Research Article

Healthy Eating and Perceived Social Acceptance among American Adolescents

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Abstract

Objective: To assess the association between adolescent's eating behaviour and social acceptance among peers.

Design: Quantitative, survey data were used. Key measures included self-reported details of healthy foods eaten and avoidance of fast foods in the past week, and perceived social acceptance among peers. Multiple imputation was used to maintain the maximum number of cases (N= 9,150) and multivariate regression analysis was employed to evaluate the significance (p<0.05) of associations between the eating measures and social acceptance. Linear and non-linear measures of healthy eating were assessed to capture potential curvilinear associations.

Setting: This study was conducted using data from a representative sample of adolescents (8th graders) across the U.S.

Subjects: Study subjects included all participants in the 8th grade wave of the Early Childhood Longitudinal Study, a nationally representative sample of almost 10,000 adolescents.

Results: As adolescents' eating behaviours become healthier, their perceived social acceptance among peers also increases. There is some evidence, however, of declining social acceptance at very high levels of healthy eating. Results were robust to controlling for BMI, as well as other social, economic and demographic variables.

Conclusion: Past research suggests peer influence is an important correlate of adolescent health behaviours and healthy eating is a key behaviour to understand for reducing adolescent obesity. The results suggest that peers are generally not an obstacle to healthy eating among American adolescents, and may be a positive source of social pressure that could be leveraged to encourage more nutritious eating among adolescents.

Introduction

Obesity rates among American children have tripled in the last two decades [1], foretelling serious long-term health problems as these children become adults [2,3]. As a result, understanding how adolescents adopt healthy behaviours is increasingly important. Given the critical role, peer groups play in shaping other adolescent behaviours (e.g., sexual activity, substance abuse, delinquency), we consider whether peers present an obstacle to healthy eating.

Unfortunately, there are troubling indications in the literature that peers may marginalize adolescents who attempt to eat healthily. In a review, Salvy et al. note that to convey a positive image people generally try to avoid overeating when around others [4,5]. But adolescents appear to have mixed emotions about healthy eating, recognizing its link to physical fitness, yet deriding those who need to watch what they eat [6]. Eating healthily, especially at a level perceived as unusual, puts adolescents at risk for social sanctions. Stead et al. learned from interviews with groups of adolescents that "healthy eating was associated with 'nerds' and 'geeks'-young people who drew the wrong sort of attention to themselves or were distanced from the mainstream of acceptance by virtue of being too clever or esoteric in their interests" [7]. Adolescents generally understand what constitutes healthy eating but often eat poorly anyway, and the majority of their unhealthy eating occurs when among peers [8,9]. Taken together, these studies suggest that adolescents receive ambivalent, and at times even hostile, messages from peers about healthy eating.

This conclusion is tentative, however, as it has yet to be demonstrated in a large-scale study and it is unclear whether youths' pronouncements against healthy eating are meaningful. Our approach to the question involves assessing the association between healthy eating behaviours and perceived social acceptance among a nationally-representative sample of American adolescents. The value of this research strategy is that it reveals whether adolescents who adopt healthy eating behaviours can do so without suffering consequences for something they care about-their social position among peers. With so little known about healthy eating behaviours and social acceptance, our primary goal is to determine the direction and functional form of the relationship.

We also consider the moderating roles of race/ethnicity, social class, and gender. We are sensitive to racial/ethnic patterns because of evidence that, as Asian and Hispanic students become more acculturated to American society, they begin to exercise less and eat more fast food [10]. And past studies suggest that the social costs for healthy eating will be the greatest among the least healthy subgroups [11]. For this reason, we anticipate that the social costs for eating behaviour will be greater for adolescents from disadvantaged groups who value healthy eating behaviours least (i.e., disadvantaged minorities and low-socioeconomic status adolescents). Further, the pressure to be thin and eat a certain way may be stronger among girls than boys, given the gender norms that reinforce thin body types and dieting behaviours among girls [12].

This study makes an important contribution to existing research on adolescent social contexts and health by analyzing a large, recent cohort of 8th graders to quantitatively assess the extent of peer social acceptance of adolescents' healthy eating behaviours eating healthy foods and avoiding fast food. The findings provide a first step in understanding how peers may be shaping U.S. adolescents' poor eating habits, and whether peer environments should be a focus of policy efforts aimed at improving eating behaviours and reducing obesity among adolescents.

