Do Environmental Interventions Impact Elementary School Students' Lunchtime Milk Selection?

Alexandra Waite, Keiko Goto*, Kenny Chan, Maria Giovanni, and Cindy Wolff

Alexandra Waite is a graduate of the Department of Nutrition and Food Science (NFSC) at California State University, Chico (CSUC). Keiko Goto is an Associate Professor in the Department of NFSC and the Director of Research and Evaluation at the Center for Nutrition and Activity Promotion. Kenny Chan is Chair of the Finance and Marketing Department at CSUC. Maria Giovanni is faculty in the Department of NFSC at CSUC. Cindy Wolff is a Professor in the Department of NFSC at CSUC and is the Program Director at the Center for Nutrition and Activity Promotion.

*Correspondence to be sent to:

Keiko Goto

Email: kgoto@csuchico.edu

Phone: 530 – 898 - 4022

Fax: 530 – 898 - 5382

Address: 25 Main Street, Suite 101A Chico, CA 95929

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Abstract This research examines whether environmentally based intervention strategies increase elementary students' selection of white milk. At intervention school one, white milk was easily accessible, but students had to ask for chocolate milk. As an outcome, students increased their selection of white milk compared to control school students ($p \leq 0.001$). At intervention school two, the visual cue of a threefold greater quantity of white compared to chocolate milk did not significantly alter selection patterns. This research indicates that requiring students to ask for an item rather than self-serve can help modify food selections and serve as a tool for obesity prevention.

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Introduction

The increasing incidence of overweight and obesity among America's children is well documented (Ogden, Carroll, Curtin, Lamb, and Flegal 2010). Research also shows that obese children have a greater tendency to be obese as adults (Hampson, Andrews, Peterson, and Duncan 2007) putting them at greater risk for developing medical conditions such as heart disease, certain cancers, and diabetes in adulthood. Other risks associated with obesity are dysfunctional eating behaviors, psychological problems, and social/emotional development

problems (Hampson, Andrews, Peterson, and Duncan 2007; Merten, Wickrama, and Williams 2008; Power, Bindler, Goetz, and Daratha 2010).

Among elementary school students, a major contributor to the prevalence of overweight and obesity is the overconsumption of sugar sweetened beverages (Block 2004). The added sugar in these drinks has been associated with childhood obesity, dental caries (Marshall, Levy, Broffitt, Warren, Eichenberger-Gilmore, Burns, and Stumbo 2003), bone health (Tsanzi, Fitch, and Tou 2008), and a lower overall diet quality (Libuda, Alexy, Buyken, Sichert-Hellert, Stehle, and Kersting 2009). The concern for added sugar has precipitated a heated debate in recent years over the type of milk offered in the National School Lunch Program (NSLP) because approximately two-thirds of participating students choose chocolate over white milk (Gordon, Fox, Clark, Nogales, Condon, Gleason, and Sarin 2007). An eight-ounce serving of chocolate milk contains approximately four teaspoons of added sugars, defined by the United States Department of Agriculture (USDA) as "sugars and syrups that are added to foods or beverages when they are processed or prepared."[1] Low-fat chocolate milk contains more than twice as much sugar as low-fat white milk, all in the form of added sugars.

Johnson, Bruemmer, Lund, Evens, and Mar (2009) state that school policies significantly impact students' exposure to sugar sweetened beverages in the school environment and, in turn, this exposure impact students' consumption of these beverages. Some school districts, concerned parents, nutrition educators, and medical providers believe one way to discourage elementary school students from consuming sugary beverages is to ban them from school campuses. Attention to this issue precipitated the 2006 agreement between the American Beverage Association and schools to sell only water, unsweetened juice, and low-fat milk to elementary

[1] This definition was obtained on a USDA website at http://www.choosemyplate.gov/weight-management-calories/calories/added-sugars.html

and middle schools with the goal of reducing student consumption of soda. Los Angeles Unified School District took the issue one step further in their recent decision to eliminate chocolate milk from elementary school meals.

