

Jumpin' Jacks: Social Marketing Campaign Aimed to Increase Awareness of Healthful Behavior in South Dakota Fourth Grade Students

Megan N. Olesen

Kendra Kattelmann

Jessica Meendering

Suzanne Stluka

South Dakota State University

This study investigated the influence of utilizing a collegiate mascot as a marketing tool for the promotion of fruit and vegetable intake and physical activity among 4th grade students. The program utilized service learning and formative research for the development of a social marketing campaign comprised of nutrition education and brand marketing. A pre-test/post-test design was used to measure fruit and vegetable intake and physical activity in participants in intervention and control schools. Awareness and understanding of the campaign was assessed post-intervention. There were no changes in fruit and vegetable intake or physical activity. However, 91% of the intervention students were able to correctly report understanding of the campaign messages, and approximately one-third of the participants were able to recall the campaign without any prompts. Results demonstrated how a social marketing campaign can utilize branding techniques to bring about awareness, which is an essential step in initiating behavior change.

Keywords: social marketing, child, obesity prevention, service learning, nutrition, physical activity

Introduction

Childhood obesity is a public health problem that is likely to persist into adulthood and is associated with complications that reduce quality of life (Institute of Medicine, 2011). From the 2009-2010 National Health and Nutrition Examination Survey (NHANES), nationwide, 18% of children aged 6-11 years old are obese ($\geq 95^{\text{th}}$ percentile) and 18% are overweight ($\geq 85^{\text{th}}$ percentile and $< 95^{\text{th}}$ percentile) (Ogden, Carroll, Kit, & Flegal, 2012). Although the overall prevalence in children 2-19 years of age has not increased from that reported in 2003-2004, the prevalence varies by age group increasing with age (Ogden et al., 2012).

Direct correspondence to Kendra Kattelmann at kendra.kattelmann@sdstate.edu

Causes for childhood obesity are multifactorial (Centers for Disease Control and Prevention, 2015). A joint report by the World Health Organization and the Food and Agriculture Organization (2003) recognized food marketing to children as a contributory factor of childhood overweight and obesity, having an impact on children's food choices at the brand and category level, purchasing behavior, purchasing requests, and food consumption habits. The media-saturated environment has an influence on a child's behavior and food preferences, and potentially family purchases (Uauy, Caleyachetty, & Swinburn, 2010).

A number of intervention techniques have been implemented to combat the childhood obesity epidemic. One technique that shows promise is the use of social marketing to influence children's behavior (Henley & Raffin, 2010). Social marketing, when used for health promotion, aims to minimize health-related risks and change behavior by presenting the goal behavior in encouraging and favorable ways (Aggelton, 1997). The success of a marketing campaign is fundamentally associated with the relationship between a brand and the consumer (Evans, Blitstein, Hersey, Renaud, & Yaroch, 2008). A Cornell University study found that children consumed more apples than cookies when Elmo[®] stickers were placed on the apples (Wansink, Just, & Payne, 2012). Similar studies have shown comparable results demonstrating children's preference to the taste of foods that display popular cartoon characters on the packaging to those without a character (Roberto, Baik, Harris, & Brownell, 2010).

Similarly, school mascots may have the potential to be used as positive influencers in wellness behavior campaigns. A systemic review on brand mascot's influence on children's diet and health found that character branding can positively increase children's fruit or vegetable intake (Kraak & Story, 2015). Combining character branding with social marketing techniques to create positive images and effective messages may be an effective strategy to gain the attention of children and promote positive behavioral choices. (Evans, 2008; Evans et al., 2008). Furthermore, school-based social marketing campaigns have great potential to create behavior change among an elementary population (Evans, 2008). The school setting offers pre-existing organizational, communicational, and social structures that provide opportunities to expose children to a healthy environment (Evans, 2008).

The primary aim of this study was to determine the influence of using the South Dakota State University (SDSU) mascot as a marketing tool in the school setting to promote fruit and vegetable consumption and physical activity among 4th grade students. The secondary aim was to assess the awareness and understanding of the mascot's use in the social marketing campaign developed for this intervention.

