

UC Davis

UC Davis Previously Published Works

Title

Student Perception of Healthfulness, School Lunch Healthfulness, and Participation in School Lunch: The Healthy Communities Study

Permalink

<https://escholarship.org/uc/item/7009x0v3>

Journal

Journal of Nutrition Education and Behavior, 51(5)

ISSN

1499-4046

Authors

Tsai, Marisa

Ritchie, Lorrene D

Ohri-Vachaspati, Punam

et al.

Publication Date

2019-05-01

DOI

10.1016/j.jneb.2019.01.014

Peer reviewed



HHS Public Access

Author manuscript

J Nutr Educ Behav. Author manuscript; available in PMC 2020 May 01.

Published in final edited form as:

J Nutr Educ Behav. 2019 May ; 51(5): 623–628. doi:10.1016/j.jneb.2019.01.014.

Student perception of healthfulness, school lunch healthfulness, and participation in school lunch: The Healthy Communities Study

Marisa Tsai, MPH, MS [Research Assistant, Nutrition Policy Institute],

Division of Agriculture and Natural Resources, University of California, 2115 Milvia Street, Suite 301, Berkeley, CA, 94704

Lorrene D. Ritchie, PhD, RD [Director and Cooperative Extension Specialist, Nutrition Policy Institute],

Division of Agriculture and Natural Resources, University of California, 2115 Milvia Street, Suite 301, Berkeley, CA, 94704

Punam Ohri-Vachaspati, PhD, RD [Professor, School of Nutrition and Health Promotion],
Arizona State University, 550 N 3rd Street, Phoenix, AZ 85004

Lauren E. Au, PhD, RD [Assistant Researcher, Nutrition Policy Institute]

Division of Agriculture and Natural Resources, University of California, 2115 Milvia Street, Suite 301, Berkeley, CA, 94704

Abstract

Objective: To increase understanding about healthfulness of school lunch and participation, this study measured 3 school lunch variables: students' perception of healthfulness, objective healthfulness, and participation and examined associations between each pair of variables (3 associations).

Methods: Multilevel models were used for a secondary analysis of data from the Healthy Communities Study, a 2013–2015 observational study of schools (n=423) and children (n=5,106) from 130 U.S. communities.

Results: Students who reported that school lunches were sometimes, often, or very often healthy ate school lunches more frequently per week ($\beta=0.71$, $p<0.0001$) than students who responded never or rarely. No associations were found with objective school lunch healthfulness.

Conclusions and Implications: Student perception of healthfulness of school lunch is positively associated with participation, but not with objective school lunch healthfulness. Understanding how student perception is associated with participation can inform effective communications to students to increase participation in the school lunch program.

Corresponding Author: Marisa Tsai, (P) 510-642-3589; mmtsai@ucanr.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Keywords

Perception; Students; school meals; school lunch participation; nutrition policy

INTRODUCTION

The United States Department of Agriculture's (USDA) National School Lunch Program (NSLP) plays an important role in the diets of U.S. children. In 2017, schools served lunches to about 30 million students each day.¹ In addition to a broad reach, school meal programs have the potential to improve the nutritional health of children, including those from low-income households.²⁻⁴ A majority of school lunches are served to low-income students for free or at a reduced price (FRP).¹ However, many more students qualify for FRP meals than participate: only 70% eligible for free meals and 67% eligible for reduced price meals participate in school lunch.⁵

The Healthy, Hunger-Free Kids Act of 2010⁶ (HHFKA) updated the USDA nutrition standards for reimbursable school meals to better reflect the 2010 Dietary Guidelines for Americans.⁷ Although some aspects of the HHFKA were delayed,⁸ most standards for reimbursable school lunches were implemented in 2013. Studies conducted after the implementation of the HHFKA found that eating school meals was associated with healthier dietary intake compared to eating meals brought from home.^{2,9}

Recent research suggests that parent perception of healthfulness of school foods is positively associated with their children's participation in school meal programs.¹⁰ However, there has been little research on student perception, despite their role as critical stakeholders. Although media has highlighted student complaints about the new meals,¹¹ studies have found that students have positive perceptions of the revised meal standards and school meal participation rates have not changed since the HHFKA was implemented.^{12, 13} However, none of these studies have examined how student perception is associated with school meal participation.

