

Research Report

Impact of nutrition messages on children's food choice: Pilot study

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Abstract

This pilot study tested the influence of nutrition message framing on snack choice among kindergarteners. Three classrooms were randomly assigned to watch one of the following 60 s videos: (a) a gain-framed nutrition message (i.e. the positive benefits of eating apples) ($n = 14$); (b) a loss-framed message (i.e. the negative consequences of not eating apples) ($n = 18$); or (c) a control scene (children playing a game) ($n = 18$). Following this, the children were offered a choice between animal crackers and an apple for their snack. Among the children who saw one of the nutrition message videos, 56% chose apples rather than animal crackers; in the control condition only 33% chose apples. This difference was statistically significant ($\chi^2 = 7.56, p < 0.01$). These results suggest that videos containing nutritional messages may have a positive influence on children's short-term food choices.

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Introduction

Poor nutrition and childhood obesity are significant public health problems in the United States (Center for Disease Control & Prevention, 2004; Koplan, Liverman, & Kraak, 2005; Ogden, Flegal, Carroll, & Johnson, 2002). Childhood obesity is a precursor to type 2 diabetes, heart problems, social stigmas, and an array of other health related problems (de Onis & Blossner, 2000; Ludwig & Ebbeling, 2001; Schwartz & Puhl, 2003). A recent report from the Institute of Medicine recommends the development and rigorous evaluation of a multi-media and public relations campaign to address childhood obesity (Koplan et al., 2005). One task is to develop innovative and effective nutritional campaigns to help children make wiser food choices.

Prospect theory states that the way in which a message is framed can influence its persuasiveness and effectiveness (Kahneman & Tversky, 1979, 1982; Tversky & Kahneman, 1981). Positive gain-framed messages state the benefits associated with doing a behavior (e.g. if you do your homework, you will succeed in school). Positive loss-framed messages state the benefits that will not occur if you do not engage in the behavior (e.g. if you do not do your homework,

you will not succeed in school). The most effective message for a desired behavior depends on a variety of factors, including whether the behavior is preventative versus detective, the certainty of the outcome, and the risks associated with the behavior (Kahneman & Tversky, 1979, 1982; Salovey, 2003; Tversky & Kahneman, 1981).

Gain-framed messages have been shown to be particularly effective for low risk preventative behaviors that have certain outcomes, such as sunscreen use (Rothman & Salovey, 1997). Research suggests that gain-framed messages yield positive results for exercise (Robberson & Rogers, 1988), application of sunscreen (Detweiler, Bedell, Salovey, Pronin, & Rothman 1999; Rothman, Salovey, Antone, Keouh, & Martin, 1993), and the use of car seats for children (Christopherson & Gyulay, 1981; Treiber, 1986). In contrast, loss-framed messages have been shown to be more effective for promoting detective behaviors associated with high risks and uncertain outcomes, such as mammography. Research has found that loss-framed messaging yields positive results for HIV testing (Apanovitch, McCarthy, & Salovey, 2003), mammography screening (Banks et al., 1995; Schneider et al., 2001), and self-breast examination (Meyerowitz & Chaiken, 1987).

To our knowledge, prospect theory has not been used to examine the most effective way to frame nutritional messages for children. This is an important area of research as nutrition messages at school compete with commercials aimed at children to eat unhealthy foods. Recently, the Kaiser Family Foundation (2004) studied the impact of advertising on

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children. Based on the available research, they conclude that ‘it appears likely that the main mechanism by which media use contributes to childhood obesity may well be through children’s exposure to billions of dollars worth of food advertising...’ (Kaiser Family Foundation, 2004, p 10). Although the underlying mechanism of why advertising works so well for children is unknown, it is clearly effective (Borzekowski & Robinson, 2001; Gaist & White, 1976; Gorn & Goldberg, 1982; Robertson & Rossiter, 1977).

