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Greater social adversity is associated with more disordered eating attitudes and behaviors among children from Southeast Michigan

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Abstract

Objective: The objective of this study is to examine the association between indicators of social adversity, including socioeconomic status and race/ethnicity, and children's disordered eating behaviors and attitudes.

Methods: Children ages 8–10 years old ($n = 183$) were recruited from Michigan. Data were collected through in-home surveys. The Children's Eating Attitudes Test (ChEAT-24) measured disordered eating attitudes and behaviors in the sample. Cumulative social adversity was considered the sum of four binary variables: caregiver race/ethnicity, caregiver education, household income, and child-reported food security status. Linear mixed models examined the association between social adversity indicators and ChEAT-24 scores.

Results: Children of primary caregivers of color had significantly higher ChEAT-24 scores than children of white caregivers ($p = .03$). Children who reported food insecurity had significantly higher ChEAT-24 scores compared to children who reported food security ($p = .01$). Compared to children with the lowest social adversity score, children with the highest score had a 4.8-unit higher ChEAT-24 score (95% CI .3–9.4), after adjusting for covariates. A significant trend was observed for greater social adversity and higher ChEAT-24 score (p-trend = .02).

Conclusion: A linear association was observed between greater social adversity and more disordered eating behaviors and attitudes among children in this sample. These findings emphasize the need for eating disorder research in children from racial/ethnic minorities and socioeconomically disadvantaged populations to support future prevention efforts.

Public Significance: Greater exposure to social adversity was associated with more disordered eating behaviors among preadolescent children. Given that eating disorders are understudied in lower-income and minority racial/ethnic populations, this study highlights the need for additional research to better support prevention and treatment efforts among children from socioeconomically diverse backgrounds.

1 | INTRODUCTION

Eating disorders in children are a significant public health concern due to their high prevalence (Merikangas et al., 2010), elevated mortality (Arcelus et al., 2011), and substantial associated costs (Deloitte Access Economics, 2020). Accordingly, understanding the etiology of disordered eating behaviors and attitudes in children is critical due to the nature of their growth and development and the implications for life-long risk of full syndrome eating disorders. The onset of full syndrome eating disorders is typically preceded by disordered eating attitudes and behaviors (e.g., skipping meals, preoccupation with nutritional value of food, and body dissatisfaction), which are commonplace among youth (Combs et al., 2013; Shisslak et al., 1995). Early intervention during childhood could prevent disordered eating behavior and reduce the risk of a full syndrome eating disorder later in life. Indeed, research has shown that early programming for children can reduce eating disorder attitudes and behaviors, thus reducing full syndrome eating disorders (Ciao et al., 2014). Studying antecedents to disordered eating in high-risk populations could illuminate viable prevention targets.

Eating disorders remain disproportionately undertreated, understudied, and underdiagnosed in individuals facing socioeconomic adversity (Sonneville & Lipson, 2018). White, affluent women are overrepresented in eating disorder studies and in the treatment-seeking population (Halbeisen et al., 2022). However, studies have increasingly shown that structurally marginalized racial/ethnic populations and those with socioeconomic adversity are at higher risk of disordered eating attitudes and behaviors (Austin et al., 2011; de Souza Ferreira & da Veiga, 2008; Gentile et al., 2007; Johnson et al., 2002; Masler et al., 2021; Striegel-Moore et al., 1995).

Factors related to social adversity include race/ethnicity, parental education status, household income, and food insecurity. Social adversity can increase exposure to chronic and acute stress, also called allostatic load (Christensen et al., 2018; Pak & Kim, 2021; Prior, 2021; Whelan et al., 2021). Higher levels of chronic stress or measured allostatic load are associated with increased risk of mental illness (Gallagher et al., 2021; Guidi et al., 2021; Reiss et al., 2019). Several studies have documented these associations more specifically by analyzing individual social adversity factors and disordered eating.

First, certain structurally marginalized racial/ethnic identities are associated with more disordered eating behaviors. In a study of over 16,000 middle school students, Black, Hawaiian/Pacific Islander, American Indian/Alaskan Native, or Latino/a students, reported higher odds of disordered weight control behaviors (vomiting or laxative use as a form of weight control in the past month) compared to their white counterparts (Austin et al., 2011). Additional studies have shown similar results of high eating disorder and disordered eating

prevalence among non-white and low-income adolescents and young adults (de Souza Ferreira & da Veiga, 2008; Gentile et al., 2007; Rodgers et al., 2017; Striegel-Moore et al., 1995). It is important to note that racial categorization is a reflection of oppression, exploitation, and social inequality that may co-exist with socioeconomic adversity as a result of systemic racism (Bell et al., 2020; Williams et al., 2010). Socioeconomic status captures relevant aspects of social inequality related to race/ethnicity, but there are other dimensions. For example, some research has indicated that even after taking socioeconomic status into account, certain racial/ethnic health disparities still persist, underscoring the independent health effects of racism (Williams et al., 2010). Finally, measures of socioeconomic status are not equivalent in meaning across racial/ethnic groups (Williams et al., 2010).