The objectives of this study were to add to understanding about healthfulness of school lunch and participation, by examining 3 associations: (1) students' perception of healthfulness of school lunch to school lunch participation, (2) objective measure of school lunch healthfulness to participation, and (3) objective measure of school lunch healthfulness to students' perception. Understanding how student perception, participation in school lunch, and objective healthfulness of school lunch are associated is important for designing effective communications around school lunch to increase student participation.

METHODS

Design

This secondary analysis used data from the Healthy Community Study (HCS), a cross-sectional observational study of communities, schools, and children across the U.S. conducted from 2013 to 2015. The study included 5,138 students ages 4–15 years recruited from 423 elementary and middle schools in 130 communities. Communities were selected

through a complex sampling design stratifying by U.S. region, community urbanicity, race/ethnicity, and income.¹⁴ Child participants were selected according to recruitment goals related to sex, age, and race/ethnicity. The Battelle Memorial Institutional Review Board approved study protocol. Written informed consent for each participating child was obtained from a parent or guardian and written assent was obtained for children. A full description of HCS is provided by John et al.¹⁵

Measures

Perception of healthfulness of school lunch was measured using a survey administered during a home visit by a trained interviewer. For children ages 4–8, an adult was the respondent and the child was present to assist. For children ages 9–11, the child was the respondent and an adult was present to assist. For children ages 12–15, the child was the sole respondent. Interviewees were asked the frequency that the statement, “The school lunch is healthy” was true for the current school year. The question was adapted from the CA HEAC Youth Nutrition Survey¹⁶ and School Nutrition Dietary Assessment Study III (SNDA-III)¹⁷. Response options were never, rarely, sometimes, often, very often, or does not apply/no school lunch. Participants responding does not apply/no school lunch were excluded from analyses. A binary variable was created for responses never/rarely (0) and sometimes/often/very often (1). Results were consistent when the variables were expressed using 3 categories (never/rarely, sometimes, and often/very often). For ease of interpretation, results are presented as binary comparisons.

To measure participation in school lunch, students and/or their parents were asked in the survey the following question adapted from SNDA-III,^{17,18} “Thinking about this school year, how many days a week (does your child/do you) usually eat the school lunch?” Response options ranged from 0 to 5 days or does not apply/no school lunch. For does not apply/no school lunch, responses were coded as 0 days. Participation in school lunch was examined as a continuous variable (0–5).

Objective healthfulness of the reimbursable school lunch is represented by a composite score using information collected for each school by a trained coder on a single school day. Coders were certified upon reaching 80% inter-rater reliability with trainers during on-site visits. Data were obtained using the Lunch and Competitive Foods Observation Form,¹⁸ which was adapted from SNDA-III.¹⁹ A la carte items that were not part of the reimbursable school lunch were not included. The score (0–9) is the sum of 9 school lunch healthfulness components, with higher scores indicating greater healthfulness. Components were selected based on best practices in school food nutrition²⁰ and consist of proportion of foods with whole grains, proportion not fast food, use of scratch cooking, presence of a salad bar, no sweet desserts or snacks, , unsweetened water, 3+ fruit options, 3+ vegetable options, and no chips or high fat snacks (Table 1). Scores were calculated for schools that had data on at least 8 of 9 items (N=387) and were rescaled for those that only had 8 items.

Child-level covariates included in models were child age, sex, race/ethnicity, annual household income level, and parental education and employment status. Community-level covariates included U.S. region, urbanicity, minority population tract status (30% or more African American or Hispanic), and proportion of population below the federal poverty level

and unemployed. Community-level information was obtained from the 2009–2013 American Community Survey.¹⁴

