



Original article

# How Food Rules at Home Influence Independent Adolescent Food Choices

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 A B S T R A C T

**Purpose:** The prevalence of unhealthy dietary behaviors among adolescents is high. We examined the effect of having health-oriented food rules at home on the healthiness of adolescents' independent food choices, and the necessity of parental oversight for such rules to be effective.

**Methods:** We surveyed a socioeconomically and racially diverse San Francisco Bay Area public high school in May 2017 (N = 1,246). We used ordinal logistic regressions to assess the relationships between adolescent-reported presence of health-oriented food rules at home and the healthiness of snacks selected by adolescents in a raffle, which included a randomized controlled experiment to manipulate the level of parental approval students needed to pick up their snacks.

**Results:** Adolescents reporting at least one health-oriented food rule at home were significantly more likely to choose healthier snacks in the raffle (adjusted odds ratio, 1.85; 95% confidence interval [CI] 1.41–2.45). Telling adolescents that a parent needed to approve the snacks did not have a significant effect on snack choice healthiness relative to a no-approval baseline condition (adjusted odds ratio, 1.01; 95% CI .55–1.86). Post hoc analyses suggest that rules may affect adolescent food-related attitudes and perceptions of parental reactions; for example, adolescents with rules reported that their parents would be more disappointed (adjusted mean difference on five-point scale, .5; 95% CI .36–.64) if they made an unhealthy food choice.

**Conclusions:** Having health-oriented food rules at home is associated with healthier snack choices. Findings suggest that adolescents with rules also hold beliefs that may correspond to healthier independent dietary choices.

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**IMPLICATIONS AND  
 CONTRIBUTION**

In this study, adolescents who had health-oriented food rules at home made healthier snack choices when choosing their own snack, regardless of active parental oversight. This research advances our understanding of food rules, a promising yet still poorly understood food-related parenting practice that may help address adolescent dietary health challenges.

Poor diet quality and diet-related health among adolescents in the United States represent a significant public health challenge [1,2]. While adolescence is a critical time for the establishment of healthy eating habits, it is also a phase marked by poor dietary behaviors. The transition from childhood to adolescence is accompanied by decreases in dietary quality, as

adolescents become increasingly independent and vulnerable to social and environmental influences outside the home [3,4]. Indeed, most adolescents fail to meet the majority of the Dietary Guidelines for Americans; they overconsume calorie-dense, nutrient-poor snacks, and fast foods, while not consuming enough nutrient-dense foods [5–8]. Yet amid this backdrop, parents continue to play an important role in shaping adolescents' eating behaviors [9–12]. Thus, parents may ask what they can do to encourage adolescents to make healthier food choices.

One promising parenting practice to this end is the creation and enforcement of food-related rules at home [10,13,14]. Food rules operate by setting clear expectations and boundaries

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**Conflicts of Interest:** The authors have no conflicts of interest to disclose.

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regarding what, when, where, and how much adolescents should eat [15–17]. Yet studies on food rules present contradictory results with some research indicates that rules may increase youth's preferences for and intake of unhealthy foods, whereas other research suggests that adolescents have healthier diets when they report having stricter practices at home. These mixed results suggest that the nature of food rules may shape their impact: while rules focused on restricting foods may have a negative effect on children's dietary behaviors [18,19], rules oriented toward structuring the availability of foods to youth may promote healthier eating behaviors [18,20–22]. Yet, we know little about if and how having food rules impacts adolescents' food choices when adolescents are free of their parents' direct oversight or enforcement of such rules. Thus, the evidence connecting food rules and adolescents' eating remains limited and equivocal at best, and research across sociodemographic groups is sparse [23,24]. This dearth of empirical inquiry on the topic has led to recent calls for research to examine whether the influence of parental rules and expectations persists when parents are not present [10].