With respect to parental education status, a systematic review showed that higher parental education status was associated with greater risk of children's eating disorders in three of four studies reporting this metric (Weissman, 2019). Related to household income, lower income-to-needs ratio was associated with increased loss of control when eating, a disordered eating behavior, in a sample of sixty 12–17-year-old participants with higher household food insecurity (West et al., 2021). Additionally, among a sample of young people (mean age = 14.5 years) certain weight control behaviors (i.e., use of diet pills or skipping meals) and ideals were more prevalent in lower-income boys and girls (Larson et al., 2021).

Previous studies have also demonstrated an association between food insecurity and more eating disorder symptoms (Altman et al., 2019; Hazzard et al., 2020; Masler et al., 2021; Royer et al., 2021). In a sample of children and adolescents ($n = 6077$), attempted weight loss and unhealthy weight control practices were more common among children with very low food security compared to children with high food security (Masler et al., 2021).

While each of these factors may uniquely impact health, few studies have examined the impact of experiencing multiple forms of social adversity and children's disordered eating behaviors. Limiting analyses to individual factors may underestimate chronic stress and associated risks of disordered eating while cumulative sums of social adversity factors could show more accurate contextual risks. Accordingly, there is a growing interest in eating disorder research that applies an intersectional framework (Burke et al., 2020). Intersectionality theory posits that most individuals hold more than one identity, and each identity can influence a person's lived experience independently and jointly with other identities to impact risk and protective factors (Burke et al., 2020; Crenshaw, 1989). Social adversity is associated with higher chronic stress and mental illness. With individual factors of social adversity associated with disordered eating, summation could capture the impact of multiple indicators increasing chronic

stress and possibly disordered eating behavior. Accordingly, the objective of this study is to examine the associations of cumulative social adversity with children's disordered eating behaviors and attitudes.

2 | METHODS

A sample of children ages 8–10 years old ($n = 195$) from low-income families were recruited from Southeast Michigan in 2018–2019. Families were recruited from community health clinics, social service agencies, and UMhealthresearch.org, an online database connecting prospective research participants to research studies. Eligibility criteria included having a primary female caregiver who was English-speaking, a child between the ages of 8–10 years old, and household income ≤200% of the federal poverty level. Most primary female caregivers were mothers. Primary female caregivers completed a survey about their household characteristics and health behaviors, which was sent electronically through Qualtrics prior to an in-home study visit. During the study visit, children completed a survey about their own characteristics and health behaviors, under the supervision of a trained research assistant. Twelve children were excluded because of missing responses to the key variables included in this study. The final analytic sample included 183 children. Families received $30 US dollars as compensation for their baseline visit, while children were able to pick from a selection of small toys. Data collection for this study was approved by the University of Michigan Medical School Institutional Review Board.

2.1 | Children's Eating Attitudes Test

The primary outcome was the total Children's Eating Attitudes Test (ChEAT-24) score, which children completed as part of the in-home survey. The ChEAT-24 is a derivative of the ChEAT-26, a 26-item questionnaire adapted from the adult version called Eating Attitudes Test (EAT-26) (Garner et al., 1982; Maloney et al., 1988; Smolak & Levine, 1994) to be more comprehensible by children. The questionnaire is designed to assess eating attitudes and behaviors and recognize abnormalities and potentially pathological behaviors (Smolak & Levine, 1994). The questionnaire consists of 26 questions with response options of "never," "rarely," and "sometimes" each scored as zero, "often" scored as one, "usually" scored as two, and "always" scored as three. Recent literature suggests higher reliability when two questions (number 19 and 25) are removed from the total ChEAT-26, resulting in a ChEAT-24 (Lommi et al., 2020). Question number 19 and 25 have been found to correlate negatively with total ChEAT scores (Murphy et al., 2019), therefore the ChEAT-24 is used in this study.

The ChEAT-24 total scores can range from .0 to 72.0, with higher scores indicating more disordered eating attitudes and behaviors. This questionnaire has high validity and reliability in several populations (Lommi et al., 2020; Murphy et al., 2019; Smolak & Levine, 1994). For reference, a ChEAT-24 or ChEAT-26 score of 20.0 or greater has been considered elevated disordered eating (Colton et al., 2007;

Murphy et al., 2019); however, there is no widely agreed upon cutoff for children (Lommi et al., 2020).

2.2 | Social adversity score

In this study, the social adversity score is defined as a sum of measured acute and chronic stressors representing social determinants of health that serve as a proxy of overall adversity faced. These factors include racial and socioeconomic adversity, referred to hereafter as social adversity. A cumulative social adversity score was created using the following indicators: primary female caregiver race/ethnicity (caregivers of color vs. non-Hispanic white), household income (≤130% of the federal poverty line vs. >130% of the federal poverty line), child-reported food security status (food insecure vs. food secure), and primary female caregiver education level (no college vs. any college). These indicators were dichotomized with caregivers of color, ≤130% of the federal poverty line, food insecurity, and lower primary female caregiver education scored as one. Each variable was selected because of evidence suggesting its association with higher chronic and acute stress (Christensen et al., 2018; Pak & Kim, 2021; Prior, 2021; Whelan et al., 2021). Our summation approach is similar to that used in other psychological fields; specifically, previous studies have summed life stressors (Mayer et al., 2019), genetic risk alleles (Shabana et al., 2018), or adverse childhood experiences (Dube et al., 2003) to show associations with a health outcome.