Methods

We use the most recent round of data from the nationally representative Early Childhood Longitudinal Study (ECLS-K). Collected by the National Center for Education Statistics, the ECLS-K provides information for a sample of children who transitioned into kindergarten in 1998-99, with a follow-up survey in the spring of 2007, when most of the children were in eighth grade. Data were collected through face-to-face interviews and questionnaires distributed to the children's parents, teachers, and school administrators. Our analysis relies primarily on information provided by the youth (reports of healthy behaviours and perceived social acceptance) although it is supplemented with background characteristics reported by parents (e.g., family income) and school officials (e.g., percent free lunch).

The ECLS-K 8th grade sample consists of 9,750 respondents. Compared to those who dropped out of the longitudinal study, the sample adolescents are slightly advantaged in several ways-more often living in two biological parent families, from higher socioeconomic levels, more likely to be white, and less likely to have moved. Because healthy eating behaviours are correlated with socioeconomic status, sample attrition likely reduces the range of healthy eating behaviours for our sample and makes our tests more conservative. We restrict our analysis to the 9,150 adolescents who reported valid responses on our dependent variable (perceived social acceptance).

Typical of most data sets, the ECLS-K has missing values on some variables (there were 2,200 cases with missing data on at least one independent variable). We imputed missing data for independent variables using multiple imputation [13,14].

Table 1 below shows the characteristics of the final sample of children who are, on average, 14 years old. Half of the sample is female and most (60%) are from more advantaged backgrounds-white, 2-parent homes. The mean household income is above $40,000 per year and the mean for school lunch prevalence in the children's schools was relatively low, at 28%, although varied substantially across the sample.

Measures

Perceived social acceptance: We employ self-reports of social acceptance comprised from youths' responses to the following statements: (1) my classmates think it's important to be my friend, (2) my classmates like the way I am, (3) my classmates care about my feelings, (4) my classmates like me as much as others, (5) and my classmates really care about me. Respondents agreed with these questions on a five-point scale with (1) this statement is never true, to (5) this statement is always true. We summed the responses to these five statements into an index measuring popularity ($\alpha = 0.88$).

Table 1 presents the sample mean of social acceptance (18.92) and its standard deviation (4.48). Thus, most students are on the higher end of the perceived social acceptance scale, which ranged from 5 to 25. Other scholars employing self-reports of social acceptance have found these measures to correlate as well or better than socio-metric evaluations of popularity (peer nominations of "most liked") with outcomes such as companionship, withdrawal [15], and substance abuse [16].

Healthy eating behaviours: We measure healthy eating in two ways. First, we constructed an index comprised of how often eighth graders reported eating the following foods in "the past 7 days": (1) milk, (2) carrots, (3) potatoes (non-fried), (4) other veggies, (5) juice, (6) salad, and (7) fruit. Possible answers were: (1) never, (2) 1-3 times per week, (3) 4-6 times per week, (4) once per day, (5) two times per day, (6) 3 times per day, (7) 4 or more times per day. We summed these measures into an index ranging from 7-49. The mean (and median) score for healthy food eating was 18 with standard deviation of almost 6 (Table 1), and 99% of the students scored 35 or below on this index.

Second, we also gauge healthy eating as abstaining from fast food consumption. Eighth graders were asked "During the past 7 days, about how many times did you eat a meal or snack from a fast food restaurant such as McDonald's, Pizza Hut, Burger King, KFC (Kentucky Fried Chicken), Taco Bell, Wendy's and so on?" Respondents were given the same answer choices as for healthy eating, ranging from (1) never, to (7) 4 or more times a day. We reverse coded the variable so that greater values indicate healthier eating (i.e., less fast food). This new variable, "avoiding fast food," has a mean of 6 and standard deviation of 1 (Table 1). Consistent with trends of rising fast food intake, 70% of the sample reported eating fast food at least once in the past week.