Statistical analysis

Multilevel models were used to examine relationships between student perception (independent variable) and school lunch participation (dependent variable); objective school lunch healthfulness (independent variable) and school lunch participation (dependent variable); and objective school lunch healthfulness (independent variable) and student perception (dependent variable). Prior to modeling, risk of collinearity was assessed by examining variance inflation factors of the potential explanatory variables for each outcome. Models included previously described child- and community-level covariates; clustering among children in the same school and community were adjusted for using random effects. Analysis using an interaction between perception and age was performed to check if there were differences by respondent type. To account for missing answers due to non-response or respondents replying don't know, multiple imputation was used.²¹ The analytical sample size for each objective varied by the following: (1) perception and participation analysis was 4,982; 124 students were excluded because they did not have school lunch or their school could not be identified; (2) school lunch healthfulness and participation analysis was 4,453; 653 students were excluded because they attended schools without school lunch healthfulness scores; (3) perception and school lunch healthfulness analysis was 4,350; 756 students were excluded because they attended schools without school lunch healthfulness scores (N=653) or did not have school lunch or their school could not be identified (N=124). Data were analyzed using SAS v.9.4 and a p-value of <0.05 was considered statistically significant.

RESULTS

The average age of participants was 9.3 years and half (51%) were female (Table 2). The 2 largest race/ethnicity groups were Hispanic (45%) and non-Hispanic white (30%). Approximately half of the sample (51%) had an annual family income of less than \$35,000. The average school lunch healthfulness score was 4.8 out of 9, with a range from 1.29 to 8.7. For the binary variable on perception of school lunch, 78.7% of students perceived the lunch to be healthy. For lunch participation, 59.7% of students usually ate school lunch daily.

Students who had a more positive perception of healthfulness of school lunch reported participating more often (Table 2). Compared to students who said school lunches were never/rarely healthy, students who reported that lunches were sometimes/often/very often healthy ate school lunch an average of 0.71 more days per week. No differences were found in the effect of perception of healthfulness and school lunch participation between child and adult respondents. No significant associations were found between objective school lunch healthfulness and student perception of the healthfulness of lunch, or between objective school lunch healthfulness and student participation in school lunch.

DISCUSSION

In this study, student perception of the healthfulness of school lunches was positively associated with lunch participation. However, their perceptions did not align with an objective measure of the healthfulness of school lunches. This suggests that other factors beyond actual healthfulness of school lunches may be influencing student perception, or that they may lack understanding about what constitutes a healthful meal.

Previous studies have indicated that student participation in school meals is influenced by social stigma, cost, taste preferences,²² and parent perception.¹⁰ Although research is limited on student perception of healthfulness of school foods, past studies found that student perception of food quality, food appearance, and taste¹² influence participation in school meals. This study adds to this literature, by finding that perception of healthfulness appears to be an additional factor that may influence student lunch participation. However, since student perception and the objective measure of healthfulness were not associated, students may be tying the idea of healthfulness to other food qualities, such as palatability or appeal, using them as a proxy for healthfulness. This study was unable to investigate whether this is true as questions on the appeal of school foods were not asked. It is also possible that students are unaware of healthier versions of traditional school foods being served and still perceive them to be less healthy. Further demonstrating the unique role of perception, differences in objective school lunch healthfulness were not associated with participation, which is consistent with existing literature showing that improving the healthfulness of school meals post HHFKA were not related to changes in participation.¹³ Given the potential of school food to improve diets and health of U.S. children,⁴ further study on factors influencing student perception is needed to inform interventions to increase school meal participation.

This study has several limitations. Due to its cross-sectional design, causality cannot be inferred. It is possible that students' exposure to school lunch influenced their perception of school lunch. Regardless, student perception may be an important factor in school meal participation. This may be especially relevant for older students who often have greater autonomy in their food choices.⁵ Another limitation is that aside from the objective measure of school lunch healthfulness, most measures were self-reported and therefore subject to recall error and reporting bias. Additionally, the objective school lunch healthfulness score for each school was based on observation of only a single school day due to resource limitations. However, this is a common practice used in other school lunch studies.²³ Strengths of this study include that it was conducted after most of the new HHFKA-related changes to school lunch standards had been implemented, thus providing a relatively recent assessment of student perception and participation. To our knowledge, this is the first study to examine the association between objective measures of school lunch healthfulness, student perception, and school lunch participation in a large, diverse sample of students in the U.S.

