

Consequences of Belonging to the "Clean Plate Club"

How does encouraging a child to "clean" his or her plate influence eating behavior away from home? Parents who insist that their child clean his or her plate may be asserting excess control that could backfire if it inhibits the development of their child's self-control around food.¹⁻³ If this is true, children who have been conditioned to clean their plate may end up requesting more food when excess controls do not exist, such as when they are away from home.

Methods. This institutional review board–approved study (Cornell University) involved 63 preschool-aged children (57% girls; mean age, 4.3 [SD, 0.91] years; mean body mass index [BMI] [calculated as weight in kilograms divided by height in meters squared], 15.5 [SD, 2.3]) and their primary meal-providers, all of whom were mothers (mean BMI, 23.6 [SD, 4.2]). These parents were given a consent form, which also asked them to indicate the extent to which they disagreed or agreed with the statement, "I tell my child to clean their plate" (1=strongly disagree; 9=strongly agree).⁴

After receiving the consent forms, the children were randomly given either a 16- or 32-oz cereal bowl and asked to indicate how much of a popular presweetened cereal (Froot Loops; Kellogg's, Battle Creek, Michigan) they would like to have for their morning snack. A researcher used a small scoop to pour 3 g of the cereal into a bowl, at which point the child was asked "Is that enough or do you want more?" or "Do you want more or is that enough?" in a rotating order. Once children indicated that they had been given enough, their bowl was removed and its weight recorded. Children were then allowed to select a small toy as a thanks for participating. After this, their height and weight were recorded. All analyses were performed using SPSS statistical software, version 13.0 (SPSS Inc, Chicago, Illinois). $P < .05$ was considered statistically significant.

Results. Boys and girls requested similar amounts of the cereal (mean [SD], 35.6 [18.3] vs 32.2 [16.4] g, respectively; $P = .45$), yet the children requested more than twice the amount of cereal in the larger bowl than in the smaller one (mean [SD], 22.0 [10.1] vs 46.89 [13.6] g, respectively; $P < .001$). The amount of cereal the children requested was unrelated to their BMIs ($P = .93$).

The correlation between children being told to clean their plate and the amount of cereal they requested was $r = 0.37$ ($P = .01$). As shown in the **Figure**, this correlation was stronger for boys ($r = 0.42$, $P = .03$) than for girls ($r = 0.33$, $P = .05$). After controlling for both the child's and mother's BMIs, the correlation was still significant for boys ($P < .001$) but not for girls ($P = .10$).

Comment. What are the consequences of telling a child to clean his or her plate? This study suggests that pre-

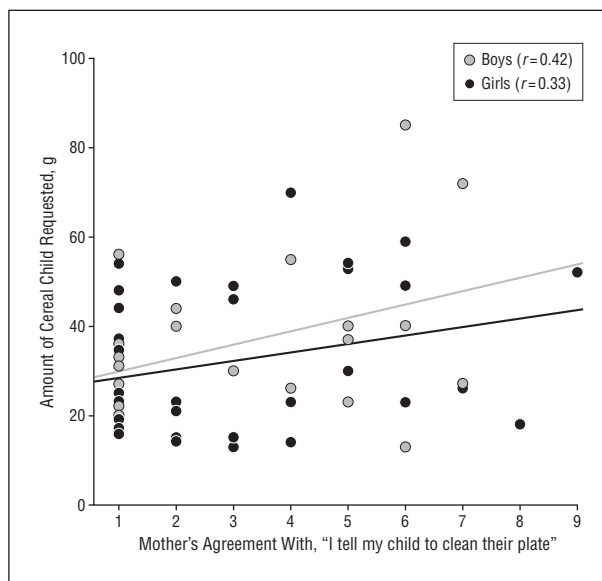


Figure. Association between amount of cereal a child requested and his or her mother's agreement with the statement, "I tell my child to clean their plate" (1=strongly disagree; 9=strongly agree).

schoolers who are told to clean their plates may also be likely to request larger portions of food when away from home. While this persists across both bowl sizes and BMI levels, this association may be even stronger with boys than girls.⁵ Interestingly, once we controlled for the mothers' BMIs, the association between how much cereal the girls requested was no longer significant. This is consistent with the notion that the modeling influence of a parent can play a significant role in eating behavior.