Opponents of a ban on chocolate milk argue that any milk consumption is better than no milk consumption. They cite a prevailing view in the nutrition and medical fields that children need to drink milk for its high content of micronutrients that are essential for bone growth and development (Heaney 2000). Black, Williams, Jones, and Goulding (2002) found that children who avoid drinking milk have poorer bone health compared to habitual milk drinkers. Research has indeed shown that those who include flavored milk in their diets report consuming more total milk than those who consume exclusively plain milk. In a group of 7,557 children and adolescents between the ages of two and eighteen, these researchers found that intakes of Vitamin A, calcium, potassium, magnesium, phosphorus, and saturated fat were comparable among all milk drinkers. Removing flavored milk from school meals might lead to a decrease in milk consumption (Murphy, Douglass, Johnson, and Spence 2008).

Milk will very likely always be a requirement in the NSLP. Promoting the consumption of white milk encourages overall healthy eating behaviors as evidence suggests that selection of white milk in the school cafeteria is positively associated with self reported vegetable consumption among elementary school students (Chan, Wolff, Bianco-Simeral, Goto, Waite, Frigaard and Chan 2012). The practice of selecting white milk could positively influence a child's preference for less sugary items through internal motivation, rather than forcing the decision via the banning of chocolate milk (external motivation). Through internal motivation, an individual will do "an activity for its inherent satisfaction rather than for some separable consequences" (Ryan and Deci 2000). This freedom of choice facilitates development of

autonomy and leads to more positive outcomes in comparison to those generated via an outside reward or threat (Deci and Ryan 2000). The difficulty lies in providing options to develop school children's autonomy, while subtly influencing them toward the more healthful choice.

Behavioral versus Cognitive Strategies for Encouraging White Milk Consumption

Historically, nutrition educators have typically relied on positive, informative messages for healthy foods, good nutrition, and weight management when promoting the benefits of white milk to K-6 students (Baranowski, Cullen, Nicklas, Thompson, and Baranowski 2003; Schrader and Lawless 2004; Lytle 2005; Lin, Yang, Hang, and Pan 2007; Contento 2008). The focus of this approach is the *knowledge→attitude→behavior* route to persuasion (Petty and Cacioppo 1981). The main strategy is to stress the merits of wise food decisions in an effort to change underlying beliefs that drive unhealthful eating behaviors. Information based campaigns such as National Nutrition Month sponsored by the Academy of Nutrition and Dietetics and USDA's MyPlate campaign are targeted at the knowledge or cognitive level. The prevailing justification for this strategy is that "improvements in knowledge levels, or cognitive factors, would lead directly to changes in behavior" (USDHHS 1994, p 216).

Previous research indicates that there are parallel approaches to knowledge based nutrition education that could be applied to increase the consumption of white milk at lunchtime. Researchers supporting the peripheral route approach suggest that behavioral change follows the sequence: *behavior* (changes in behavior) → *affect* (changes in attitudes) → *cognition* (changes in knowledge and beliefs). For example, eating environment and food availability can influence students' selection and consumption of cafeteria school lunch foods (Stroebele 2004; Wansink 2004). Peripheral route behavior change variables include "atmospherics, the effort of obtaining food, the social interactions that occur, and the distractions that may be taking place" as well as

"package or portion size, whether it is stockpiled, and how it is served" (Wansink 2004). Manipulation of these elements in the school cafeteria setting, either singularly or simultaneously, could potentially guide students to healthier food choices, specifically in reference to the type of milk selected and consumed. Most of these approaches do not require efforts to change students' attitudes towards white milk as a precursor to changing their selection patterns.