Implications for Research and Practice

Study findings suggest that students' perceived healthfulness of school lunches is an important factor in school lunch participation. Students with positive perceptions of

healthfulness were more likely to participate than students with less favorable perceptions. However, an objective measure of the healthfulness of school lunch was not associated with perception nor participation, suggesting that students may be using characteristics unrelated to nutrition to assess healthfulness. Future studies should explore the factors influencing student perception and their conception of healthfulness to inform interventions to increase school lunch participation. As efforts continue to improve and promote school meals, engaging students in the process and communicating changes in school meal healthfulness may be important to increasing participation.

Acknowledgements:

Research was supported by the National Heart, Lung, and Blood Institute of the National Institutes of Health under award number K01HL131630. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. The funding source had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

The authors would like to acknowledge Lilly Nhan, MPH, RD, Janice Kao, MPH, and Kenneth Chui, PhD for their support of the project.

References

1. USDA Food and Nutrition Service. National School Lunch Program: Participation and Lunches Served 2018; <https://fnspod.azureedge.net/sites/default/files/pd/slsummar.pdf> Accessed November 15, 2018.
2. Au LE, Gurzo K, Gosliner W, Webb KL, Crawford PB, Ritchie LD. Eating School Meals Daily Is Associated with Healthier Dietary Intakes: The Healthy Communities Study. *Journal of the Academy of Nutrition and Dietetics* 2018;118(8):1474–1481.e1471. [PubMed: 29555435]
3. Robinson-O'Brien R, Burgess-Champoux T, Haines J, Hannan PJ, Neumark-Sztainer D. Associations between school meals offered through the National School Lunch Program and the School Breakfast Program and fruit and vegetable intake among ethnically diverse, low-income children. *The Journal of school health* 2010;80(10):487–492. [PubMed: 20840658]
4. Institute of Medicine. Committee on Nutrition Standards for Foods in Schools Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth Washington, DC 2007.
5. Moore Q, Hulsey L, Ponza M. Factors Associated with School Meal Participation and the Relationship Between Different Participation Measures. IDEAS Working Paper Series from RePEc 2009.
6. USDA Food and Nutrition Service. Healthy Hunger-Free Kids Act. Nutritional standards in the National School Lunch and Breakfast Programs 2012; June 26th. Available at: <https://www.fns.usda.gov/school-meals/healthy-hunger-free-kids-act> Accessed 2018.
7. US Department of Agriculture, US Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th edition. Washington, DC: US Government Printing Office; 2010 https://www.cnpp.usda.gov/sites/default/files/dietary_guidelines_for_americans/PolicyDoc.pdf Accessed February 1, 2019.
8. USDA Food and Nutrition Service. Child Nutrition Programs: Flexibilities for Milk, Whole Grains, and Sodium Requirements 2018; <https://www.fns.usda.gov/school-meals/fr113017> Accessed June 26th, 2018.
9. Johnson DB, Podrabsky M, Rocha A, Otten JJ. Effect of the healthy hunger-free kids act on the nutritional quality of meals selected by students and school lunch participation rates. *JAMA Pediatrics* 2016;170(1):e153918. [PubMed: 26747076]
10. Ohri-Vachaspati P Parental perception of the nutritional quality of school meals and its association with students' school lunch participation. *Appetite* 2014;74:44–47. [PubMed: 24316119]