Methods

Jumpin' Jacks was a three-month social marketing campaign intervention that targeted 4th grade school children. Students were randomized by school into intervention or control group and assessed pre- and post-intervention for primary and secondary outcomes. The social marketing campaign intervention materials were developed as a service learning project at SDSU.

Development of *Jumpin' Jacks* Social Marketing Campaign Materials

Instructors from the Graphic Design and Advertising Departments at SDSU were contacted to participate in a service learning poster development project. An instructor from the Graphic Design department incorporated the poster development project into the course curriculum. Twelve graphic design students participated, and each developed a series of three posters. Posters incorporated pictures of the Jackrabbit mascot and slogans aimed to promote fruit and vegetable consumption and physical activity among 4th grade students. Nutrition educators chose six posters based on appropriateness of the slogan, creativity, and quality of the design. The six posters and respective messages were then formatively evaluated for understanding and relevance to the target audience by 4th graders (15 male, 15 female) from a local Boys and Girls Club. The 4th graders were queried on 1) student perception and understanding of the marketing messages, 2) favorability of each poster, 3) identification of the mascot, and 4) suggestions for modifying the posters. Based on this feedback, two graphic design artists who received the highest ratings by the target audience were selected to create the remaining materials. These two graphic design artists worked with SDSU nutrition educators to incorporate target audience feedback for the development of a series of posters for the intervention. Suggested modifications provided by the target audience included changes to the overall layout of the poster, brighter backgrounds, realistic graphics, and addition of collegiate athletes from a variety of sports. As a result of this service learning project, eight posters featuring the collegiate mascot promoting fruit and vegetable consumption and physical activity were developed and refined for use in the *Jumpin' Jacks* campaign. One of the posters used for the campaign is presented in Figure 1.

Figure 1. Jumpin' Jacks



Study Design and Participants for *Jumpin' Jacks* Social Marketing Campaign Intervention

The *Jumpin' Jacks* intervention was a randomized cluster design with student participants being assigned to intervention or control group by school. At baseline, 144 (98 intervention, 46 control) 4th grade students from six schools participated. Schools were randomly assigned to an intervention or control group during the summer of 2012. Students in control schools were assessed at respective time periods and received no intervention. Inclusion criteria for the school selection process incorporated schools within a 50-mile radius of Brookings, SD that did not have an active United States Department of Agriculture (USDA) Team Nutrition program during the time of the intervention. Student consent was obtained in accordance with policy statements of the Human Subjects Committee at SDSU. Forms were distributed through the participating schools for 4th grade students and their parents. Parents were informed of the purpose, possible risks, and benefits of their child's participation in the study and provided a study information sheet prior to study dissemination. Parents were instructed to contact the school administrator or the principal investigator by a set deadline to express their child's non-participation in the study.

Baseline evaluation occurred in September 2012 with the distribution of pre-assessment surveys that determined fruit and vegetable intake and physical activity of all the study participants. The social marketing campaign began in October 2012, with the Jackrabbit mascot visiting the intervention schools. During the visit, the 4th grade students met the Jackrabbit mascot who performed a skit to introduce the *Jumpin' Jacks* campaign and convey the importance of eating fruits and vegetables and engaging in daily physical activity. The skit incorporated the daily dietary and physical activity daily recommendations specific to nine and ten year olds (USDA & USDHHS, 2010). The intervention schools then received eight posters featuring the mascot. Posters were placed in the schools the day of the skit. To maximize exposure, the posters were placed in 4th grade classrooms, hallways, the cafeteria, and the gymnasium. The *Jumpin' Jacks* social marketing campaign was implemented for three months during the fall 2012 school semester. At completion of the three-month study, campaign posters were removed from the intervention schools. Post-assessment surveys and in-depth interviews for awareness and understanding were completed with study participants in intervention and control schools.

Instruments

The Block Food Screener and Block Kids Physical Activity Screener (Hunsberger, O'Malley, Block, & Norris, 2015; NutritionQuest, 2013) were administered to the intervention and control participants at baseline and post-intervention. The Block Food Screener is a validated tool to assess children's intake of nutrients and food groups. Participants were queried for frequency and amount consumed in the *last week*. The Block Food Screener reports cup equivalents of total vegetable, fruit, vegetable excluding potato, potato, and legume consumed daily. Whole grain consumption is reported in ounce equivalents per day. The Block Kids Physical Activity Screener assessed daily physical activity with nine items querying leisure and school activity,

chores, and part-time jobs frequency and duration of activity in the past seven days. Physical activity is reported as moderate, recreational, vigorous, and moderate/vigorous minutes per day.