Food security was measured using a new, validated child-reported measure that asked questions about a child's frequency of experiences with food insecurity (Fram et al., 2013; Landry et al., 2019). We considered a score of two or more to be indicative of food insecurity, similar to prior studies (Landry et al., 2019). Race/ethnicity was dichotomized because of sample size limitations; the caregivers of color category include Black or African American ($n = 48$), Hispanic ($n = 3$), Middle Eastern/North African ($n = 1$), Asian ($n = 2$), Multiracial/multiethnic ($n = 9$), and other ($n = 9$).

Female caregiver race/ethnicity was used because we hypothesize that caregiver race/ethnicity is more strongly correlated with results of structural racism faced by the household compared to child race/ethnicity, such as housing discrimination, incarceration, or hiring discrimination (Shonkoff et al., 2021). Caregiver race/ethnicity might also better represent race-related experiences that a child might experience vicariously from a parent's lived experience (Heard-Garris et al., 2018; Shonkoff et al., 2021). Additionally, race/ethnicity is used as a proxy measurement for the adversity of institutionalized racism and marginalization. Federal poverty level was calculated based on the 2019 U.S. Federal Poverty Guidelines (U.S. Department of Health and Human Services, 2019) using participants household size and household income. The cut-off of 130% of the federal poverty level was utilized because it is the percentage associated with eligibility for the Supplemental Nutrition Assistance Program (SNAP). SNAP is a federal program designed to help low-income individuals purchase food (Nestle, 2019). These variables were then summed to create an overall score, ranging from zero to four. A higher score indicated greater household social adversity.

2.3 | Statistical analysis

Descriptive statistics were calculated for the children in the sample. Tetrachoric correlation coefficients were calculated between each indicator variable in the social adversity score. We fit linear mixed models to examine the association between the cumulative social adversity score and mean ChEAT-24 score, both unadjusted and adjusted for child's age and gender. Unadjusted linear mixed models were used to calculate statistical significance of mean ChEAT-24 by each social adversity factor independently. Additionally, linear mixed models were used to calculate statistical significance in social adversity score and ChEAT-24 score by the number of participating children in each household. Each model included a random intercept for household identifier to account for clustering within households with multiple children participating in the study. We examined a test for linear trend by including the social adversity score as an ordinal variable. Statistical analysis was conducted using SAS Statistical Software package version 9.4.

3 | RESULTS

In the analytic sample, the mean age was 9.0 years (SD: .8) and 54.6% were girls (Table 1). This sample consisted of 134 households with one reported child ($n = 134$), 23 households with two reported children ($n = 46$ children), and one household with three reported

children ($n = 3$). There was no statistically significant difference in mean ChEAT-24 score by number of participating children in households ($p = .33$) or in social adversity score by number of children in each household ($p = .86$).

With respect to primary female caregiver characteristics, 39.3% of caregivers identified as caregivers of color, 15.3% reported no college education, and 59.6% reported their household income was at or below 130% of the poverty level. The prevalence of food insecurity was 56.8% as reported by children. The tetrachoric correlation coefficients between each indicator variable ranged from .18 to .54 suggesting that there is some relation between the components of the social adversity score, but they are generally distinct constructs.

The mean ChEAT-24 score of the sample was 5.2 (SD: 6.3) with a median value of 3.0 and range of .0 to 36.0. Children of caregivers of color had significantly higher ChEAT-24 scores than children of white caregivers ($p = .03$). Children who reported food insecurity had significantly higher ChEAT-24 scores compared to children who reported food security ($p = .01$). Mean ChEAT-24 scores were not significantly different by child age, child gender, primary female caregiver education status, or household income ($p > .05$).

The associations between social adversity and children's disordered eating scores are shown in Table 2. Approximately 13.7% of the sample had a social adversity score of .0, 33.9% had a social adversity score of 1.0, 26.2% had a social adversity score of 2.0, 20.2% had a social adversity score of 3.0, and 6.0% had the highest possible social adversity score of 4.0. In the adjusted model on average, compared to

