

Are Differences in Exposure to a Multicomponent School-Based Intervention Associated With Varying Dietary Outcomes in Adolescents?

Birnbaum et al

Critique Evaluation by:
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Study Design and Objectives

- Group Randomized Trial Design

- Appropriate

- Objective #1:

To examine the outcomes on students' eating patterns after exposure to the seventh-grade intervention and to assess whether different outcomes were associated with different levels of exposure (dose response).

- Objective #2:

To test for dose response patterns in several psychosocial variables hypothesized to be mediators of the intervention.

Theoretical Framework

- **Social Cognitive Theory**

- Definition: Knowledge acquisition is directly related to observing others in a context of social interactions, experiences, and outside media
 - guided the development of the interventions (school environment; classroom curriculum + school environment; peer leaders + classroom curriculum + school environment)

- **Theory of Planned Behavior**

- Definition: Six constructs (attitudes, behavioral intention, subjective norms, social norms, perceived power, perceived behavioral control) affect intention, which affects behavior
 - used in the survey to assess psychosocial mediators of eating behavior change

- **Self-efficacy**

- Definition: An individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments
 - used as a possible predictor of the efficacy of peer-leaders

Statistics

- Repeated measures mixed-model Poisson Regression
 - used to analyze fruit and vegetable intake
- Repeated measures mixed model analysis of variance
 - used to analyze usual food choices
- Type III F test Anova
 - used to detect differences in fruit and vegetable intake and usual food choices by treatment group

Results

Fruit and Vegetable Intake

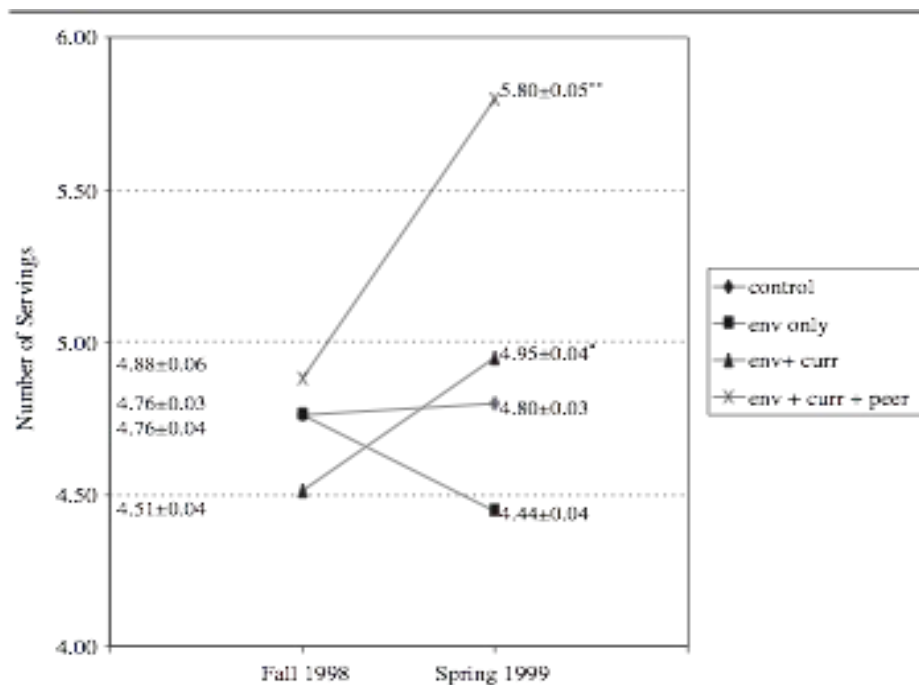


Figure 1. Changes in self-reported past-year mean daily servings of fruits and vegetables, pre-post seventh-grade intervention, by exposure group.^a

NOTE: env = environment; curr = curriculum.

a. Adjusted for baseline demographics: race and parents' education.

* $p < .10$. ** $p < .05$.

