Brief report

Poor nutrition and bullying behaviors: A comparison of deviant and non-deviant youth

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ABSTRACT

Research on the topic of bullying has revealed that a substantial number of youth are bullied each year. Even so, a complete understanding of the origins of bullying behaviors remains elusive. In the current study, we propose that poor nutrition may constitute an important modifiable risk factor for bullying behaviors during adolescence, and that behavioral sensitivity to nutrition may vary across deviant and non-deviant youth. We employ data from the US sample of youth (52% male) ages 10–17 from the 2009–2010 Health Behaviour in School-Aged Children (HBSC) study to examine our hypothesis (N = 8753). The results reveal that poor nutrition significantly increases the odds of persistent bullying among youth, and that this relationship is particularly pronounced for non-deviant youth. The findings suggest that efforts to improve the nutrition of non-deviant youth may have the added benefit of reducing their likelihood of engaging in persistent bullying behaviors.

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It is estimated that between one in four and one in three American youth experience some form of bullying each year (Maynard, Vaughn, Salas-Wright, & Vaughn, 2016; Nansel et al., 2001). In light of the pervasiveness of the problem, a substantial body of empirical research on bullying has accrued (Nakamoto & Schwartz, 2010; Reijntjes et al., 2011, 2010; Vaughn et al., 2010). Still, little investigation has been undertaken to examine the links between nutrition and bullying behavior. This oversight is noteworthy, as there are a number of compelling reasons to believe that nutritional factors may be associated with bullying, including the well-established link between poor nutrition and externalizing/violent behaviors from childhood onward (Jackson, 2016; Jackson & Vaughn, 2017; Liu, Raine, Venables, & Mednick, 2004; Vaughn et al., 2010). Research has also intimated that, while some youth who bully are also engaged in a wider network of externalizing or deviant behaviors, many are not (Weerman, Harland, & van der Laan, 2007). Moreover, there is reason to believe that the latter subset may be particularly sensitive to biosocial risk factors (such as insufficient food and poor diet) that can "push" otherwise healthy young people into aggressive acts (Raine, 2013). Social push theories suggest violent youth who are absent environmental risk are often likely to be propelled by factors of a biological or physiological nature. This provides a mechanism for how some youths with apparently low social risk (e.g., few deviant peer affiliations) may be nudged into aggressive deviance. Because poor

nutrition represents a modifiable risk factor, knowledge of its linkages to bullying could offer a critical avenue for prevention and intervention.

The present study employs data from a population-based study of school-aged children in the US to explore whether youth receiving poor nutrition are at greater risk of enacting persistent bullying behaviors. We also examine whether the nutrition-bullying link is invariant among youth reporting involvement in deviant behaviors (and with deviant peers) and those reporting no such involvement, aside from bullying. Based on prior research and theorizing (Raine, 2013; Weerman et al., 2007), we hypothesize that the association between nutrition and bullying will be stronger among non-deviant youth.

1. Method

1.1. Sample and procedures

Study findings are based on secondary data from the Health Behaviour in School-Aged Children (HBSC) study. The HBSC, which is conducted worldwide in collaboration with the World Health Organization, examines health-related and lifestyle issues among school-enrolled children in grades five through ten. It utilizes multistage area probability sampling methods to select a representative sample of school-aged children in the US. Specifically, census regions and grades were employed as strata, with school districts as primary sampling units. African American and Hispanic youths were oversampled to obtain better representation of these groups (see Iannotti, 2013; Roberts et al., 2009). The current study was limited to youths in 5th through 10th grade, ages 10–17, who completed the HBSC in 2009–2010 in the United States (N = 8753).[1]

1.2. Measures

1.2.1. Bullying

Eleven items were used to identify those youth who participated in frequent bullying of their peers. These questions inquire about a variety of bullying behaviors during the months prior to the interview, including name-calling, exclusion, physical violence, and bullying others based on their race/ethnicity, sexual orientation, or religion. Items concerning the bullying medium used (i.e., computer, cell phone, etc.) were also included. Response options to each item include: "I have not bullied another student in the past couple of months" (1), "only once or twice" (2), "2 or 3 times a month" (3), "about once a week" (4), and "several times a week" (5). Consistent with prior research on bullying using the HBSC study (Maynard et al., 2016), subjects who reported engaging regularly in the bullying behavior (i.e., at least 2 to 3 times a month) were assigned a value of 1, whereas those reporting no engagement or engaging in the behavior infrequently (i.e., only once or twice) were assigned a value of 0. Scores were then summed into an index ($\alpha = 0.93$), which is essentially a variety score of the 11 types of bullying that are covered in the US HBSC questionnaire. Youths who regularly engaged in multiple forms of bullying were identified on the basis of this index and were assigned a value of 1.[2] Alternatively, youths who did not engage in multiple forms of bullying on a regular basis were assigned a value of 0.[3]

1.2.2. Nutrition

Subjects were also asked questions about three nutritional components: food insufficiency, junk food intake, and produce intake. To measure *food insufficiency*, youth were presented with the following prompt/question: "Some young people go to school or to bed hungry because there is not enough food at home. How often does this happen to you?" (0 = never, 1 = sometimes, 2 = often, 3 = very often). *Junk food intake* was derived from 3 questions pertaining to the frequency of soda/sugary drink, fast food, and sweets consumption. Specifically, youth were asked how many times a week they usually eat or drink 1) sweets like candy or chocolate, 2) Coke or other soft drinks that contain sugar and 3) fast food. Response options ranged from never (0) to every day, more than once a day (7). Items were dichotomized at one standard deviation above the mean, and then summed together, with scores ranging from 0 to 3. Finally, two questions pertaining to *fruit and vegetable intake* were used to create a composite measure of low produce consumption. Specifically, youth were asked: ""How many times a week do you usually eat… fruits and/or vegetables?" (0 = never, 7 = every day, more than once). Items were dichotomized at one standard deviation below the mean, and then summed together, with scores ranging from 0 to 2.[4]

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[1] Listwise deletion was employed in the present analysis. Ancillary analyses revealed no significant differences in mean values of key covariates (e.g., race, age, sex) across missing and non-missing cases.

[2] This corresponded to one standard deviation above the mean or higher on the variety score.

[3] Alternative coding strategies (e.g., continuous) did not alter the substantive results of the present study.

[4] Dichotomization of dietary patterns is commonly used in the literature to identify subjects with particularly poor diets (Larson et al., 2008; Moore, Diez Roux, Nettleton, Jacobs, & Franco, 2009). Alternative coding (e.g., additive index of continuous items) did not alter the substantive results of the present study.