TABLE 1 Mean Children's Eating Attitudes Test (ChEAT-24) scores by sociodemographic indicators among children from Southeast Michigan

	n	% or mean (SD)	Mean ChEAT-24 score	SE	p-Value[a]
Child demographic factors					
Child age	183	9.0 (.8)	5.2	.5	.18
Child gender					.64
Boy	83	45.4	4.9	.7	
Girl	100	54.6	5.4	.6	
Social adversity indicators					
Primary female caregiver race/ethnicity					.03
Non-Hispanic white	111	60.7	4.4	.5	
Caregivers of color[b]	72	39.3	6.5	.8	
Primary female caregiver education					.42
Any college	155	84.7	5.3	.5	
No college	28	15.3	4.3	1.0	
Household income					.32
Above 130% of federal poverty level	74	40.4	4.6	.7	
130% of federal poverty level and below	109	59.6	5.6	.6	
Child food insecurity					.01
No	79	43.2	3.9	.6	
Yes	104	56.8	6.2	.7	

Abbreviations: SD, standard deviation; SE, standard error.
[a]p-Value calculated through unadjusted linear mixed models to account for clustering in households.
[b]Caregivers of color category includes Black or African American ($n = 48$), Hispanic ($n = 3$), Middle Eastern/North African ($n = 1$), Asian ($n = 2$), Multi-racial/multiethnic ($n = 9$), and other ($n = 9$).

TABLE 2　Association of social adversity score with Children's Eating Attitudes Test (ChEAT-24) score among children from Southeast Michigan

Number of social adversity risk factors	n	%	Mean ChEAT-24 score	Unadjusted		Adjusted[a]	
				β[b]	95% CI	β[b]	95% CI
0	25	13.7	2.7	0	x	0	x
1	62	33.9	5.0	2.3	−.6 to 5.2	2.2	−.7 to 5.1
2	48	26.2	5.8	3.0	−.1 to 6.0	2.9	−.2 to 6.0
3	37	20.2	5.8	3.2	.0 to 6.4	3.4	.2 to 6.6
4	11	6.0	7.4	4.9	.4 to 9.4	4.8[c]	.3 to 9.4
Trend[d]				$p = .03$		$p = .02$	

Abbreviation: CI, confidence interval.
[a]The adjusted model accounts for child age and child gender.
[b]Linear mixed model.
[c]Sample interpretation of β = on average, compared to children with the lowest social adversity score, children with the highest social adversity score had a 4.8-unit higher (95% CI .3–9.4) ChEAT-24 score after adjusting for covariates.
[d]Test for linear trend: social adversity score as an ordinal variable in a linear mixed model.

children with the lowest social adversity score, children with the highest social adversity score had a 4.8-unit higher (95% CI .3–9.4) ChEAT-24 score. Additionally, on average, compared to children with the lowest social adversity score, children with social adversity score of 3.0 had a 3.4 (95% CI .2–6.6) unit higher ChEAT-24 score. The difference between the lowest social adversity score and a score of 1.0 or 2.0 was not statistically significant. There was a significant trend observed for greater social adversity scores and higher mean ChEAT-24 scores (p-trend = .02) in the adjusted model.

4 | DISCUSSION

In this sample of children, greater social adversity was associated with more disordered eating behaviors and attitudes. These findings have important implications because childhood disordered eating behaviors can predict future full syndrome eating disorders (Combs et al., 2013; Herle et al., 2020; Shisslak et al., 1995). Additionally, eating disorders are being seen at an increasing rate in adolescent girl's emergency room visits (Radhakrishnan et al., 2022). Disordered eating attitudes and behaviors are also harmful alone, regardless of potential for full syndrome eating disorders later in life (Shisslak et al., 1995).

Findings from the present study should be interpreted within the context of the other studies of multiple social adversity indicators and disordered eating behaviors. A recent 2021 study indicated that more socioeconomic disadvantage measured by a metric of neighborhood disadvantage (unemployment, poverty, education, and housing quality measures [Kind & Buckingham, 2018]) was associated with more disordered eating behavior in girls ages 8–17 (Mikhail et al., 2021). Further, in a sample modeling eating disorder behaviors and attitudes in girls ages 9–21 years old over time, receiving public assistance and Black race was associated with higher initial disordered eating behaviors and attitudes (Bodell et al., 2018).

While race/ethnicity and food insecurity categories had significantly different mean ChEAT-24 scores when stratified, poverty level

categories and parental education status did not. For reference, the caregivers of color category include Black or African American (n = 48), Hispanic (n = 3), Middle Eastern/North African (n = 1), Asian (n = 2), Multi-racial/multiethnic (n = 9), and other (n = 9). This suggests that race/ethnicity and food insecurity may have more of an impact on total ChEAT-24 scores than other factors of social adversity. Individual factors may not have statistically significant relationships with disordered eating behaviors and attitudes, but the cumulative sum of multiple facets of one's identity could. Additionally, children in our sample with a social adversity score of one or two did not have significant differences in ChEAT-24 scores compared to those with a score of zero, but scores of three or four did. This could further indicate cumulative social adversities impacting disordered eating more so than individual factors alone and suggest the existence of an additive intersectional process.