11. Kang Y, Wang Y, Zhang D, Zhou L. The public's opinions on a new school meals policy for childhood obesity prevention in the U.S.: A social media analytics approach. *International Journal of Medical Informatics* 2017;103:83–88. [PubMed: 28551006]
12. Asada Y, Hughes AG, Read M, Schwartz MB, Chriqui JF. High School Students' Recommendations to Improve School Food Environments: Insights From a Critical Stakeholder Group. *The Journal of school health* 2017;87(11):842–849. [PubMed: 29023833]
13. Vaudrin N, Lloyd K, Yedidia MJ, Todd M, Ohri-Vachaspati P. Impact of the 2010 US Healthy, Hunger-Free Kids Act on School Breakfast and Lunch Participation Rates Between 2008 and 2015. *American Journal of Public Health* 2018;108(1):84–86. [PubMed: 29161063]
14. Strauss WJ, Sroka CJ, Frongillo EA, et al. Statistical Design Features of the Healthy Communities Study. *American journal of preventive medicine* 2015;49(4):624–630. [PubMed: 26384932]
15. John LV, Gregoriou M, Pate RR, et al. Operational Implementation of the Healthy Communities Study: How Communities Shape Children's Health: How Communities Shape Children's Health. *American journal of preventive medicine* 2015;49(4):631–635. [PubMed: 26384933]
16. Samuels SE, Craypo L, Boyle M, Crawford PB, Yancey A, Flores G. The California Endowment's Healthy Eating, Active Communities program: a midpoint review. *American journal of public health* 2010;100(11):2114. [PubMed: 20864700]
17. Fox MK, Dodd AH, Wilson A, Gleason PM. Association between School Food Environment and Practices and Body Mass Index of US Public School Children. *Association between School Food Environment and Practices and Body Mass Index of US Public School Children* 2009;109(2S):S108–S117.
18. Ritchie LD, Wakimoto P, Woodward-Lopez G, et al. The Healthy Communities Study Nutrition Assessments: Child Diet and the School Nutrition Environment. *American journal of preventive medicine* 2015;49(4):647–652. [PubMed: 26384936]
19. U.S. Department of Agriculture (USDA) Food and Nutrition Service. School Nutrition Dietary Assessment (SNDA) Study III, Pre-Visit Questionnaire and Menu Survey – Reimbursable Meals Form 2004; <http://www.fns.usda.gov/sites/default/files/SNDAlIIOMB.pdf> Accessed July 9, 2018.
20. US Department of Agriculture. Tools for Schools. School Meals 2018; <https://www.fns.usda.gov/school-meals/tools-schools> Accessed August 17, 2018.
21. Buuren Sv, Groothuis-Oudshoorn K. MICE: Multivariate Imputation by Chained Equations in R 2010:1–7660.
22. Bailey-Davis L, Virus A, McCoy TA, Wojtanowski A, Vander Veur SS, Foster GD. Middle School Student and Parent Perceptions of Government-Sponsored Free School Breakfast and Consumption: A Qualitative Inquiry in an Urban Setting. *Journal of the Academy of Nutrition and Dietetics* 2013;113(2):251–257. [PubMed: 23351628]
23. Gosliner W School-level factors associated with increased fruit and vegetable consumption among students in California middle and high schools. *The Journal of school health* 2014;84(9):559–568. [PubMed: 25117889]

Table 1.

Objective Measure of School Lunch Healthfulness Components

Component	Measurement
1. Proportion whole grain-rich	The proportion of whole grain-rich bread, pasta or tortillas, brown rice, corn tortillas among all grain products. Coded: Proportion of whole grain-rich, continuous variable (0–1)
2. Proportion not fast foods	The proportion of foods that are not commonly found in fast food chain restaurants, including burgers, hot dogs, and pizza. Coded: Proportion of foods that are not fast food items, continuous variable (0–1)
3. Use of scratch cooking	Use of over 25% scratch cooking (i.e. food preparation involving the use of raw ingredients) and less than 25% convenience cooking (i.e. pre-portioned, heat and serve items). Coded: Yes(1)/No(0)
4. Salad bar	Presence of salad bar at lunch. Coded: Yes (1)/No (0)
5. No sweet desserts or snacks	No candy, cake, cookies, low-fat cookies, frozen dessert, low-fat frozen dessert, ice cream or other type of sweet foods offered with meal. Coded: Yes(1) /No (0)
6. Unsweetened water	Water available free of charge in the dining room or serving areas from water fountain, pitcher, bottles, dispenser or other sources. Coded: Yes(1)/No(0)
7. Fruit	Three or more dried, fresh or frozen, canned or cooked fruit. Coded: Yes(1)/No(0)
8. Vegetables	Three or more pre-made salad (entrée/meal sized), side salad, fresh vegetables or processed vegetables offered with meal. Coded: Yes(1)/No(0)
9. No chips, fries, or high fat snacks	No chips, fried potatoes or low-fat chips offered with meal. Coded: Yes(1)/No(0)
Total score	Sum of all individual components (0–9)

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 2.