Student awareness and understanding of the *Jumpin' Jacks* social marketing campaign was evaluated post-intervention using the protocol and interview questions adapted from the *VERB: It's What You Do*TM campaign (Huhman et al., 2005). Students (90 intervention, 42 control) were individually interviewed and asked the following two questions by the first author: "What ideas did *Jumpin' Jacks* give you?" and "Tell me in your own words what *Jumpin' Jacks* is all about?" If the student was unable to recall or answer the questions, the student was shown the posters and re-questioned. Responses were recorded and categorized based on student's ability to recall the *Jumpin' Jacks* campaign (unaided recall) or after viewing the *Jumpin' Jacks* posters (aided recall) and on ability to state one or more of the intended *Jumpin' Jacks* messages (understanding). Categorization of responses was completed by two trained researchers independently and then compared and categorized to consensus. Responses were categorized as:

- 1) unaided recall and understanding: student recognized campaign without help and correctly verbalized the intent of the campaign messages;
- 2) aided recall and understanding: recognized campaign with the help of an aid and correctly verbalized the intent of the messages;
- 3) unaided recall and no understanding: recognized campaign without help but could not correctly recall any of the campaign messages;
- 4) aided recall and no understanding: recognized campaign with the help of an aid but could not recall any of the campaign messages; and
- 5) no recall, even with aids, and no understanding of the campaign messages.

To further assess understanding of the campaign, content analysis of the recorded responses was completed. Responses to questions were reviewed for content and coded for major themes by two trained researchers (i.e., the first two authors).

Quantitative variables were examined for normality, and non-normal variables were transformed prior to analysis. In SAS (Version 9.3), a PROC GLM was used to determine significant differences ($p \leq 0.05$) between intervention and control dietary and physical activity variables.

Results

The mean (SE) age of the participants was 9.19 (0.4) years; 83 students were male (58%), and 61 were female (42%). Most respondents (70%) were White, and 20% were Native American (see Table 1). There were no significant differences between intervention and control participants for any of the dietary variables or physical activity measures (see Table 2).

Table 1. Age, Gender, and Demographic Data for Student Participants at Baseline (n = 144)

Variable	Intervention	Control	Total (%)
Mean Age \pm SE	9.15 \pm 0.4	9.26 \pm 0.4	9.19 \pm 0.4
<i>Sex, n (%)</i>			
Male	56 (57)	27 (59)	83 (58)
Female	42 (43)	19 (41)	61 (42)
<i>Ethnicity, n (%)</i>			
White	64 (65.3)	37 (80.4)	101 (70.1)
Native American	24 (24.5)	5 (10.9)	29 (20.1)
Other	10 (10.2)	4 (8.7)	14 (9.7)

Table 2. Daily Dietary Intake and Physical Activity Data of Student Participants at Baseline and Post-Assessment ($p \geq 0.05$)