One peripheral route strategy for promoting white milk is to make the acquisition of chocolate milk more "effortful." Levitsky (2002) showed that when chocolate candy was placed either on participants' desks or two meters away, those with candy on their desks ate significantly more. Similar results have been observed with milk. Albala, Ebbeling, Cifuentes, Lera, Bustos, and Ludwig (2008) reported that overweight and obese children who received home delivery of milk, thereby ostensibly increasing its availability, significantly increased their milk consumption and decreased their consumption of sugar-sweetened beverages. In a companion study by these same authors, the delivery of noncaloric beverages to the home of adolescents for 25 weeks almost completely eliminated the consumption of sugar-sweetened beverages and promoted weight loss among the most overweight adolescents. Reducing the accessibility of chocolate milk may also suggest, at least perceptually, that it is an inappropriate beverage for lunch. Thus, it may be that one way to discourage chocolate milk consumption is to make white milk more accessible than chocolate milk in school cafeterias.

Increased availability is another important environmental factor that influences consumption behavior. A smaller volume or a less prominent display of chocolate milk vs. white milk in the cafeteria serving line may reduce rates of selection for chocolate milk. The availability of a reduced quantity of a product serves as a cue to imply a "consumption norm."

Indeed, previous research indicates that with no formal guideline, the provision of more physical space for a product in a retail store results in increased sales of that product (Kahn and Wansink 2004; Wansink 2004). Research by Faith, Fontaine, Baskin, and Allison (2007) suggests that increased availability of fruits and vegetables is associated with higher rates of selection. Additionally, Wansink (2004) showed that stockpiled convenient ready-to-eat foods are selected at a significantly higher rate than nonstockpiled foods. Perhaps if white milk is presented at lunch in a volume that proportionally over shadows that of chocolate milk, students may be persuaded to gravitate toward selection of white milk.

The dissonance theory predicts that serving students white milk at lunch will, in time, lead them to like the product more (Petty and Cacioppo 1981) and perhaps learn to develop a long-term positive attitude toward its consumption. Just and Wansink (2009) argue that people will often rebel when they feel that they are being coerced into doing something. This may help explain why children and adolescents don't respond to "nagging" messages to drink white milk. Also, people will take ownership of an idea if they feel they have knowingly and freely made that decision. If school cafeterias can guide students' milk choices in subtle ways, self-attribution can have a positive influence on the students to bring about self-initiated positive outcomes. In support, research shows that girls with higher dairy intake at age five continue to have high dairy intake over time (Mannino, Lee, Mitchell, Smicklas-Wright, and Birch 2004). This theory is also reflected in the 2010 Dietary Guidelines that state, "It is especially important to establish the habit of drinking milk in young children, as those who consume milk at an early age are more likely to do so as adults" (USDA 2010, p.38).

In summary, we hypothesize that environmental interventions can influence elementary school students' milk choice behavior. This research investigates if elementary school students

are more likely to choose white milk at lunch if it is less effortful (or more convenient) to select than chocolate milk and whether these students are more likely to choose white milk if it is presented in a greater volume compared to chocolate milk.

Methods

A pre-post control trial was conducted in Spring 2011 on three elementary school campuses in one school district located in a medium sized city in rural northern California. These elementary schools were selected based on the convenience of their location in the local school district and their participation in the Network for Healthy California's Harvest of the Month Program. The free/reduced eligibility of all three schools is greater than 50%. The schools were randomly assigned as an intervention or a control school.

Participants (400 intervention and 277 control) were first to sixth grade students participating in the National School Lunch Program. They were observed for their beverage selection up to five consecutive days depending on their frequency of cafeteria use for each of the one week pre and post data collection periods. This study was deemed exempt by the University Institutional Review Board.

The interventions attempted to influence a student's selection toward white milk versus chocolate flavored milk. Baseline data were collected over five days per school in March 2011, followed by five days during the intervention period in April 2011. Students were identified on an individual level and their milk selections documented on each of the days they were provided a meal in the school cafeteria during data collection.

In addition to observations of students' milk selections, milk cartons from each of the three schools were collected and counted at the end of each lunch. Milk waste was weighed to determine milk consumption for the school as a whole. The independent variable was the

intervention implemented at each of the schools. The dependent variables were the students' selection of white or chocolate milk and the quantity of milk they chose to throw away as waste.