For a physician who is counseling a family with potential obesity issues, a clean-your-plate strategy may lead to unwanted consequences. An alternative approach to consider would be to provide moderate portions and smaller bowls and to encourage a child to taste all foods at a meal and then determine whether they want additional servings.⁶

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Adult Mental Health Effects of Early Childhood Intervention

The findings of Reynolds et al¹ of the longitudinal effects of preschool intervention provide compelling evidence that preschool programs have a positive long-term impact on educational outcomes, health insurance status, and incarceration. These findings are diluted, however, in the large number of other assessed and reported outcomes. The findings related to mental health, in particular, raise more questions than they answer. While the study purports to look at adult mental health as an outcome, the only measure is a 5-item self-report of depressive symptoms, which was administered in conjunction with a larger survey. Respondents were considered positive for depression if they reported feeling sad, lonely, depressed, helpless, or that life was not worth living at levels ranging from a few times a month to almost every day. A respondent who reported feeling lonely a few times a month would be classified as positive for depression according to this scale. The authors identify the narrow scope of this assessment as a limitation of their study, suggesting that the intervention's effects on mental health may have been underestimated. Studies of brief screening measures of depression, however, have found that these measures likely overestimate depression compared with longer measures with higher specificity.^{2,3}

The authors go on to report that the preschool intervention group was less likely to have 1 or more depressive symptoms than the comparison group. These findings are not robust, however, with $P = .06$. In addition, the large sample size provides high statistical power, increasing the likelihood of finding statistical significance even if the results are due to chance. The mental health results reported in the study, therefore, appear to be questionable both in the method of measurement and the significance of the results obtained.

The true findings of this study are important and compelling. The data highlight the long-term effects and financial benefits of investing in early childhood education owing to its effectiveness in increasing educational attainment and decreasing rates of incarceration among participants. The effects of preschool intervention on adult mental health are of much less concern than the more direct effects on educational achievement. The inclusion of the findings related to depression in the reporting of results is unnecessary, distracting attention from the truly important and significant results.

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In reply

Narendorf raised 2 concerns about our study of the long-term effects of the Child-Parent Center Program on health and well-being.¹ The first was the limitation of our self-report measure of depressive symptoms, and the second was the inclusion of the mental health results, which Narendorf believes were not robust and diluted the reporting of findings for educational attainment, criminal behavior, health insurance coverage, and other outcomes.

On the measurement of depressive symptoms, we agree and stated in the article that a more comprehensive clinical assessment of depression is warranted to more fully document the effects of intervention on full-blown depression and related disorders. Nevertheless, our measure of depressive symptoms was from the depression subscale of the well-known Derogatis Brief Symptom Inventory,² which has strong evidence of reliability and predictive validity. The 5-item scale we used had an internal consistency reliability coefficient of 0.84, which is relatively high and more than acceptable for assessing intervention effects.

To minimize the possible overidentification of individuals with depressive symptoms, we only coded individuals whose symptoms were relatively frequent or severe for the specific item they were asked as 1. This included any or more of the following responses: (1) felt depressed almost every day (in the past month), (2) felt hopeless a few times a week or more, (3) felt lonely almost every day, (4) felt life is not worth living 2 or more times a month, and (5) felt sad almost every day. Narendorf's example of the individual who reported feeling lonely a few times a month (absent other symptoms) was coded as 0 (no depressive symptoms). While it is certainly possible that we overidentified some individuals at risk for depression, this would not have affected program estimates as it was the difference in rates between groups on the same measure in which we were most interested.

Also, it was essential that we included the mental health outcome in the study. Regardless of the findings, it is plausible that intervention can affect mental health through improved school performance and higher educational attainment. Our finding was that preschoolers had a 26% lower rate of depressive symptoms than the comparison group (12.8% vs 17.4%) at a probability value of 0.057. In interpreting the findings, both statistical and practical significance should be taken into account. In contrast to Narendorf's perspective, there is nothing magic about the $P = .05$ standard for statistical significance. It is an arbitrary one and varies by discipline and field. Indeed, owing to increased reliability, a more complete and sensitive measure