Nonetheless, the similarities between our findings and previous research provide credence to the psychological and physical benefits of frequent family meals. The cross-sectional design of the present study prevents us from inferring that the frequency of family meals leads to healthier behavioral profiles. It is possible that adolescents with more developmental assets and a communicative, supportive environment may encourage more frequent family meals.

The present study had several limitations that merit mention. The cross-sectional design prohibits us from concluding that having more frequent family meals directly enhances developmental assets or protects adolescents from engaging in high-risk behaviors. Longitudinal prospective research is needed to assess the causal relationships between family meal frequency and healthy adolescent development. In addition, the present study could not assess if parental work schedules interfere with the frequency of family meals, nor could we assess if there were differences in relationships between family meal frequency and developmental assets or high-risk behaviors by racial/ethnic groups. Future research should explore these relationships. Lastly, a more objective perspective of the family environment than self-report may be needed. Perhaps future research could

employ videotape methodology during family meals in an attempt to collect objective assessments of family functioning. Objective assessments of the family dynamics and communication styles during meals could identify the mechanisms at work that produce personal and family strengths.

The positive associations between the frequency of family meals and the developmental assets, particularly those related to family support, indicate that efforts to schedule regular family meals may be a way to keep connections with family members and ease daily stress [33] in the fast-paced lives of today's families. Efforts to increase family meals may also have an impact on adolescent high-risk behaviors by providing an opportunity for parents to monitor their children's activities and increase daily communication. It may also be a venue for parents to demonstrate their family values and show their support of their children. Previous research suggests that both parents [34] and adolescents [35,36] believe family meals are important and enjoyable. Thus, although increasing the frequency of family meals is not the total answer for all of youth's ills, perhaps it is a viable and meaningful way to increase family connection, enhance adolescent development, and promote well-being. Creative and realistic strategies for enhancing and supporting family meals, given the context within which different families live, should be explored to promote healthy adolescent development.

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