Results

Food Choices

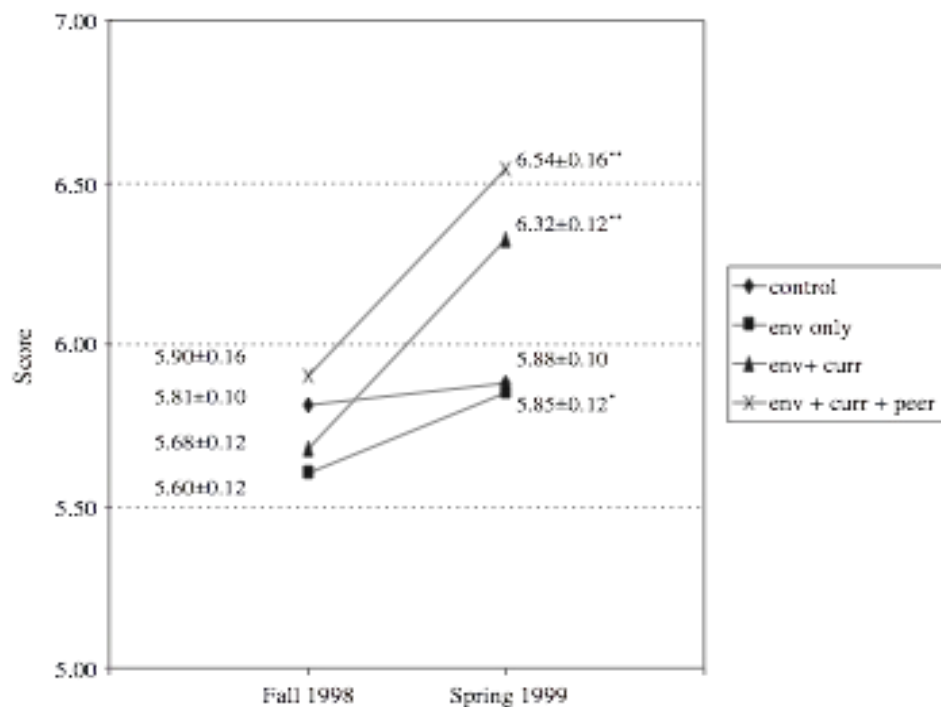


Figure 2. Changes in usual food choices score (higher score indicates lower fat consumption), pre-post seventh-grade intervention, by exposure group.^a

NOTE: env = environment; curr = curriculum.

a. Adjusted for baseline demographics: sex, race, and parents' education.

* $p < .10$. ** $p < .01$.

Gaps in Literature

- The use of peer educators in nutrition interventions
- Types of environmental interventions needed to make a behavior change
- Synergistic effects of multicomponent interventions

Application to Practice

- use of peer leaders when doing a school-wide nutrition intervention
- possible dose-response relationship
 - the more education one receives (via environment, curriculum, and peer leaders) the more likely one will make the behavior change
- involvement of families when implementing a nutrition intervention

Limitations

- all data was self-reported
- familial involvement requires multicomponent interventions
- impossible to account for individuals' exposure to interventions

Final Score and Conclusion Statement

81%

In 2002, Birnbaum et al conducted a school-based, group-randomized trial to evaluate differences in dietary outcomes based on the level of exposure to a 1 year multicomponent intervention to increase fruit and vegetable intake and decrease fat intake to lower future risk of cancer in 7th grade students of low income families. Assessed at baseline were usual fruit and vegetable intake and food choices of students, but no statistical differences were found across groups. Results suggested that the students who received the most nutrition education exposure (10 week curriculum including parental involvement + environment manipulation + peer leaders) increased fruit and vegetable intake and decreased fat intake the most compared to all other groups; meanwhile the control group's (no exposure) fruit, vegetable, and fat intake remained the same from baseline, but the schools who received environmental manipulation only (lowest exposure) decreased fruit and vegetable intake from baseline. The main confounding variable (also addressed as a limitation) included the parental involvement of the highest exposure group, as there is no ability to assess its specific involvement in the the intervention. The results warrant a possible dose-response relationship between levels of nutrition education exposure and behavior change, however more research needs to be conducted to determine the most effective intervention when working with the adolescent population.