Study Design

The first intervention in this research made the acquisition of chocolate milk "more effortful." During baseline at intervention school one, *"Ask for Chocolate Milk,"* students selected their lunch in the following order: entrée, a milk carton from side by side crates of segregated white and chocolate milk in equal amounts, and a fruit and vegetable garden bar, followed by the point of sale (POS). For the intervention week, the chocolate milk was hidden behind the counter and the white milk was placed in front of the counter with a poster displayed to the side of it saying, "If you want chocolate milk, ask for it." A researcher would only provide a carton of chocolate milk if a student asked for one.

The second intervention modified the "availability and prominence" of chocolate milk. At baseline, intervention school two, *"Increased White Milk Quantity,"* students selected their lunch in the following order: entrée, side by side crates of segregated white and chocolate milk in unequal quantities, garden bar, and POS. Chocolate milk and white milk were displayed in equal quantity. For the intervention week, the quantity of white milk available was increased to approximately three times that of chocolate milk. Two overflowing crates of white milk were displayed next to one scarcely stocked crate of chocolate milk. For every 5-10 students that came through the line, a researcher would replace the milk students selected to maintain a three to one ratio of white to chocolate milk. The order in which the students selected their lunch items remained consistent with baseline observations.

During baseline observations at the control school, the order in which students chose their lunch was as follows: entrée, garden bar, side by side crates of white and chocolate milk of equal quantities, and the POS. There were no changes made for the post observation.

Data Collection: Milk Selection

University interns were recruited to aid with data collection. They were trained as researchers for the observation and milk waste data collection. Observation tracking forms were used to record the type of milk beverage selected by all students selecting lunches from the school cafeteria. The observation forms listed the first and last names of the students in each class, and ID numbers and grade levels in separate columns. Three or four researchers would stand at the POS and identify students by name and document the individual students' beverage selection using a coding system. Each child was documented by one observer. The number of researchers assigned to a cafeteria was dependent on the student traffic in that cafeteria. Upon completion of data entry, student names were discarded to protect their identification.

Data Collection: Milk Waste

On the first day of observations, teachers were asked to tell their classes that the school was trying a new recycling program and to throw their milk cartons into separate trash cans labeled as either "chocolate milk" or "white milk." These trash cans were placed on either side of the trash cans normally used by the janitorial staff. A trained researcher stood behind the trash cans and assisted the students in throwing their trash in the appropriate bin for white milk, chocolate milk, or other trash. If asked by students why the researchers were there, they were instructed to say, "We are trying a new recycling program with milk cartons." This was done to disguise the purpose of the milk waste collection so as to not affect the students' milk consumption.

The milk waste was transported offsite where the discarded cartons were counted and documented as either "opened" or "unopened." The white and chocolate milk collected as waste was poured into separate buckets, weighed in pounds, and recorded. The tare weight of the bucket was recorded and subtracted from the total weights to determine the amount of milk discarded. Data collection and documentation for both was repeated for each of the five baseline and intervention days for both the observation and milk waste parts of the study.

Data Analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 19.0. Students were matched by ID number from baseline to post-intervention as the unit of analysis used for milk selection. Demographic information was summarized using descriptive statistics. Data were collected as binomial counts of white milk selected at baseline (pre-intervention) and post intervention, with the McNemar test used to determine significance between pre and post intervention. Odds ratios were determined to compare each intervention school with the control and significance was determined using binary logistic regression. Due to lack of normality in the data, Kruskal-Wallace was used to compare the average post-intervention percent of students who selected white milk at the intervention schools against that of the control school, using the number of days as a unit of measurement. A Bonferroni-corrected α value of 0.017 was used for three pairwise multiple comparisons.

To assess changes in white milk consumption, the proportion of consumed white milk out of the total milk selected was determined and baseline (pre-intervention) consumption was compared with post-intervention consumption for each school. Differences in proportion of consumed white milk between baseline and post-intervention for each school was calculated and

compared using the Wilcoxon signed-rank test with an α level of ≤ 0.05 used to indicate statistical significance.