Co-variates: Identifying the relationship between healthy eating and perceived social acceptance is complicated by the fact that socioeconomically advantaged students may practice healthier eating behaviours and enjoy greater popularity. It is possible, therefore, that an association between healthy eating and social acceptance may be spurious. While our observational data cannot resolve this problem definitively, we reduce its severity by estimating multivariate models that statistically adjust our estimates of healthy eating for other factors. We originally estimated models with parents' education, occupation, and family income as covariates but trimmed these to family income only because parents' education and occupation were largely unrelated to adolescents' perceived social acceptance and were highly correlated with family income. Other controls include: (a) race (binary variables for Black, Hispanic and Asian with White as the reference category), (b) gender (female=1), (c) family structure, where

Table 1: Descriptive Statistics, 8ᵗʰ Grade Wave ECLS-K, N=9,150.

Variable	Mean	S.D.	Range
Dependent Variable			
Perceived Social Acceptance	18.92	4.48	5=low social acceptance to 25=high social acceptance
Independent Variables			
Healthy Foods Eaten	18.41	5.94	7=little healthy food eaten to 49=most healthy foods eaten in past week
Avoiding Fast Food	6.03	1.22	1=fast food 4 times/day to 7=no fast food in past week
Covariates			
Age	14.28	0.37	12.3=youngest age to 16.9=oldest age
Gender	0.5	0.5	0=male, 1=female
Normal BMI	0.61	0.49	0=overweight/obese, 1=normal BMI
Household Income	8.97	2.96	1=annual income category (<$5001) to 13=annual income category ($200,001+)
White	0.62	0.49	
Black	0.1	0.3	
Hispanic	0.17	0.38	
Asian	0.06	0.23	
Other Race	0.05	0.23	
2-Bio Parents in Home	0.59	0.49	0=other family structures, 1=2 bio parents in household
School % Free Lunch	28.2	26.25	0=no students receive free lunch to 95=95% of students receive free lunch

1= currently living with both biological parents and 0=other family structure; and (d) the percentage of students receiving free lunch in the child's school. See Table 1 for the mean, standard deviation and range for each of these variables.

In addition, we consider whether the associations between healthy eating and social acceptance may be due to the unobserved bias of individual's body size, assessed through Body Mass Index (BMI). If controlling for weight status (overweight vs. normal BMI) reduces the association between healthy eating and social acceptances, then we would conclude that healthy eating behaviours matter little-appearance is what counts. But if an association between healthy eating and perceived social acceptance persists independent of BMI, then greater attention should go toward understanding the consequences of healthy eating per se. To capture the most salient body size differences in appearance, we categorized the sample adolescents' BMI as normal weight =1 or overweight/obese = 0, based on established gender and age-standardized z-score cut offs for overweight and U.S growth charts [17]. The binary variable normal BMI has a mean of 0.61, suggesting that sixty-one percent of the sample is neither overweight nor obese.

Analytic strategy: We explore the relationship between healthy eating behaviours and social acceptance through OLS multivariate regression models estimated in three stages. First, we assessed the linear association between our healthy eating measures. Then, to test the hypothesis that there may be social penalties for healthy eating at the high end of the scales, we assessed the statistical significance of different functional forms of the healthy eating variables. In presenting the results we focus on linear and quadratic terms, as supplemental analysis (not presented here) indicated no further benefit in using spline measures. In the models presented we show the associations between healthy foods eaten and avoiding fast foods with social acceptance separately and then together in the final model to assess

the independent role of eating healthy foods and avoiding unhealthy foods. To consider whether the associations between healthy eating behaviours and social acceptance change once we statistically control for adolescents' BMI status, we show models with and without the "normal BMI" variable. Finally, we test for moderating effects of race/ethnicity, family income, and gender. For brevity, we summarize where significant interactions were found. In all models we adjust standard errors for the fact that adolescents are clustered by school. We evaluate statistical significance at p<0.05.

Results

The OLS regression results are presented in Table 2. Our best-fitting model suggests that the relationship between eating healthy foods and social acceptance is curvilinear, with the highest levels of perceived social acceptance exhibited by adolescents practicing mid-level healthy eating. However, we found no relationship between avoiding fast food and social acceptance as evidenced by the small, insignificant coefficients for avoiding fast food. In supplemental models (not presented) we estimated quadratic and various spline models for avoiding fast food, none of which reached statistical significance.

To illustrate the effect of eating healthy foods, Figure 1 shows the predicted values of perceived social acceptance across various levels of eating healthy food in Figure 1. The vertical percentile lines in Figure 1 highlight how 99% of the sample exists on the healthy eating scale before the negative association begins. Thus, the negative association at the high end of the healthy food eating scale is small and relevant for only a small percent of the sample children.