Beyond the media, schools are influential environments in children’s lives and may serve as effective mediums in relaying nutritional information and health promotion messages (Center for Disease Control & Prevention, 1996). In 2003, the American Dietetic Association (ADA), the Society for Nutrition Education (SNE), and the American School Food Service Association (ASFSA) declared that a comprehensive nutritional program should be offered in all schools to students in pre-school through the twelfth grade (Position of the ADA, SNE, & ASFSA, 2003). While many agree on the importance of nutrition education, the effectiveness of nutritional intervention programs on actual eating behavior is uncertain (Campbell, Walters, O’Meara, Kelly, & Summerbell, 2001). There is evidence that some nutrition education programs produce a change in nutritional knowledge and intent, but few demonstrate a behavioral change (Caballero et al., 2003; Luepker et al., 1996). For example, Sahota and colleagues (2001) conducted a study assessing the effectiveness of a primary school based nutritional intervention for reducing the risk of obesity in children. Ten schools were selected and randomized to receive a multi-component health promotion program. While nutrition knowledge improved significantly in the intervention schools, minimal behavioral changes in dietary intake were observed. The evidence for the effectiveness of school based nutrition messages on actual eating behavior remains unconvincing.

The purpose of this study was to develop and test the impact of a commercial for apples on kindergarten children’s snack choice. Two commercials were tested: a positive gain-framed message and a positive loss-framed message. Because eating well is a preventative behavior, prospect theory would predict a gain-framed message to be more effective in encouraging children to choose apples over animal crackers. We expected the loss-framed commercial to be less effective than the gain-framed commercial, but more effective than the control commercial.

Method

Participants

A local elementary school was recruited to participate and three of the four kindergarten classrooms took part in the study. The school was in Connecticut’s Economic Reference Group ‘F’, with a mean per capita income of \$28,882. Fifty-three kindergarten students participated in the present study. Three students were excluded (one child was sent to the nurse midway through the experiment, one child refused to choose a snack, and another child had allergies and was not allowed to

participate in the behavioral portion of the experiment). This resulted in the inclusion of 23 girls and 27 boys (mean age 5.0 ± 0.04 years). The majority ($n=46$) of the children were White, two were Black not Hispanic, and two were Hispanic/Latino. Each classroom was randomly assigned to one of the three conditions: gain-framed ($n=14$), loss-framed ($n=18$), and control ($n=18$). There were no significant differences in age or ethnicity among the three classes. No children had special needs. Data collection occurred in school, and written parental consent was obtained for all subjects. The protocol was approved by the Yale University Human Subjects Committee (Protocol #C26028).

Materials

Three 60 s videos were scripted and produced for the present study. Scripts of the video were screened for validity and appropriateness of framed messages by researchers who are expert in message framing. Descriptions of the three videos are below.

Gain-framed video

A black screen appears with the following message in white font with a voice over that reads: ‘at home and at school there are many choices of food to eat. Apples are one of the healthy choices and are good for you too’. An image then appears of a young boy at a dining room table in front of a bowl of fruit. The boy picks up an apple and begins to eat it. Another image appears and a little girl at the same table sits in front of a similar bowl of fruit. She picks up an apple and begins to eat. A black screen appears with the following message in white font with a voice over that reads: ‘if you choose to eat healthy foods like apples you will have more energy to play and be active, especially with your friends’. An image then appears of a boy on a tire swing. Another young boy approaches, gesturing for the boy to join him in play. The boy joins the friend in a game of baseball. The next image shows the young girl on the same tire swing. A friend approaches, gesturing for her to play. We then see the two girls jump roping in a yard.

Loss-framed video

A black screen appears with the following message in white font with a voice over that reads: ‘at home and at school there are many choices of food to eat. Apples are one of the healthy choices and are good for you too’. An image then appears of a young boy at a dining room table in front of a bowl of fruit. The boy picks up an apple and then puts it back in the bowl. He shakes his head and pushes the bowl away from him. The next image is of a little girl sitting at the same table with a similar looking bowl of fruit in front of her. She picks up an apple and puts it back in the bowl. She then makes a sour face and pushes the bowl away from her. A black screen appears with the following message in white font with a voice over that reads: ‘if you do not choose to eat healthy foods like apples you will not have as much energy to play and be active, especially with your friends’. The next image is of the same boy, swinging listlessly on a tire swing. Another young boy approaches and

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