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Attractive names sustain increased vegetable intake in schools

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ABSTRACT

Objective: This study will determine if the ...ctiv... of attractive ...mes can be a sustainable, scalable means to increase the selection of vegetables in school l... ...ooms.

Methods: Study 1 paired an attracti... ...e with carrot... ...ive elementary schools (n = 147) and measured selection and consumption ov... ...week compared to co...ols. Study 2 tracked food sales of vegetables in two elementary schools (n = 1...) that were systematically attractively named or not named over a two-month period. Both studies w... conducted ...ew York in 2011.

Results: Study 1 found that ele... ...tary studen... ...e twice the percentage of their carrots if attractively named as "X-ray Vision Carrots," th... ...n-nam... ...r generically named as the "Food of the Day." Study 2 found that elementa... ...hool student... ...more likely to persistently choose more hot vegetable dishes (p<0.001) wi... ...e given fun or attractive names.

Discussion: Attract... ...name... ...ly and persistently increased healthy food consumption in elementary schools. The scala... ...y of ... ...is ...erscored by the success of Study 2, which was implemented and executed f... ...egligible c... ...high school student volunteer.

Introduction

Can children be influenced to pr... ...tables in sch... ...unches? Research with adults has shown ...at giv... descriptive names to healthy foods in cafeteria... ...creases th... ...election by 28% (Wansink et al., 2005). Si... ...results have no... ...ays generalized to child behavior (e.g., ...en et ...004). Here we examine three key questions: 1) Can a... ...tive... ...mes increase the choice and intake of vegetables in school lu... ...ns? 2) W... ...d this effect persist over time? 3) Woul... ...tive n... ...be... ...y implemented on a wide scale?

Attract... ...and de... ...iptive nam...s not only raise the salience or awareness... ...e f... ...1996), but also raise one's taste expectations (W... ...k, 2003; Wansink and Park, 2002; Tuorila et al., 1998). The resu... ...confirmatory sensory bias has been shown to lead people to "tas... ...hat they expect" (Wansink et al., 2001). Yet, despite encouraging results of attractive names in cafeterias and restaurants, they are rarely used in schools (Campbell et al., 2001). This work examines how attractive naming can be implemented in schools to encourage healthier eating in a cost-effective and scalable way.

Study 1: how attractive names impact the intake of healthy foods

After obtaining Institutional Review Board approval from Cornell University and parental consent, 147 (78 female) children ranging from 8 to 11 years old were recruited from five ethnically and economically diverse schools. The menus for each lunch were unchanged except for the addition of carrots.

Methods

On three different days at each school, carrots were offered in addition to the school's scheduled offerings. On the first and last days of the study (Monday and Friday), carrots were served as they normally were, unnamed. These two days served as pre- and post-test controls, respectively. On the second day of the study (Thursday), carrots were served and given an attractive name "X-ray Vision Carrots," a simple name "The Food of the Day," or unnamed (control).

For the 113 students who were present for all three study days, their choices at each meal were unobtrusively recorded. Following lunch, the weight of any remaining carrots was subtracted from their starting weight to determine the actual amount eaten.

Results

The results from Analysis of Variance (ANOVA) indicated that the three different naming conditions had no impact on the amount of

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Table 1
Study 1: elementary students consumed more carrots when attractively named.

	Named as "X-ray Vision Carrots" ($n=32$)	Named as "Food of the Day" ($n=38$)	Unnamed (Control) ($n=45$)	P-value
	Mean (SD)	Mean (SD)	Mean (SD)	
Number taken	17.1 (17.6)	14.6 (14.5)	19.4 (19.9)	0.47
Number eaten	11.3 (16.3)	4.7 (6.7)	6.8 (8.7)	0.04
Number uneaten	6.7 (9.6)	10.3 (12.5)	13.2 (16.9)	0.14
% Eaten	65.9	32.0	35.1	<0.01

Study conducted in New York in 2011.

carrots students selected ($p=0.47$) but they did influence how much was eaten. As Table 1 indicates, children ate more of their carrots when named "X-ray Vision Carrots" than when named "Food of the Day" ($p=0.02$) or when unnamed ($p=0.06$).

Indeed, whereas 66% of carrots named "X-ray Vision Carrots" were eaten, only 32% of carrots named "Food of the Day" were eaten and 35% of unnamed carrots were eaten ($p<0.05$). It also influenced carry-over effects. Children who were not exposed to carrots named "X-ray Vision Carrots" on Thursday were less likely to take carrots on Friday's post-test session compared to Monday's pre-test session (*Mean* = −3.04, *SD* = 11.69). Conversely, those who were exposed to carrots named "X-ray Vision Carrots" on Thursday were more likely to take carrots (*Mean* = 4.53, *SD* = 17.66), $p=0.03$ (1-tailed).