Our analysis builds on the growing evidence that counters the "white, affluent, female" eating disorder and disordered eating stereotype (Gordon et al., 2002). Studying the factors associated with disordered eating in individuals who do not match this stereotype is important for the development of prevention and treatment measures for demographically diverse populations. The demographic distribution of treatment-seeking individuals does not align with eating disorder prevalence among the population (Swanson et al., 2011). Furthermore, individuals with higher socioeconomic status have higher odds of recognizing a need for treatment and receiving treatment compared to their lower socioeconomic status counterparts in a sample of 1747 individuals (Sonneville & Lipson, 2018). By further emphasizing individuals facing racial and socioeconomic adversity as a priority population, treatment and intervention methods can be improved.

Our study has several limitations. First, our sample size is small, and all children were recruited from English-speaking, low-income families from one geographic region in the United States. This limits our study's generalizability to populations outside of this subset. The inclusion criterion of English speaking might also eliminate

individuals experiencing further socioeconomic disadvantages from xenophobia and structural barriers. Second, the ChEAT-24 overall score does not distinguish between specific types of eating disorder behaviors and attitudes (e.g., binge eating, restrictive eating, body dissatisfaction, etc.), so we cannot say which specific types of attitudes or behaviors are more common among children with more social adversity. Third, we dichotomized race/ethnicity because of our small sample size, but recognize some meaning is lost in the collapsing of racial/ethnic identities into categories. Additionally, this present study looks at cumulative social adversity, rather than interactions because of sample size limitations. As such, the extent to which several identities may interact to impact risk of disordered eating behavior cannot be discerned. Further, data are cross-sectional; therefore, we are unable to examine how social adversity contributes to disordered eating trajectories and the onset of eating disorders throughout adolescence. Finally, in the context of social adversity, the ChEAT-24 metric could capture behavior like dietary restraint from food insecurity that is not motivated by shape or weight concern (Middlemass et al., 2021). Although harmful and concerning, this behavior might not reflect disordered eating, but would be captured as such through our analysis. This could overestimate reported disordered eating behaviors and attitudes. Future studies may want to investigate these associations with longitudinal data in a larger sample size. Strengths include the inclusion of multiple types of social adversity faced by the same individual and the use of the ChEAT-24 metric as a comprehensive and validated indicator of disordered eating behaviors and attitudes.

These findings emphasize the need for eating disorder research in children from racial/ethnic minorities and socioeconomically disadvantaged populations to support future prevention efforts, which could reduce future risks of disordered eating behavior in children. Additionally, future work should focus on obtaining a large sample size to enable exploration of intersectionality theory by testing the interaction of multiple social adversity characteristics and risk of disordered eating behavior (Burke et al., 2020; Crenshaw, 1989). Other social adversity factors could be explored such as zip code, gender orientation, sexual orientation, and other material insecurities (e.g., housing, health care, transportation). Maximizing prevention efforts against disordered eating and future full syndrome eating disorders requires successful identification of a multitude of risk factors in order to tailor interventions to those at greatest risk. Clinicians could consider screening social adversity risk factors in light of risk for mental illness, disordered eating, and eating disorders. This could promote early intervention and also contextualize clinical presentations of disordered eating. Understanding social adversity could also promote realistic and compassionate treatment approaches for patients.

AUTHOR CONTRIBUTIONS

Andrea McGowan: Conceptualization; data analysis; manuscript drafting and revision. **Mikayla R Barry:** Data analysis; manuscript revision. **Kendrin R Sonneville:** Methodology, manuscript revision. **Cindy Leung:** Conceptualization; methodology; manuscript revision; supervision.

CONFLICT OF INTEREST

The authors have no conflict to declare.

DATA AVAILABILITY STATEMENT

Data and code available upon request.

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REFERENCES

Altman, E. A., Ritchie, L. D., Frongillo, E. A., & Madsen, K. A. (2019). Food insecurity is associated with body dissatisfaction among children in California. *Journal of the Academy of Nutrition and Dietetics*, 119(10), 1732–1737. https://doi.org/10.1016/j.jand.2018.07.007

Arcelus, J., Mitchell, A. J., Wales, J., & Nielsen, S. (2011). Mortality rates in patients with anorexia nervosa and other eating disorders. A meta-analysis of 36 studies. *Archives of General Psychiatry*, 68(7), 724–731. https://doi.org/10.1001/archgenpsychiatry.2011.74

Austin, S. B., Spadano-Gasbarro, J., Greaney, M. L., Richmond, T. K., Feldman, H. A., Osganian, S. K., Hunt, A. T., Mezgebu, S., & Peterson, K. E. (2011). Disordered weight control behaviors in early adolescent boys and girls of color: An under-recognized factor in the epidemic of childhood overweight. *Journal of Adolescent Health*, 48(1), 109–112. https://doi.org/10.1016/j.jadohealth.2010.05.017

Bell, C. N., Sacks, T. K., Thomas Tobin, C. S., & Thorpe, R. J. (2020). Racial non-equivalence of socioeconomic status and self-rated health among African Americans and Whites. *SSM Popul Health*, 10, 100561. https://doi.org/10.1016/j.ssmph.2020.100561

