

# Exploring the Use of Storybooks to Reach Mothers of Preschoolers With Nutrition and Physical Activity Messages

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## ABSTRACT

**Objective:** To assess perceptions stay-at-home mothers have about their preschoolers' eating and physical activity behaviors and to explore the feasibility of using storybooks in home-based nutrition and activity programming.

**Methods:** Focus groups were conducted with 24 mothers, intercept interviews were conducted with 30 parents, and a storybook prototype was developed and pretested in 8 preschool classrooms.

**Results:** Mothers acknowledged picky eating as an issue and were less likely to identify issues with physical activity, but they were interested in information on gross motor development. Mothers strongly supported storybooks as a modality to convey and reinforce health messages at home. The storybook prototype was well liked by parents, teachers, and preschoolers.

**Conclusions and Implications:** Storybooks are a practical method to reach mothers and preschoolers and have the potential to elicit changes in eating and activity behaviors. Understanding mothers' perceptions of healthy eating and physical activity is essential to ensure that storybook messages resonate with this audience.

**Key Words:** nutrition, child, preschool, focus groups, picky eating, physical activity (*J Nutr Educ Behav.* 2013;45:362-367.)

## INTRODUCTION

It is important to establish healthful habits early in life, as children begin to form eating and physical activity patterns at a young age.<sup>1-3</sup> The preschool years, ages 3-5, present an opportune time for nutrition education, as children are eager to learn and possess a great potential for change.<sup>1</sup> In order to reach preschool-aged children, it is essential to target secondary influencers, particularly parents.

Parents are critical in the development of a child's food environment and influence the relationship the child develops with food later in life.<sup>4-6</sup> Parents have an impact on children's eating practices by controlling

availability and accessibility of food, establishing meal structure, modeling eating practices, influencing food socialization practices, and using feeding styles and practices.<sup>4,6</sup>

Additionally, parents directly and indirectly influence physical activity behaviors of their child. Factors facilitating physical activity include parental modeling, access to safe environments for activity, and organized activities.<sup>7</sup> Parental modeling through increased physical activity level has been positively correlated with an increase in preschool-aged children's activity level.<sup>8</sup>

Storybooks are a practical method to reach parents through child-driven health education in the home. Many storybooks already de-

pict food, yet they often do not depict healthful food or food-related behaviors.<sup>9</sup> Developing storybooks with targeted health messages can increase preschool-aged children's willingness to taste novel food items<sup>10</sup> and expose children to new food items through pictures.<sup>11</sup> Furthermore, storybooks can be used to promote healthful behaviors among parents.<sup>12</sup>

The *Food Friends* programs—*Fun with New Foods* and *Get Movin' with Mighty Moves*—are 2 classroom-based curricula with the objective of establishing healthful eating habits and physical activity patterns in early childhood.<sup>13-16</sup> These programs, based on Social Cognitive Theory and tenets of social marketing, have demonstrated increases in children's willingness to try new food items and enhanced gross motor abilities.<sup>13,15</sup> Program concepts include 8 superhero food characters who live in the town of Healthadelphia, where they encourage their friends (participating children) to become "Super Tasters" and "Mighty Movers." The messages, strategies, and materials were developed with target audience input (parents, teachers,

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and preschoolers) over a 12-year time frame. In addition to classroom-based materials, child-centered “Home Connection” materials have been developed to encourage and provide strategies for families to offer new food items and engage in age-appropriate physical activity, including gross motor skill development, with their child(ren).<sup>17,18</sup> Parents have expressed a strong desire for materials that stimulate children's imaginations and support dramatic play.<sup>14</sup> Storybooks have been repeatedly mentioned as a way to engage young children's imaginations, and they serve as a vehicle to communicate program concepts and messages with parents.

The primary aims of this study were to assess perceptions and expectations mothers have about eating and physical activity behaviors of preschool-aged children and to explore the use of storybooks with nutrition and physical activity messages to reach mothers of preschoolers as either a part of the existing *Food Friends* programs or as stand-alone, home-based programming. The secondary aim was to determine storybook format, messages, concepts, and potential use by parents. The third aim was for teachers to evaluate the age appropriateness and acceptance of the storybook for preschoolers.