Study 2: a longitudinal study of attractively-named veget… middle schools

Participants were drawn from two neighbori… elemen… schools outside New York City. The study was… d for t… months (40 school lunch days). The schools… re sim… r and th… menus identical. The study focused on th… ee ite… t were… most frequently served—carrots, green b…ns, a… con.

Methods

Both schools modified their cash regis… to record the purchase of hot and cold vegetable… es separately. … obtaining approval from Cornell Universit… Institutional Review Board, we collected de-identified studen… el pur… e data. The data include purchase observations for 1552 … (54.3% m…le) of which 47.8% attended the treatment s…ool.

For the f… …ys (pre… t… t period), both schools offered food iten… s usu… without … creative naming of vegetables or other items. In the second 20-day period, the same hot vegetables served in the treatment school were given names selected by a high school student volunteer. These included names such as X-ray Vision Carrots, Power Punch Broccoli, Silly Dilly Green Beans, and Tiny Tasty Tree Tops. They were displayed on printed cards placed next to the food items in the line. The control school served the same items as the treatment school but did not provide any such names.

The purchase pattern of each child was recorded in both schools over the course of the study. Our study included 40,778 total child-day observations, with roughly half in the treatment group. To investigate the ease of implementation and potential scalability of this method, a high school student was … uited to conduct the study. He received school credit for hi… TR.

Results

Table 2 presents summa… tatistics o… dent… ections by treatment and month. Compa… to the b…eline re… Month 1, the proportion of students tak… hot … table during the attractive names intervention (Mont…2) i… by 99.0%… On the other hand, the proportion of stude… aking a h… getab… the control school declined by 16.2% fro… th 1 to Mo… th differences are significant at the $p<0.0$… el … he difference … etween the two is also highly significant ($p<0.01$). S… …on of broccoli increased by 109.4% ($p<0.001$), sele… green bean… 176.9% ($p<0.001$), and selection of carrots h… .2% (ns). Significanc… s based on an F-statistic of differences in … centage purchasing in Month 1 and Month 2.

By employ… a binary logistic model with just the dummy vari… for scho… month and treatment period, we find that giving the … …es attractive names increases the number of students taking t… by 12% ($p<0.001$) and decreases the amount of cold vegbles taken by 1.7%. Given the low base-rate incidence of vegetable … n, this represents nearly a 100% increase.

Discussion

In combination, these studies demonstrate that using an attractive name to describe a healthy food in a cafeteria is robustly effective, persistent, and scalable with little or no money or experience. These names were *not* carefully crafted, discussed in focus groups, and then pre-tested. Additionally, this study shows that the impact of attractive names lasts. Over the course of two months, the selection of hot vegetable side dishes went up 99% in the treatment school while declining 16% in the control school.

Most importantly, this study shows that an attractive name intervention is scalable for little or no cost. The instructions and guidance for this study were developed with the intent that any cafeteria worker or high school student volunteer could implement the changes. To this end, the sophomore student volunteer generated the names,

Table 2
Study 2: more … getables were selected during the month they were attractively named.

	Treatment group			Control group			P-value
	Month 1 Baseline mean *Unnamed* (SD)	Month 2 Intervention mean *Attractively named* (SD)	% Change	Month 1 Control mean *Unnamed* (SD)	Month 2 Control mean *Unnamed* (SD)	% Change	
All hot vegetables	0.018 (0.133)	0.054 (0.227)	99.0***	0.086 (0.281)	0.062 (0.241)	−16.2***	<0.01
Broccoli	0.021 (0.145)	0.073 (0.260)	109.4***	0.120 (0.325)	0.018 (0.136)	−73.3***	<0.01
Green beans	0.002 (0.045)	0.033 (0.178)	176.9***	0.047 (0.211)	0.099 (0.298)	35.7***	0.19
Carrots	0.017 (0.128)	0.023 (0.149)	30.2	0.030 (0.171)	0.046 (0.209)	41.5	0.52

Study conducted in New York in 2011. Means represent fraction of students selecting. Each child-day is treated as a single observation.
Significance based on an F-statistic of differences in percent purchasing between Month 1 and Month 2. *** indicates $p<0.001$.

created the name cards, and executed the study at a negligible cost. Many of the interventions for school lunchrooms are not scalable because they are either too complicated, too labor-intensive, or too costly. The success of one student who implemented this at a negligible cost is a testament to its scalability across other schools.

Conflict of interest statement

The authors declare no conflicts of interest.

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