Bodell, L. P., Wildes, J. E., Cheng, Y., Goldschmidt, A. B., Keenan, K., Hipwell, A. E., & Stepp, S. D. (2018). Associations between race and eating disorder symptom trajectories in black and white girls. *Journal of Abnormal Child Psychology*, 46(3), 625–638. https://doi.org/10.1007/s10802-017-0322-5

Burke, N. L., Schaefer, L. M., Hazzard, V. M., & Rodgers, R. F. (2020). Where identities converge: The importance of intersectionality in eating disorders research. *International Journal of Eating Disorders*, 53(10), 1605–1609. https://doi.org/10.1002/eat.23371

Christensen, D. S., Flensborg-Madsen, T., Garde, E., Hansen, Å. M., Pedersen, J. M., & Mortensen, E. L. (2018). Parental socioeconomic position and midlife allostatic load: A study of potential mediators. *BMC Public Health*, 18(1), 1029. https://doi.org/10.1186/s12889-018-5956-x

Ciao, A. C., Loth, K., & Neumark-Sztainer, D. (2014). Preventing eating disorder pathology: Common and unique features of successful eating disorders prevention programs. *Current Psychiatry Reports*, 16(7), 453. https://doi.org/10.1007/s11920-014-0453-0

Colton, P. A., Olmsted, M. P., & Rodin, G. M. (2007). Eating disturbances in a school population of preteen girls: Assessment and screening. *International Journal of Eating Disorders*, 40(5), 435–440. https://doi.org/10.1002/eat.20386

Combs, J. L., Pearson, C. M., Zapolski, T. C. B., & Smith, G. T. (2013). Preadolescent disordered eating predicts subsequent eating dysfunction. *Journal of Pediatric Psychology*, 38(1), 41–49. https://doi.org/10.1093/jpepsy/jss094

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum*, *1989*(1), Article 8. http://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8

de Souza Ferreira, J. E., & da Veiga, G. V. (2008). Eating disorder risk behavior in Brazilian adolescents from low socio-economic level. *Appetite*, *51*(2), 249–255. https://doi.org/10.1016/j.appet.2008.02.015

Deloitte Access Economics. (2020). *The social and economic cost of eating disorders in the United States of America: A report for the strategic training initiative for the prevention of eating disorders and the academy for eating disorders*. https://www.hsph.harvard.edu/striped/report-economic-costs-of-eating-disorders/

Dube, S. R., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W. H., & Anda, R. F. (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The adverse childhood experiences study. *Pediatrics*, *111*(3), 564–572. https://doi.org/10.1542/peds.111.3.564

Fram, M. S., Frongillo, E. A., Draper, C. L., & Fishbein, E. M. (2013). Development and validation of a child report assessment of child food insecurity and comparison to parent report assessment. *Journal of Hunger & Environmental Nutrition*, *8*(2), 128–145. https://doi.org/10.1080/19320248.2013.790775

Gallagher, S., Sumner, R., Creaven, A.-M., O'Súilleabháin, P. S., & Howard, S. (2021). Allostatic load and mental health during COVID-19: The moderating role of neuroticism. *Brain, Behavior, & Immunity - Health*, *16*, 100311. https://doi.org/10.1016/j.bbih.2021.100311

Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychological Medicine*, *12*(4), 871–878. https://doi.org/10.1017/s0033291700049163

Gentile, K., Raghavan, C., Rajah, V., & Gates, K. (2007). It doesn't happen here: Eating disorders in an ethnically diverse sample of economically disadvantaged, urban college students. *Eating Disorders*, *15*(5), 405–425. https://doi.org/10.1080/10640260701667904

Gordon, K. H., Perez, M., & Joiner, T. E. (2002). The impact of racial stereotypes on eating disorder recognition. *The International Journal of Eating Disorders*, *32*(2), 219–224. https://doi.org/10.1002/eat.10070

Guidi, J., Lucente, M., Sonino, N., & Fava, G. A. (2021). Allostatic load and its impact on health: A systematic review. *Psychotherapy and Psychosomatics*, *90*(1), 11–27. https://doi.org/10.1159/000510696

Halbeisen, G., Brandt, G., & Paslakis, G. (2022). A plea for diversity in eating disorders research. *Frontiers in Psychiatry*, *13*, 820043. https://doi.org/10.3389/fpsyt.2022.820043

Hazzard, V. M., Loth, K. A., Hooper, L., & Becker, C. B. (2020). Food insecurity and eating disorders: A review of emerging evidence. *Current Psychiatry Reports*, *22*(12), 74. https://doi.org/10.1007/s11920-020-01200-0

Heard-Garris, N. J., Cale, M., Camaj, L., Hamati, M. C., & Dominguez, T. P. (2018). Transmitting trauma: A systematic review of vicarious racism and child health. *Social Science & Medicine*, *199*, 230–240. https://doi.org/10.1016/j.socscimed.2017.04.018