Characteristics of Children in the Healthy Communities Study (N=4,982)

Child-level characteristics	Mean (SD)
Age, years	9.3 (2.6)
Usually eat school lunch	n(%)
0 days	695 (14.0)
1 day	342 (6.9)
2 days	291 (5.8)
3 days	370 (7.4)
4 days	309 (6.2)
5 days	2,975 (59.7)
Perception that school lunch is healthy	n(%)
Never	422 (8.5)
Rarely	636 (12.8)
Sometimes	1,960 (39.3)
Often	1,091 (21.9)
Very often	873 (17.5)
Race/ethnicity ^b	n(%)
Hispanic or Latino	2,246 (45.1)
Non-Hispanic White	1,447 (29.0)
Non-Hispanic Black	907 (18.2)
Non-Hispanic multi-racial	183 (3.7)
Non-Hispanic other	199 (4.0)
Family annual income	n(%)
Less than \$20,000	1,371 (27.2)
\$20,000 – 35,000	1,238 (24.9)
\$35,000 – 50,000	627 (12.6)
\$50,000 – 75,000	546 (11.0)
\$75,000 – 100,000	365 (7.3)
Greater than \$100,000	849 (17.0)
Maximum parental education from both biological mother/father	n(%)
Less than high school	1,148 (23.0)
High school diploma or equivalent	1,014 (20.4)
Some college or associate degree	1,243 (25.0)
Bachelor degree	752 (15.1)
Graduate degree ^c	825 (16.6)
Maximum current employment status of biological mother/father	n(%)
Working full-time for pay	3,619 (72.6)
Working part-time for pay	509 (10.2)
Unemployed ^d	265 (5.3)
Other	589 (11.8)
School-level characteristics	Mean (SD)
School lunch healthfulness	4.8 (1.2)
Students eligible for FRP meals (%)	70.8 (25.4)
School type	n(%)
Elementary school	3,017 (60.6)
Elementary and middle school (K-8)	649 (13.0)
Middle school	1,316 (26.4)
Community-level characteristics	

Child-level characteristics	Mean (SD)
U.S. region	n(%)
Midwest	950 (19.1)
Northeast	773 (15.5)
South	2,093 (42.0)
West	1,166 (23.4)
Community minority classification	n(%)
Black	1,034 (20.8)
Hispanic	2,000 (40.1)
Other	1,948 (39.1)
Community urbanicity	n(%)
Rural	1,127 (22.6)
Suburban	1,963 (39.4)
Urban	1,892 (38.0)
	Mean (SD)
Poverty (%)	20.8 (10.6)
Unemployment (%)	8.8 (3.4)

^aDue to nonresponse, the total n is not the same for all variables

^bRace and origin: Other includes American Indian/Alaska Native, Native Hawaiian/Pacific Islander, Asian.

^cGraduate includes masters, professional, doctorate degree.

^dUnemployed includes only temporarily laid off, on sick leave or maternity leave, looking for work, unemployed; Other includes disabled, keeping house, retired, student, other.

Table 3.

Associations Between Student Perception, School Lunch Healthfulness, and Participation in School

Association Between Positive Student Perception of Healthfulness of School Lunch and Participation in School Lunch (n=4,982)^{a, b, c}					
	Estimate	Standard error	95% CI	P-value	R ²
Participation in school lunch (days/week)	0.71	0.06	(0.60 to 0.82)	<.001	0.27
Association Between School Lunch Healthfulness and Participation in School Lunch (n=4,453)^{a, b}					
	Estimate	Standard error	95% CI	P-value	R ²
Participation in school lunch (days/week)	0.02	0.03	(-0.05 to 0.08)	0.61	0.23
Association Between School Lunch Healthfulness and Student Perception of Healthfulness of School Lunch (n=4,350)^{b, c, d}					
	Odds ratio	95% CI		P-value	
Positive perception of healthfulness	1.02	(0.95–1.09)		0.60	

CI indicates confidence interval.

^aMultilevel mixed model regression adjusted for: Child-level variables: age, gender, race/ethnicity, annual household income, maximum parental education, and maximum parental employment. Community-level variables: U.S. region, minority classification, urbanicity, proportion of population below the federal poverty level, and percent of population unemployed. Standard errors are clustered at community and school level.

^bN may differ from total analytical sample due to nonresponse.

^cReference group is participants responding Never or Rarely. Positive perception combines Sometimes, Often, and Very often responses.

^dMultilevel logistic regression adjusted for same variables as previous regression. Standard errors are clustered at the school and community level.