Results

Table 1 is a summary of the participants' demographic information. All three schools in this study are low income as determined by National School Lunch Program eligibility rates of greater than 50% of all enrolled students. Kindergarten students were excluded from all schools based on their inability to read the poster as part of the *"Ask for Chocolate Milk"* intervention. A total of 677 students from all three schools were observed making milk selections in the cafeteria and were matched for both pre and post data collection periods.

Effects of the Interventions on Milk Selection

The number and percent of students selecting white milk at least one time over the course of the pre and post intervention periods were compared. These results are summarized in Table 2. At the first intervention school where students were required to "*Ask for Chocolate Milk,*" 30% (n = 74) selected white milk at least one time during the pre-intervention data collection period compared to 48% (n = 118) during the intervention period, an increase of 18% ($p<0.001$). At the second intervention school where students were exposed to "*Increased White Milk Quantity*" compared to chocolate, no significant difference was found between the percent of students selecting white milk at pre (33%, n=50) compared to the intervention period (35%, n = 53, p = 0.69). The control school experienced no significant difference from pre (23%, n = 64) to post (24%, n = 65, p = 1.00).

The odds ratio of students selecting white milk at the two intervention schools was compared to that at the control school. At the intervention school where students were required to *"Ask for Chocolate Milk,"* the odds of students selecting white milk were 3.81 (2.4 – 6.1)

times higher compared to the control school after controlling for the pre-intervention data as a covariate ($p < 0.001$). As shown in Table 3, at the second intervention school where students were exposed to an *"Increased White Milk Quantity,"* the odds of students selecting white milk were 1.51 (0.85 – 2.70) times higher compared to the control school ($p = 0.159$). Among more frequent participants in the school meals program during the intervention week (≥ 3 days), significant and non-significant findings between control and intervention students remained the same.

The average percent of students who selected white milk out of the total milk selected was compared from pre to post intervention. For example, if a child selected white milk four times and chocolate milk once during the five day observation period, the ratio of white milk selection to total milk selection for that child is 0.8. The percent of students in the "*Ask for Chocolate Milk*" group who selected white milk increased by 8.9% from pre to post ($p< 0.001$). There was no significant difference in the *"Increased White Milk Quantity"* intervention ($p= 0.366$) or control groups ($p= 0.915$).

When the ratio of white milk to total milk cartons chosen over the five day intervention was compared, the mean rank of the proportion of students selecting white milk in the *"Ask for Chocolate Milk"* intervention was 376, which was significantly higher than those observed in the *"Increased White Milk Quantity*" or the control group (mean ranks = 324 and 314, respectively, $p<0.001$). These differences were found in comparing pairs of schools: the "*Ask for Chocolate Milk"* intervention had a significantly higher mean rank than the control school (288 vs 240, $p<0.001$) and the "*Increased White Milk Quantity*" intervention (212 vs. 182, $p=.002$). No difference was found between the latter intervention and the control school (219 vs 214, $p=0.553$).

Effects of the Interventions on Milk Consumption

The pre and post five day average proportion of white milk consumed out of the total milk selected was compared for milk waste during the intervention week. This analysis was conducted from the measured waste and number of cartons collected. The average numbers of pre and post white milk cartons counted daily and weighed in the "*Ask for Chocolate Milk*" intervention group were 49 and 64, respectively. The average numbers of pre and post white milk cartons counted and weighed in the "*Increased White Milk Quantity*" intervention group were 36 and 35, respectively. The average number of white milk cartons counted and weighed in the control group was 41 for both pre and post intervention.

Among students required to *"Ask for Chocolate Milk,"* there was no significant difference in the median percent of white milk consumed out of total milk selected from pre (50%) to post (47%) as shown in Table 4. Though significantly more students selected white milk with this intervention, milk waste did not change, indicating that students will drink white milk if they select it. Similarly, *"Increased White Milk Quantity"* students and control school students did not change white milk consumption from pre to post.