Herle, M., Stavola, B. D., Hübel, C., Abdulkadir, M., Ferreira, D. S., Loos, R. J. F., Bryant-Waugh, R., Bulik, C. M., & Micali, N. (2020). A longitudinal study of eating behaviours in childhood and later eating disorder behaviours and diagnoses. *The British Journal of Psychiatry*, *216*(2), 113–119. https://doi.org/10.1192/bjp.2019.174

Johnson, J. G., Cohen, P., Kasen, S., & Brook, J. S. (2002). Childhood adversities associated with risk for eating disorders or weight problems during adolescence or early adulthood. *American Journal of Psychiatry*, *159*(3), 394–400. https://doi.org/10.1176/appi.ajp.159.3.394

Kind, A. J. H., & Buckingham, W. R. (2018). Making neighborhood-disadvantage metrics accessible—The neighborhood atlas. *New England Journal of Medicine*, *378*(26), 2456–2458. https://doi.org/10.1056/NEJMp1802313

Landry, M. J., van den Berg, A. E., Asigbee, F. M., Vandyousefi, S., Ghaddar, R., & Davis, J. N. (2019). Child-report of food insecurity is associated with diet quality in children. *Nutrients*, *11*(7), 1574. https://doi.org/10.3390/nu11071574

Larson, N., Loth, K. A., Eisenberg, M. E., Hazzard, V. M., & Neumark-Sztainer, D. (2021). Body dissatisfaction and disordered eating are prevalent problems among U.S. young people from diverse socioeconomic backgrounds: Findings from the EAT 2010–2018 study. *Eating Behaviors*, *42*, 101535. https://doi.org/10.1016/j.eatbeh.2021.101535

Lommi, S., Viljakainen, H. T., Weiderpass, E., & de Oliveira Figueiredo, R. A. (2020). Children's Eating Attitudes Test (ChEAT): A validation study in Finnish children. *Eating and Weight Disorders*, *25*(4), 961–971. https://doi.org/10.1007/s40519-019-00712-w

Maloney, M. J., McGuire, J. B., & Daniels, S. R. (1988). Reliability testing of a children's version of the Eating Attitude Test. *Journal of the American Academy of Child & Adolescent Psychiatry*, *27*(5), 541–543. https://doi.org/10.1097/00004583-198809000-00004

Masler, I. V., Palakshappa, D., Skinner, A. C., Skelton, J. A., & Brown, C. L. (2021). Food insecurity is associated with increased weight loss attempts in children and adolescents. *Pediatric Obesity*, *16*(1), e12691. https://doi.org/10.1111/ijpo.12691

Mayer, S. E., Prather, A. A., Puterman, E., Lin, J., Arenander, J., Coccia, M., Shields, G. S., Slavich, G. M., & Epel, E. S. (2019). Cumulative lifetime stress exposure and leukocyte telomere length attrition: The unique role of stressor duration and exposure timing. *Psychoneuroendocrinology*, *104*, 210–218. https://doi.org/10.1016/j.psyneuen.2019.03.002

Merikangas, K. R., He, J., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., Benjet, C., Georgiades, K., & Swendsen, J. (2010). Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, *49*(10), 980–989. https://doi.org/10.1016/j.jaac.2010.05.017

Middlemass, K. M., Cruz, J., Gamboa, A., Johnson, C., Taylor, B., Gomez, F., & Becker, C. B. (2021). Food insecurity & dietary restraint in a diverse urban population. *Eating Disorders*, *29*(6), 616–629. https://doi.org/10.1080/10640266.2020.1723343

Mikhail, M. E., Carroll, S. L., Clark, D. A., O'Connor, S., Burt, S. A., & Klump, K. L. (2021). Context matters: Neighborhood disadvantage is associated with increased disordered eating and earlier activation of genetic influences in girls. *Journal of Abnormal Psychology*, *130*(8), 875–885. https://doi.org/10.1037/abn0000719

Murphy, T. J., Hwang, H., Kramer, M. S., Martin, R. M., Oken, E., & Yang, S. (2019). Assessment of eating attitudes and dieting behaviors in healthy children: Confirmatory factor analysis of the Children's Eating Attitudes Test. *International Journal of Eating Disorders*, *52*(6), 669–680. https://doi.org/10.1002/eat.23062

Nestle, M. (2019). The Supplemental Nutrition Assistance Program (SNAP): History, politics, and public health implications. *American Journal of Public Health*, *109*(12), 1631–1635. https://doi.org/10.2105/AJPH.2019.305361

Pak, T.-Y., & Kim, G. (2021). Association of food insecurity with allostatic load among older adults in the US. *JAMA Network Open*, *4*(12), e2137503. https://doi.org/10.1001/jamanetworkopen.2021.37503

Prior, L. (2021). Allostatic load and exposure histories of disadvantage. *International Journal of Environmental Research and Public Health*, *18*(14), 7222. https://doi.org/10.3390/ijerph18147222