## METHODS

Focus groups were conducted with stay-at-home mothers whose children did not attend preschool full-time and had not participated in the *Food Friends* programs. Emergent themes identified in focus groups regarding the storybook were then tested with parents whose children were enrolled in preschools participating in the *Food Friends* programs and thus were familiar with the program. This step provided additional insight into the dissemination of the *Food Friends* characters, messages, and themes in a storybook format. Finally, the storybook prototype was tested in the classroom environment with teachers and preschoolers familiar with the *Food Friends* program. This study was approved by the Institutional Review Board at Colorado State University.

## Focus Groups

A purposive sampling technique was used to recruit stay-at-home mothers of preschool-aged children from existing parenting groups, such as Mothers of Preschoolers (MOPS) and other organized parent groups. The focus groups were conducted where these groups regularly met—a YMCA, 2 community centers, and a church. A moderator trained in focus group facilitation led each 90-minute session. Prior to the start of the focus group meeting, participants completed a short questionnaire ascertaining demographic information, such as age, education level, and household income. Participants received a \$20 cash stipend.

A structured script of open-ended, probing questions was developed to assess mothers' perceptions of nutrition and physical activity behaviors of their preschool-aged child, interest in a home-based nutrition and/or physical activity program, and the proposed storybook concept (see [Supplementary Data](#)). Questions were designed to assess the behavioral capability construct of the Social Cognitive Theory<sup>19</sup> and were tested for face and content validity by 8 experts in the fields of nutrition, human development, early childhood education, and marketing. Modifications were made until concurrence was obtained among all experts. Focus group sessions were audiotaped, and handwritten notes were taken by the co-moderator. Three reviewers independently coded focus group transcripts, categorized participants' responses, and cross-verified one another's categorizations. Disagreements in coding were discussed until consensus was reached. Common ideas and themes were identified, based on the number of responses per category, as well as descriptive quotations.<sup>20</sup>

## Interviews

To confirm emergent themes identified in focus groups, brief intercept interviews, 5-10 minutes in length, were conducted with parents as they waited to pick up their children from 1 of 3 preschools participating in the *Food Friends* programs.<sup>21</sup> To eliminate the potential for participants to be included in multiple phases of the project, interviews were conducted

2 or 3 months after the completion of focus groups and in a different community. A semistructured interview protocol was developed to confirm parent perceptions of the proposed storybook format and content. Similar to focus groups, questions were tested for face and content validity, and interview results were analyzed for new themes and to confirm focus group findings.

## Storybook Prototype

The storybook prototype was based on program concepts, messages, and graphics used in the *Food Friends* programs *Fun with New Foods* and *Get Movin' with Mighty Moves*.<sup>14,22</sup> Several activities were developed to amplify messages from the storyline and to develop specific school readiness skills. The format included a program introduction page, storyline, and a parent page with activities.

The introductory page was designed to introduce the *Food Friends*, the town they live in (Healthadelphia), and the individual *Food Friends* characters depicted in the story. The prototype description included Ollie Orange and his Mighty Moves (gross motor skills), superpower (lightning quick), and favorite place in Healthadelphia (Chef Charlie's restaurant). The storyline portrayed the children trying new food items with the *Food Friends*, and 2 preschool-aged children, Zack and Zoe, at Chef Charlie's restaurant.

Following the story was a “Parent Page” with 1 simple message (“Be a good role model”) and activity suggestions that parents could do with their child(ren). Activities covered language, cognitive, social, and physical development while reinforcing story messages and behavioral concepts (try new food items and be active). Two activity examples were letter recognition of different fruits and vegetables mentioned in the story (language development) and pretending to skate with Ollie Orange at different speeds and directions (motor skills and concepts). In addition to the activities, a child-friendly recipe was also included. The activities and recipe aimed to enhance the behavioral capability of parents introducing and offering new food items and being active with their child. The storyline, messages,

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