Variable	Group (Intervention n = 87) (Control n = 41)	Pre- Assessment (M \pm SE)	Post- Assessment (M \pm SE)	p-value ^a (group x time)
Age (years)	Intervention Control	9.1 \pm 0.04 9.3 \pm 0.07	9.4 \pm 0.06 9.5 \pm 0.08	
<i>Dietary Variables^b</i>				
Fruit (cups/day)	Intervention Control	1.4 \pm 0.1 1.0 \pm 0.2	1.3 \pm 0.1 1.2 \pm 0.1	p = 0.19
Total Vegetable (cups/day)	Intervention Control	1.0 \pm 0.1 1.0 \pm 0.2	0.9 \pm 0.1 1.2 \pm 0.1	p = 0.14
Vegetable, No Potato (cups/day)	Intervention Control	0.7 \pm 0.08 0.7 \pm 0.1	0.7 \pm 0.08 0.9 \pm 0.1	p = 0.17
Potato (cups/day)	Intervention Control	0.3 \pm 0.04 0.2 \pm 0.04	0.2 \pm 0.03 0.3 \pm 0.05	p = 0.08
Legume (cups/day)	Intervention Control	0.05 \pm 0.01 0.03 \pm 0.01	0.05 \pm 0.01 0.05 \pm 0.02	p = 0.87
Whole Grain (ounces/day)	Intervention Control	0.5 \pm 0.05 0.3 \pm 0.04	0.4 \pm 0.05 0.5 \pm 0.06	p = 0.19
<i>Physical Activity (minutes/day)^b</i>				
Moderate Minutes	Intervention Control	88.4 \pm 9.6 84.4 \pm 11.3	71.7 \pm 8.8 89.6 \pm 12.6	p = 0.15
Recreational Minutes	Intervention Control	95.7 \pm 9.9 90.3 \pm 12.5	76.6 \pm 9.7 93.0 \pm 13.3	p = 0.20
Vigorous Minutes	Intervention Control	45.3 \pm 5.2 42.1 \pm 7.1	34.1 \pm 5.04 48.8 \pm 9.0	p = 0.16
Vigorous/Moderate Minutes	Intervention Control	133.7 \pm 12.6 126.5 \pm 14.8	105.9 \pm 12.6 138.4 \pm 18.5	p = 0.16

^aSAS (version 9.3) GLM procedure determined significance between groups ($p < 0.05$).

^bAssessed with Block Food and Kids Physical Activity Screeners (NutritionQuest, 2013)

Table 3 reports the frequency and percentage of students meeting daily dietary and physical activity recommendations based on age and gender specific Dietary and Physical Activity Guidelines for Americans (USDA & United States Department of Health and Human Services [USDHHS], 2010; USDHHS, 2008). Over 70% of students were meeting the recommendations of 60 minutes of moderate or vigorous physical activity a day at baseline; this decreased to approximately 50% at post-assessment. Fewer students met the recommended fruit and vegetable intake. At baseline, less than 30% of students were consuming the recommended intake of 1.5 cups of fruit per day. There were no changes at post-assessment for fruit intake. Less than 10% of students were meeting the total vegetable recommendation of 2 cups per day for females and 2.5 cups per day for males at baseline, and there were no changes post-assessment. Whole grain intake remained steady at around 50% of students meeting the daily recommendation of 3 ounces per day at baseline and post-assessment (see Table 3).

Table 3. Frequency and Percentage of Student Participants Meeting Daily Dietary and Physical Activity Recommendations^a

Variable	Group	Pre-	Total	Post-	Total
	(Intervention <i>n</i> = 87) (Control <i>n</i> = 41)	Assessment <i>n</i> (%)		Assessment <i>n</i> (%)	
Vigorous/Moderate Minutes	Intervention	60 (69.0)	91 (71.1)	46 (52.9)	75 (58.6)
	Control	31 (75.6)		29 (70.7)	
Fruit	Intervention	28 (32.1)	36 (28.1)	29 (33.3)	41 (32.0)
	Control	8 (19.5)		12 (29.3)	
Vegetable	Intervention	10 (11.5)	12 (9.4)	7 (8.1)	12 (9.4)
	Control	2 (4.9)		5 (12.2)	
Whole Grain	Intervention	46 (52.9)	64 (50.0)	43 (49.4)	67 (52.3)
	Control	18 (43.9)		24 (58.5)	

^aUSDA & USDHHS, 2010; USDHHS, 2008

Querying student's ability to recall and understand the social marketing materials and messages found 91% of intervention students correctly understood, and approximately one-third recalled unaided (see Table 4). Control students were interviewed to control for crossover exposure. As expected, control students displayed no awareness or understanding of the campaign.

Table 4. Frequency of Student's Ability to Recall and Understand the Jumpin' Jacks Social Marketing Campaign

Recall & Understanding Category	Intervention (n = 90)	Control (n = 42)
Unaided recall and understanding, n (%)	27 (30.0)	
Males/Females, n	10/17	
Aided recall and understanding, n (%)	55 (61.0)	
Males/Females, n	35/20	
Unaided recall and no understanding, n (%)	2 (2.2)	
Males/Females, n	1/1	
Aided recall and no understanding, n (%)	3 (3.3)	
Males/Females, n	1/2	
No recall and no understanding, n (%)	3 (3.3)	42 (100)
Males/Females, n	3/0	27/19

Note: Evaluated using an in-depth interview adopted from Huhman et al., 2005.