Radhakrishnan, L., Leeb, R. T., Bitsko, R. H., Carey, K., Gates, A., Holland, K. M., Hartnett, K. P., Kite-Powell, A., DeVies, J., Smith, A. R., van Santen, K. L., Crossen, S., Sheppard, M., Wotiz, S., Lane, R. I., Njai, R., Johnson, A. G., Winn, A., Kirking, H. L., … Anderson, K. N. (2022). Pediatric emergency department visits associated with mental health conditions before and during the COVID-19 pandemic—United States, January 2019–January 2022. *MMWR Morbidity and Mortality Weekly Report*, *71*(8), 319–324. https://doi.org/10.15585/mmwr.mm7108e2

Reiss, F., Meyrose, A.-K., Otto, C., Lampert, T., Klasen, F., & Ravens-Sieberer, U. (2019). Socioeconomic status, stressful life situations and mental health problems in children and adolescents: Results of the German BELLA cohort-study. *PLoS One*, *14*(3), e0213700. https://doi.org/10.1371/journal.pone.0213700

Rodgers, R. F., Peterson, K. E., Hunt, A. T., Spadano-Gasbarro, J. L., Richmond, T. K., Greaney, M. L., & Bryn Austin, S. (2017). Racial/ethnic and weight status disparities in dieting and disordered weight control behaviors among early adolescents. *Eating Behaviors*, *26*, 104–107. https://doi.org/10.1016/j.eatbeh.2017.02.005

Royer, M. F., Ojinnaka, C. O., & Bruening, M. (2021). Food insecurity is related to disordered eating behaviors among college students. *Journal of Nutrition Education and Behavior*, *53*, 951–956. https://doi.org/10.1016/j.jneb.2021.08.005

Shabana, Shahid, S. U., & Hasnain, S. (2018). Use of a gene score of multiple low-modest effect size variants can predict the risk of obesity better than the individual SNPs. *Lipids in Health and Disease*, *17*(1), 155. https://doi.org/10.1186/s12944-018-0806-5

Shisslak, C. M., Crago, M., & Estes, L. S. (1995). The spectrum of eating disturbances. *The International Journal of Eating Disorders*, *18*(3), 209–219. https://doi.org/10.1002/1098-108x(199511)18:3<209::aid-eat2260180303>3.0.co;2-e

Shonkoff, J. P., Slopen, N., & Williams, D. R. (2021). Early childhood adversity, toxic stress, and the impacts of racism on the foundations of health. *Annual Review of Public Health*, *42*(1), 115–134. https://doi.org/10.1146/annurev-publhealth-090419-101940

Smolak, L., & Levine, M. P. (1994). Psychometric properties of the Children's Eating Attitudes Test. *The International Journal of Eating Disorders*, *16*(3), 275–282. https://doi.org/10.1002/1098-108x(199411)16:3<275::aid-eat2260160308>3.0.co;2-u

Sonneville, K. R., & Lipson, S. K. (2018). Disparities in eating disorder diagnosis and treatment according to weight status, race/ethnicity, socioeconomic background, and sex among college students. *The International Journal of Eating Disorders*, *51*(6), 518–526. https://doi.org/10.1002/eat.22846

Striegel-Moore, R. H., Schreiber, G. B., Pike, K. M., Wilfley, D. E., & Rodin, J. (1995). Drive for thinness in black and white preadolescent girls. *The International Journal of Eating Disorders*, *18*(1), 59–69. https://doi.org/10.1002/1098-108x(199507)18:1<59::aid-eat2260180107>3.0.co;2-6

Swanson, S. A., Crow, S. J., Le Grange, D., Swendsen, J., & Merikangas, K. R. (2011). Prevalence and correlates of eating disorders in adolescents. Results from the national comorbidity survey replication adolescent supplement. *Archives of General Psychiatry*, *68*(7), 714–723. https://doi.org/10.1001/archgenpsychiatry.2011.22

U.S. Department of Health and Human Services. (2019). *U.S. Federal Poverty Guidelines used to determine financial eligibility for certain federal programs*. https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines

Weissman, R. S. (2019). The role of sociocultural factors in the etiology of eating disorders. *The Psychiatric Clinics of North America*, *42*(1), 121–144. https://doi.org/10.1016/j.psc.2018.10.009

West, C. E., Darling, K. E., Ruzicka, E. B., & Sato, A. F. (2021). Household income and loss of control eating in adolescence: Examining the role of food insecurity. *Appetite*, *165*, 105291. https://doi.org/10.1016/j.appet.2021.105291

Whelan, E., O'Shea, J., Hunt, E., & Dockray, S. (2021). Evaluating measures of allostatic load in adolescents: A systematic review. *Psychoneuroendocrinology*, *131*, 105324. https://doi.org/10.1016/j.psyneuen.2021.105324

Williams, D. R., Mohammed, S. A., Leavell, J., & Collins, C. (2010). Race, socioeconomic status, and health: Complexities, ongoing challenges, and research opportunities: Race, SES, and health. *Annals of the New York Academy of Sciences*, *1186*(1), 69–101. https://doi.org/10.1111/j.1749-6632.2009.05339.x