Discussion

The high rate of obesity among children is alarming. Parents, educators, and health care providers are justified in their concerns over the contribution of excess calories and added sugar associated with the provision of chocolate milk as part of a school lunch. The nudging of students toward the selection of white milk instead of chocolate milk is a valuable step to improve the overall quality of their diets by reducing consumption of added sugar and calories.

Food choice decisions are complex and no single unified theory exists to fully explain these choices. The process model by Sobal and Bisogni (2009) suggests incorporating multiple

influences such as personal and social factors and a personal value system, as well as life experiences. A model proposed by Lipperman-Kreda, Grube, and Paschall (2010) is largely grounded in social learning theory and echoes a similar set of predictors of behavior such as parental dis/approval, beliefs in social and health risks of the behavior, product availability, and product use by friends. Wansink, van Ittersum, and Painter (2006) argue the importance of addressing contextual cues that influence eating behaviors. These researchers showed that when study participants attending an ice cream social were given a larger bowl, they served themselves 31.0% more ice cream without being aware of it. These theories partly explain why nutrition education alone has limited influence on changing attitude and behavior in children's consumption patterns and the high percent of students choosing sugar-sweetened chocolate milk as a part of their school meal.

Studies in feeding behavior have shown that behavioral interventions may be applied to improve the healthfulness of food choices when nutrition education alone is not adequate to promote effective change. Levitsky (2002) observed that the best predictor of how much a child eats is the amount of food the child is served, which is determined by the caregiver. Baranowski, Cullen, and Baranowski (1999) also identified environmental factors that affect the outcome of nutrition education interventions, one of which is the increased availability of the targeted food.

To our knowledge, the present study is the first to test the effects of environmental interventions on school children's lunchtime milk selection and consumption. From an economics standpoint, the demand for a product is influenced by the prevailing price, whether monetary or the effort needed to acquire it. The law of demand specifies that the amount of consumption will decrease with increases in price, all other things being equal. There is no reason this law does not apply to school children's demand for sugar sweetened chocolate milk

at lunchtime. Indeed, students in the present study who had to ask for chocolate milk when white milk was readily available were more likely to choose white milk. This finding supports the premise that the amount of work required to select a food may be inversely related to the likelihood of choosing that food, indicating that increasing the effort needed to access a food may be an effective way to change behavior. This could explain why at the intervention school where students were required to *"Ask for Chocolate Milk,"* the odds of students selecting white milk was 3.81 (2.4 – 6.1) times higher compared to the control school ($p < 0.001$).

These results are promising. Childhood is an important time in establishing a person's food preferences (Aldridge, Dovey, and Halford 2009). Although restricting access to high sugar and high fat foods may be a simple way to limit consumption, such restrictions often create an increased interest in and consumption of these foods (Birch and Venture 2009). Guiding children to attend to internal signals, such as hunger and satiety, and external cues, such as positive social contexts, appears to be an effective approach to developing healthy eating habits. As children progress through elementary school, they respond more positively to novel foods and are more influenced by societal cues (Aldridge, Dovey, and Halford 2009) and information about the food, particularly when they are able to taste it (Pelchat and Pliner 1995). These findings suggest that targeting the consumption of added sugar in chocolate milk may be an effective approach toward the prevention of childhood obesity among school meal participants.

Results from this study did not confirm findings that prominence was associated with selection. Unlike students in the longitudinal and cross-sectional research studies done by Geller and Dzewaltowski (2008) and a separate study by Faith, Fontaine, Baskin and Allison (2007), students in the present study who were exposed to an increased ratio of white to chocolate milk were not more likely to select white milk as part of their lunch.

Our study is not without limitations. Logistical reasons did not allow for the collection of milk waste on an individual level. Milk waste data collection relied on the students throwing away their leftover milk in the appropriate trash can. Though trained staff was there to assist, a student may have accidentally thrown away their milk in the wrong bin. We estimate that this occurred three or four times in a given day. After milk waste collection was completed, the waste was triple bagged and transferred off site for weighing. Even so, some bags developed tiny leaks. Because of the consistency of data collection methods, the occurrence of the above limitations was equal between school sites.