These associations between eating healthy food and perceived social acceptance appear robust to alternative model specifications. For example, in model 5 we included both healthy eating behaviours in the model simultaneously to assess whether the previously observed

Table 2: OLS Regression of Perceived Social Acceptance on Healthy Behaviours and Covariates, 8th Grade Wave ECLS-K.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	β	β	β	β	β	β
	(S.E.)	(S.E.)	(S.E.)	(S.E.)	(S.E.)	(S.E.)
Healthy Eating						
Healthy Foods Eaten		0.077**	0.20**		0.20**	0.20**
		-0.0084	-0.039		-0.039	-0.038
Healthy Foods Squared			-0.0030**		-0.0030**	-0.0030**
			-0.0009		-0.0009	-0.0009
Avoiding Fast Food				0.0048	0.0046	0.024
				-0.045	-0.045	-0.045
Controls						
Age	0.025*	0.024*	0.024*	0.025*	0.024*	0.022*
	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Female	1.38**	1.41**	1.40**	1.38**	1.40**	1.39**
	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Normal BMI						0.70**
						-0.096
Household Income	0.15**	0.15**	0.15**	0.15**	0.15**	0.14**
	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021
Black	0.53**	0.61**	0.65**	0.54**	0.66**	0.70**
	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Hispanic	0.2	0.23	0.26	0.2	0.26	0.32*
	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14
Asian	0.53*	0.48*	0.49*	0.53*	0.49*	0.47*
	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21
Other Race	-0.061	-0.035	-0.022	-0.061	-0.022	0.012
	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22
2-Bio Parents	0.37**	0.34**	0.33**	0.37**	0.33**	0.31**
	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
School % Free Lunch	-0.010**	-0.0097**	-0.0095**	-0.010**	-0.0094**	-0.0088**
	-0.0023	-0.0022	-0.0022	-0.0023	-0.0022	-0.0022
N= 9,150 Constant	12.5**	11.3**	10.2**	12.5**	10.2**	10.1**
	-1.81	-1.8	-1.81	-1.84	-1.83	-1.83
R-squared	0.045	0.055	0.056	0.045	0.056	0.062

** $p<0.01$, * $p<0.05$.

patterns for any single eating indicator were contingent upon levels of the other, but the patterns persisted. We also assessed whether the relationships changed if youths' normal BMI was statistically controlled (model 6). But again, the curvilinear relationships between perceived social acceptance and healthy eating were reproduced, and fast food avoidance remained statistically insignificant.

Finally, in supplemental analyses we assessed whether these results held across key social groups: race/ethnicity, social class, and gender by estimating interaction terms between these social group statuses and our healthy eating variables (results available upon request). The only significant interaction term was between blacks and whites for the eating healthy food measure-blacks showed less evidence than whites of declining social acceptance at high levels of healthy eating (99th percentile). We view this pattern with caution, however, as there are fewer than 50 black adolescents in the tail of the healthy food eating distribution (99th percentile).
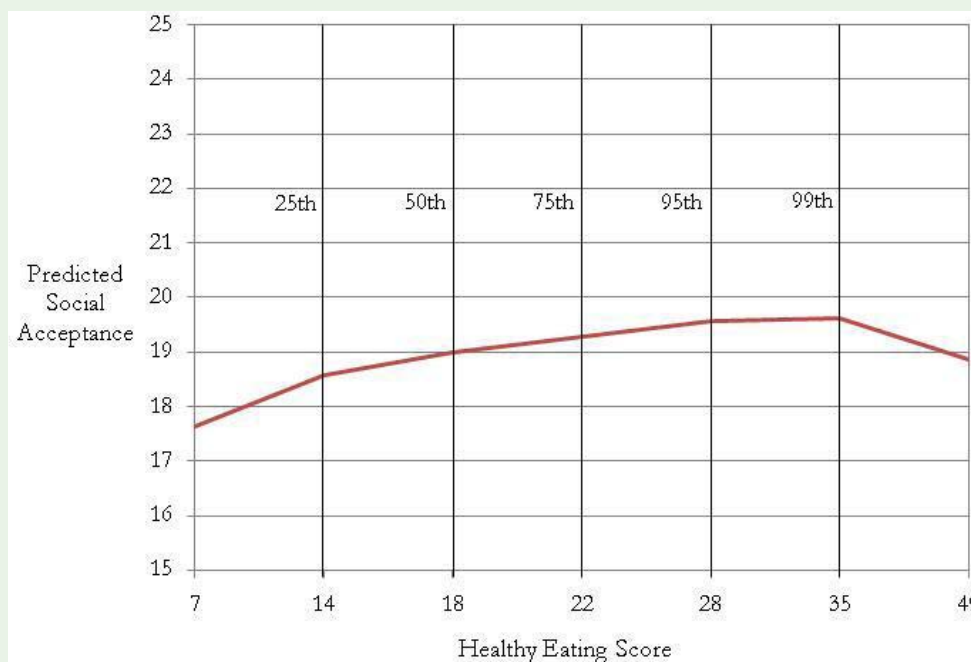
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Figure 1: Predicted Level of Social Acceptance by Level of Healthy Foods Eaten, 8th Grade Wave ECLS-K, N=9,150.