The responses from the intervention student interviews indicated that the students were aware of the campaign and the messages promoted by the Jackrabbit mascot. Students were able to recognize the *Jumpin' Jacks* mascot and associate the *Jumpin' Jacks* messages with appropriate behavior. Seven major themes were identified in intervention student's responses to interview questions: (1) eat healthy, (2) be healthy, (3) exercise, (4) play sports, (5) replicate Jack the Jackrabbit's healthy habits, (6) MyPlate, and (7) recruitment campaign (see Table 5). A common response from a student's interview is "*Jumpin' Jacks* encourages you to eat good food and go outside and have fun exercising."

Table 5. Major Themes of Intervention Student Responses to Interview Questions That Assessed Understanding (n = 90)

Major Themes	Questions	
	Interview Responses	
	What ideas did <i>Jumpin' Jacks</i> give you?	Please tell me in your own words what <i>Jumpin' Jacks</i> is all about.
1. Eat healthy	"to not eat junk food, it's good to get fruit and vegetables in your body"	"learning about what foods you should eat; eating vegetables and fruits; what you should drink"
2. Be healthy	"stay healthy; keep fit and in shape; keep my body working"	"getting healthy; fitness; eating the right foods"
	"to be healthy; exercise is good"	"help kids get healthy and get energy; so kids are eating healthier and more fit so they can go outside and play"
3. Exercise	"eat a lot of vegetables and fruits so you stay healthy and not get sick"	"eating healthy and exercise and playing fun games"
	"I exercise more than I used to, like jogging and biking"	"exercising, get your blood pumping; help your muscles get strong"

	“get active each day; play with friends”	“help kids to understand that exercising is good for them”
	“get outside and do something”	“exercising, getting out of the house, playing with friends, and getting healthy”
	“have fun while you are exercising”	
	“watch less TV; go out and play more, get more exercise and ride my bike”	
4. Play sports	“to do something; to run around and play and do sports”	“healthy eating; nutrition keeps kids healthy so they can play sports”
	“when we are older, play sports; help support the team”	
5. Replicate Jack the Jackrabbit’s healthy habits	“I should exercise more; when I saw Jack jump, I wanted to jump high like that, so I started practicing; I’ve gotten faster; I’ve started exercising more”	“you need to be healthy and he wants you to eat fruits and vegetables and not a lot of candy and do a lot of exercising; he wants you to eat like him”
	“to eat more fruit, you’d be able to play like Jack”	
6. MyPlate	“you’re supposed to eat well; the food web; what you are supposed to eat everyday”	“shows how much you’re supposed to eat in a plate”
	“keep balanced food and drinks; MyPlate”	
7. Recruitment campaign	“made SDSU look fun to go to, I like football”	“advertisement to eat healthy; advertisement for good food; advertisement to think SDSU is a good school”
	“go to college at SDSU; play football at SDSU; have a good time at SDSU”	

Discussion and Implications

Although the *Jumpin' Jacks* social marketing campaign did not produce increased fruit and vegetable consumption and physical activity levels in 4th grade students, the campaign did create awareness. Changing dietary and physical activity behavior may require interventions of greater intensity and breadth (Van Cauwenberghe et al., 2010). Van Cauwenberghe et al. (2010) posits that multicomponent programs which engage both children and their families in the intervention result in larger improvements in fruit and vegetable intake than single component programs. However, these multicomponent programs may be difficult to replicate due to considerable resources, such as manpower, funds, and time required to implement the programming. Similarly, the magnitude of programming required to promote physical activity change is large and requires community support (Naylor et al., 2015). In contrast to large scale multicomponent interventions, the *Jumpin' Jacks* social marketing campaign was produced with limited funds and implemented in the school setting without being resource intense.