The lack of clarity around the effect of food rules motivates our examination of the relationship between these rules and adolescent independent dietary choices. It is important for parents to understand whether having food rules—and more specifically, what kinds of food rules—may be helpful or harmful in encouraging healthy eating [25]. In this article, we explore the potential impact of having food rules at home that are explicitly oriented around health. We focus on health-oriented food rules because these may communicate to adolescents the importance of dietary health in independent food decisions [26]. We thus use a survey-based, experimental study to address the following questions. (1) Is there an effect of health-oriented food rules on adolescent food choices? (2) Is parental approval necessary for these food rules to be effective? (3) How might health-oriented food rules operate to encourage healthier independent dietary choices among adolescents? We hypothesize that health-oriented food rules will be associated with healthier adolescent food choices, particularly in the presence of parental approval, and that these food rules may operate by shaping adolescents' feelings about their food choices.

## Methods

### Participants

We conducted a survey in May 2017, which included an embedded randomized intervention experiment. All students attending a public high school in the San Francisco Bay Area and who were enrolled in an English class were potential participants in our population-based sample. In consultation with school administrators, we administered the survey during English classes as most students are enrolled in one such class. Of the 1,485 students at school that day, 1,445 (97%) students participated in the survey. All survey questions were voluntary. We excluded responses missing measures and covariates included in the final regression analyses, resulting in a final dataset of 1,246 responses (86% of total participating students) with analyzable data. Most student responses were excluded because of missing parental education information (see [Supplemental Table A1](#) for more details); a higher percentage of male adolescents, younger students, and Hispanic students omitted this information. Importantly, rates of missing data did not vary by experimental condition and experimental subgroups did not differ in terms of

demographic characteristics. The study protocol was approved by Stanford's Institutional Review Board. Parents were informed in advance and given the opportunity to withdraw their adolescents from the study.

### Survey procedure

Similar to surveys routinely conducted by the school district, our survey was administered online to students using individual laptops. Our measures were collected as part of a larger survey that included questions about students' food practices at home and at school, food access and availability, and perceptions of parents' and friends' dietary preferences and behaviors. English teachers administered the survey at the beginning of each period. Most students took between 15–25 minutes to complete the survey. Teachers were trained to administer the survey, to communicate clearly to students that participation was anonymous and voluntary, and to maintain a quiet and focused survey-taking environment until all students finished. We visited classrooms during and in between periods to check in with teachers. We did not observe instances where students were discussing survey content, either before, during, or after survey administration.

### Embedded experiment exposure

After clicking through the survey's opening screen with consent information and standard demographic questions, students were informed that, by participating, they were automatically entered into a raffle where they could win two snacks to pick up from the school's front office the following week. We randomized the perceived level of parental approval required to pick up these snacks. Neither students nor teachers were aware that the snack raffle was an experiment, nor were they aware of any of the research hypotheses.

Students were randomly assigned by the survey platform Qualtrics (Qualtrics Labs; Provo, UT) to one of three conditions. The first condition required parental approval of students' snack choices. Students in this *parent-approved* condition were told that if they won the raffle, their parents would first need to approve the snack choices before the student could pick the snacks up. The other two conditions did not require students to obtain parental approval. Students in the *parent-mentioned* condition were told that their parents would normally be notified if they won the raffle, but that their parents would not be notified in this case. Students in the *baseline (no approval)* condition were told that they would not need their parents' approval to pick up their snacks. We expected that overall, students would select more unhealthy snacks than healthy snacks [5]. We also expected that, compared to students without health-oriented food rules at home or to students with health-oriented food rules at home in the *baseline (no approval)* or *parent-mentioned* conditions, adolescents with health-oriented food rules at home would make healthier choices in the *parent-approved* condition.

Following two questions to ensure that students had read and understood the raffle instructions (i.e., attention check questions), students were shown a screen with ten randomly ordered snacks from which to choose. After selecting their first snack, students answered a question to gauge the perceived importance of parental approval in their snack choice to ensure that our experimental manipulation had successfully affected students in the *parent-approved* condition (i.e., manipulation check). Students

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