Discussion

The good news from our study is that it appears that American youth are more supportive of healthy eating behaviours than previously thought. The skyrocketing rates of obesity, combined with earlier research noting adolescents' ambivalence toward healthy eating, suggested that peers might be significant obstacles to reducing obesity rates [6-9]. But it turns out that these earlier studies reveal little about the real world social consequences of eating healthily. The advantage of our method is that it directly assessed the association between two measures of healthy eating and adolescents' perceived status among peers.

While healthy eating is generally associated with greater perceived social acceptance, the magnitude of the relationship is modest. Nevertheless, the fact that the association is statistically significant and positive (rather than negative), provides new evidence that peer sanctions do not represent an important obstacle for the efforts to improve American adolescents' eating behaviours.

That conclusion is tempered, however, by recognizing that being among the healthiest eaters (top one percent) may carry modest social penalties. Our models suggest that youths practicing moderate levels of healthy food-eating habits (on our scale) enjoy the greatest social acceptance, while those exhibiting very low and very high levels of nutritious eating enjoy the least (Figure 1). Few American eighth graders practice very healthy eating (only one percent scored 35 or more on our scale ranging from 7-49), but for those who do, this level of healthy eating appears to come with a modest social penalty. We interpret this result as representing a weak level of sanctioning because so few American eighth graders fall into this category and the magnitude of the effect is small.

We also measured adolescents' eating habits via the extent to which they eat fast foods. Avoiding fast food does not appear to be associated with perceived social acceptance, indicating that adolescents can reduce or give up fast food intake without serious social consequences. Of course, this analysis is limited to youths' reports of their fast-food eating habits in the last week, a period potentially too short to identify adolescents who fervently resist fast food. Perhaps if our data had information about eating habits over a longer period of time we would have observed a social penalty for adolescents who consistently say no to fast food.

Past scholars have suspected that the social penalties for healthy eating would be the greatest among the least healthy subgroups [11], or that rewards for healthy eating were based on gender expectations [12], yet our results provided little support for these sub-group differences. For example, although health is strongly associated with socioeconomic status, we found no evidence that the relationship between healthy eating behaviours and social acceptance varied by income level. In addition, Hispanics have higher obesity rates than their white counterparts, yet there was no evidence in our study that peer sanctions for healthy eating vary across the two groups. We did find some evidence-small statistically significant interactions-suggesting that black adolescents may endure less of a penalty for very healthy eating, but this was applicable to only a small set of individuals in this sample. Taken as a whole, the associations between healthy eating and social acceptance among adolescents do not vary in meaningful ways across income level, race/ethnicity, or gender.

We also recognize that articulating the precise relationship between healthy eating behaviours and perceived social acceptance is difficult because the causal ordering is not well understood. Although our analyses proceeded with healthy eating as the independent

variable and perceived social acceptance as the dependent variable, it is important to keep in mind that the associations we observed could indicate that one's level of perceived social acceptance influences the kinds of healthy eating behaviours they are willing to adopt. From this perspective, adolescents who already perceive themselves as enjoying high social acceptance may adopt healthy eating behaviours as a way of signalling their status position to others. While we cannot resolve this causal question, our primary contribution is to provide the first examination of the more basic question-what is the relationship between healthy eating behaviours and social acceptance? By demonstrating that it is mostly positive, regardless of the causal direction, our study suggests that social sanctions against healthy eating are not a likely culprit in the growth of adolescent obesity.