Although research has suggested that promoting healthful eating and physical activity together is the most effective way to combat child obesity and cultivate healthy lifestyles (Kahn et al., 2009; Waters et al., 2011), the social marketing literature suggests that targeting multiple goals simultaneously is a challenge. For example, Fridinger and Kirby (2003) explained that a social marketing program combining the promotion of healthful eating and physical activity faces several problems and challenges. First, the target audience may have different images of the two behaviors of healthful eating and physical activity, and they may not make the connection between both at any one time. Second, developing social marketing strategies for both behaviors is complicated (Paek et al., 2014). Although media alone cannot change behavior, it can provide a preliminary cue for action (Bauman, 2000, 2004). The *Jumpin' Jacks* campaign demonstrates how a social marketing campaign that utilizes branding techniques can be successful in bringing about awareness, which is an essential step in initiating behavior change. The goal of social marketing campaigns is to achieve high levels of awareness and understanding among the target audience (Snyder & Hamilton, 2002). As described through his hierarchy of effects model, McGuire (1981) posits that behavior change requires attaining very high levels of exposure and awareness. The *Jumpin' Jacks* campaign was able to achieve this first step in the targeted behaviors as the 4th grade students exposed to the campaign had high recall and understanding of the campaign health behavior messages.

Branding a popular character to a positive behavior can be used to create awareness. Kraak and Story (2015) used three cartoon media characters to assess the recognition of popular characters and relationship to taste and snack preference for potato chips, crackers, and baby carrots. The media characters used in the study were Nickelodeon's *SpongeBob SquarePants*®, Warner Brothers Entertainment's *Pink Panther*®, and *El Chavo*®. The study found: 1) a high recognition of familiar media characters (92-98%) among the children, 2) the use of familiar licensed character on food packaging increased children's taste and snack preferences, and 3) younger children (4-6 years) were more likely to prefer a food with a licensed media character compared with older children (7-11 years). Similarly, the qualitative results from the *Jumpin' Jacks* campaign demonstrated that a school mascot can be used as "local" celebrity to create awareness and brand healthful behavior. Intervention students associated healthful behaviors of for dietary intake and being physically active with the messaging and images of the university school mascot used in the social marketing campaigns.

The present study had limitations that should be acknowledged. Because this study used self-reported data to gather daily physical activity and dietary consumption, recall bias may have impacted the results. Seasonal variations from baseline to post-assessment may have impacted physical activity and dietary consumption data due to environmental conditions and access to fresh fruits and vegetables. Additionally, these results should be interpreted within the appropriate geographical context. Indeed, students living in areas outreaching the 50-mile radius

of Brookings, SD may have quite different responses to the *Jumpin' Jacks* campaign featuring the college mascot.

Conclusion

This study utilized a service learning project to develop campaign materials featuring the SDSU collegiate mascot promoting fruit and vegetable consumption and physical activity. Formative research served to improve the design of the campaign posters and messages. Although, the social marketing campaign did not increase fruit and vegetable consumption or physical activity, the intervention students were able to recognize the *Jumpin' Jacks* mascot and associate the *Jumpin' Jacks* messages with appropriate healthful behavior. The result was a high level of awareness among the participants. Future research is needed to bridge the gap between high awareness and behavior change outcomes.

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Megan N. Olesen, MS, RDN, LN, is a Nutrition Field Specialist for South Dakota State University Extension.

Kendra Kattelmann, PhD, RDN, LN, FAND, is a professor and the Director for the Didactic Program in Dietetics at South Dakota State University.

Jessica Meendering, PhD, is an associate professor in the Department of Health and Nutritional Sciences and the Director of the Exercise Science Program at South Dakota State University.

Suzanne Stluka, MS, RDN, LN, is the Expanded Food and Nutrition Education (EFNEP) and Supplemental Nutrition Assistance Education (SNAP-Ed) Coordinator as well as the Food & Families Program Director for South Dakota State University Extension.

Acknowledgements

This project was funded by the Cooperative State Research, Education, and Extension Service, the Agriculture and Food Research Initiative (AFRI) Grant no. 2011-67002-30202 from the USDA National Institute of Food and Agriculture, and the Bentley Undergraduate Research program, South Dakota State University, College of Agriculture and Biological Science.