Conclusion

If the ultimate objective is a sustainable reduction in children's consumption of added sugar and associated excess calories, nutrition education cannot do it alone. While a chocolate milk ban is becoming increasingly popular, no factual evidence supports that such a ban would have a meaningful effect on childhood obesity directly or indirectly. Food choice among children depends upon the home, school, and dining environments in which these decisions are made.

This research demonstrates that lessons borrowed from behavioral economics may present useful strategies to alter food selections, with lunchtime milk choice being a logical behavior change focus. The involvement of food service staff and school administrators is needed to execute the type of behavioral interventions strategy discussed in this paper. Food preferences can be modified, as repeated exposure to a food will increase acceptance, especially if a child is encouraged to try the food (Aldridge, Dovey, and Halford 2009). While taste has a powerful influence on choice, other modalities have been found to influence dietary decisions, such as visual, associative, and contextual (Aldridge, Dovey, and Halford 2009). The more familiar a food is, the more it is liked (Cooke 2007). Incorporation of other factors, particularly

parental education and support play a critical role in shaping their children's early experiences since parents typically decide what foods are made available and accessible (Kavey 2010; Scaglioni, Arrizza, Vecchi, and Tedeschi 2011). The development of healthy food selection habits in childhood is important because early preference have long-term influence on dietary intake later in life (Birch and Ventura 2009; Aldridge, Dovey, and Halford 2009).

Continuing research is needed to explore factors that make added sugar beverages, such as flavored milk and soda, attractive from physiological (pleasurable experience), social/familial (parental restriction), cognitive (understanding of negative consequences associated with sugar consumption), and environmental (easy availability) perspectives. The impact of brand knowledge on food choice must also be considered as advertising and experience with branded products impacts food preferences (Cornwell and McAlister 2011). This information will be critical for the development of effective behavioral interventions for reducing excess sugar and calorie consumption in schools, homes, worksites, and the community.

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Table 1. Demographic Characteristics of Students						
	Intervention One *Ask for Chocolate Milk*		**Intervention Two** *Increased White Milk Quantity*		**Control**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Grade						
1st	45	18	22	14	53	19
2nd	41	17	27	18	28	14
3rd	29	12	32	21	53	19
4th	48	19	34	22	47	17
5th	44	18	18	12	42	15
6th	40	16	20	13	44	16
Total	247	100	153	100	277	100

Table 2. Change in Number of Students Selecting White Milk at Least One Time During the Week of Observations							
	Pre		Post		Change		*p* value*
	No.	%	No.	%	No.	%	
Intervention One: *Ask for Chocolate Milk*	74	30	118	48	44	18	< 0.001
Intervention Two: *Increased White Milk Quantity*	50	33	53	35	3	2	0.69
Control School	64	23	65	24	1	1	1.00
*Significance determined using McNemar							

Table 3. Odds Ratio of Students Requesting Chocolate Milk vs. Self-Serve*			
	Odds Ratio*	**95% CI**	***p* value****
Intervention One: *Ask for Chocolate Milk*	3.81	2.4 - 6.1	< 0.001
Intervention Two: *Increased White Milk Quantity*	1.51	0.85 - 2.70	0.159
*Odds ratio in comparison to control group **Significance determined using binary logistic regression			

Table 4. No difference in proportions of consumed white milk from pre to post.			
	White Milk		
	Pre-Intervention	**Post-Intervention**	***p* value***
	Median (25th percentile, 75th percentile)	**Median (25th percentile, 75th percentile)**	
Intervention One: *Ask for Chocolate Milk*	50% (46%, 55%)	47% (46%, 54%)	0.50
Intervention Two: *Increased White Milk Quantity*	56% (54%, 62%)	62% (47%, 68%)	0.89
Control School	54% (51%, 57%)	56% (39%, 61%)	0.69
*Significance determined using Wilcoxon signed-rank test			