Social context shapes what eating means. As Fischler notes, "the way any given human group eats helps it assert its diversity, hierarchy and organization, and at the same time, both its oneness and the otherness of whoever eats differently" [18]. This social fact is not well represented in scholarship attempting to understand growing health-related problems among teenagers, however. This is unfortunate because the peer group is a useful lens for understanding adolescents' use of drugs, sexual activity, and other risky behaviours [16]. Motivated by the recognition that adolescents care about what peers think, our study uncovers a pattern that was previously unknown-American teenagers can adopt healthy eating behaviours without fear of losing status among peers, and indeed may gain some acceptance by improving their eating habits. This suggests a potentially important policy lever-peer influence– that may help improve adolescents' eating habits, a key battle in the war against adolescent obesity.

References

1. Ogden CL, Carroll MD, Flegal KM. Prevalence of Obesity and Trends in Body Mass Index Among US Children and Adolescents, 1999-2010. JAMA. 2012; 307: 483-490.

2. Daniels SR. The Consequences of Childhood Overweight and Obesity. Future Child. 2006; 16: 47-67.

3. Ferraro KF, Kelley-Moore JA. Cumulative Disadvantage and Health: Long-Term Consequences Of Obesity? Am Sociol Rev. 2003; 68: 707-729.

4. Vartanian LR, Herman CP, Polivy J. Consumption Stereotypes and Impression Management: How You are What You Eat. Appetite. 2007; 48: 265-277.

5. Salvy SJ, de la Haye K, Bowker JC, Hermans RC. Influence of Peers and Friends on Children's And Adolescents' Eating and Activity Behaviors. Physiol Behav. 2012; 106: 369-378.

6. Stevenson C, Doherty G, Barnett J, Muldoon OT, Trew K. Adolescents' Views of Food and Eating: Identifying Barriers To Healthy Eating. J Adolesc, 2007; 30: 417-434.

7. Stead M, McDermott L, Mackintosh AM, Adamson A. Why Healthy Eating Is Bad for Young People's Health: Identity, Belonging and Food. Soc Sci Med. 2011; 72: 1131-1139.

8. Croll JK, Neumark-Sztainer D, Story M. Healthy Eating: What Does It Mean To Adolescents? J Nutr Educ. 2001; 33: 193-198.

9. Evans N, Glipin E, Farkas AJ, Shenassa E, Pierce JP. Adolescents' Perceptions of Their Peers' Health Norms. Am J Public Health. 1995; 85: 1064-1069.

10. Unger JB, Reynolds K, Shakib S, Sprujit- Metz D, Sun P, Anderson Johnson C. Acculturation, Physical Activity, and Fast-Food Consumption Among Asian-American and Hispanic Adolescents. Journal of Community Health. 2004; 29: 467-481.

11. Crosnoe R, Muller C. Body Mass Index, Academic Achievement, and School Context: Examining The Educational Experiences of Adolescents at Risk of Obesity. Journal of Health and Social Behavior. 2004; 45: 393-407.

12. Nichter M. Fat Talk: What Girls and Their Parents Say About Dieting.Harvard University Press. 2001. .

13. Allison PD, Missing Data. Thousand Oaks, Calif. Sage Publications. 2002.

14. Von Hippel PT. Regression with Missing Ys: An Improved Strategy for Analyzing Multiply Imputed Data. Sociological Methodology. 2007; 37: 83-117.

15. McElhaney KB, Antonishak J, Allen JP. "They Like Me, They Like Me Not": Popularity and Adolescents' Perceptions of Acceptance Predicting Social Functioning Over Time. Child Dev. 2008; 79: 720-731.

16. Tucker JS, Green HD Jr, Zhou AJ, Miles JN, Shih RA, D'Amico EJ. Substance Use Among Middle School Students: Associations With Self-Rated and Peer-Nominated Popularity. J Adolesc. 2011; 34: 513-519.

17. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing A Standard Definition for Child Overweight and Obesity Worldwide: International Survey. BMJ. 2000; 320: 1240-1243.

18. Fischler C. Food, Self and Identity. Social Science Information. 1988; 27: 275-292.

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