

# Psychosocial Outcomes of *Lunch is in the Bag*, a Parent Program for Packing Healthful Lunches for Preschool Children

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## ABSTRACT

**Objective:** This pilot study evaluated effects of *Lunch is in the Bag* on behavioral constructs and their predictive relationship to lunch-packing behaviors of parents of young children.

**Methods:** Six child care centers were pair-matched and randomly assigned to intervention (n = 3) and comparison (n = 3) groups. Parent/child dyads participated. Constructs of knowledge, outcome expectations, perceived control, subjective norms, and intentions were measured by a pre/post questionnaire. Hierarchical linear regression was used, and  $P < .05$  was considered significant.

**Results:** There were significant increases in knowledge ( $P = .01$ ); outcome expectations for whole grains ( $P < .001$ ); and subjective norms for fruit ( $P = .002$ ), vegetables ( $P = .046$ ), and whole grains ( $P = .02$ ). Perceived control, outcome expectations, and intentions significantly predicted packing vegetables and knowledge predicted whole grains.

**Conclusions and Implications:** *Lunch is in the Bag* is a feasible intervention to improve the lunch-packing behaviors of parents of preschool-aged children.

**Key Words:** child care, young children, parents, vegetable, fruit, whole grain (*J Nutr Educ Behav.* 2011;43:536-542.)

## INTRODUCTION

Lack of fruit, vegetables, and whole grains (FVWG) in preschoolers' sack lunches is a serious concern, because these food items have been identified as critical to healthful growth and development, maintenance of healthful weight, and prevention of certain cancers, diabetes, and other chronic diseases.<sup>1-3</sup> Only 48% of American preschool-aged children consume the recommended number of servings of fruits and vegetables.<sup>4</sup> The average intake of whole-grain food by young children and adolescents is less than 1 serving per day, far short of the

United States (US) Dietary Guidelines, which recommend 3 servings per day or half of all servings of grains.<sup>5</sup>

The preschool years represent a period when children establish food preferences, can accurately discern between healthful and unhealthful food, and acquire dietary habits that track into their later years.<sup>6-8</sup> Almost three fourths of children in the US ages 3-5 regularly spend at least 1 day per week in care outside of the home.<sup>9</sup> This number translates to many lunch meals consumed away from home. Although the majority of child care centers prepare the lunch meal in-house, many centers require

parents to send all or part of the lunch meal from home.<sup>10</sup> Daily preparation of sack lunches is an opportunity for parents to provide regular exposure to FVWG for their preschool children. The child care center is a good setting for behavioral interventions to increase exposure to and preference for these food items.<sup>10-13</sup>

Several studies that have evaluated adult consumption of FVWG based on social cognitive theories show outcome expectations, subjective norms, and other psychosocial factors to be significant predictors of dietary intentions and behavior.<sup>14-17</sup> For example, Havas demonstrated an increased consumption of fruits and vegetables among mothers in the Special Supplemental Nutrition Program for Women, Infants, and Children was directly related to increased knowledge, self-efficacy, and attitudes.<sup>18</sup> Gibson found that mothers' nutrition knowledge, frequency of fruit consumption, and attitude about the health benefits of children's consumption of fruits and vegetables were independent predictors of children's fruit intake, whereas attitude toward health benefits predicted

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children's vegetable consumption.<sup>19</sup> Villarubia also found parents' attitudes had the strongest relationship to their intentions to serve vegetables to their third- to fifth-grade children, followed by perceived behavioral control and subjective norms, whereas intentions and perceived behavioral control had the greatest influence on the behavior of serving vegetables to their children.<sup>20</sup> Despite these studies, to the authors' knowledge, Social Cognitive Theory (SCT) and the Theory of Planned Behavior (TPB) have not been applied to studies in the child care setting targeting parents packing FVWG in sack lunches for their preschool-aged children.<sup>21,22</sup>

To enable and encourage parents to pack better sack lunches for their young children, the *Lunch is in the Bag* program was developed using SCT, and especially TPB, as a framework. The expected primary outcome was that after exposure to *Lunch is in the Bag*, parents would pack at least 1 serving each of FVWG in preschool sack lunches each day. The program consisted of brief behaviorally based activities presented through a series of handouts for parents, classroom activities for the children, and parent-child activity stations at the child care center over a 5-week period. Theory-guided proximal objectives for the *Lunch is in the Bag* program were to increase knowledge (K) about how to pack nutritious, safe, and appealing lunches, as well as increase outcome expectations (OE), perceived control (PC), subjective norms (SN), and intentions (I) for packing fruit, vegetables, and whole grains in the child's sack lunch every day.

The purpose of this pilot study was to (1) evaluate the achievement of the proximal objectives of the intervention and (2) examine the extent to which the psychosocial variables were useful as predictors of parents packing FVWG in children's sack lunches.

## METHODS

### Participants

Participants were recruited from 6 licensed child care centers in a metropolitan area in central Texas. Inclusion criteria for centers were: (1) state licensure of the center, (2) mini-

mum enrollment of 20 children ages 3-5 years, (3) care for children during lunchtime, and (4) a requirement for children to bring their lunches from home. All families of 3- to 5-year-old children ( $n = 368$ ) attending the selected child care centers were invited to participate. Center directors were provided a letter of explanation that included a draft statement of their endorsement of the program to distribute to parents the week before recruitment. Enrollment criterion for the families was participation of 1 parent-child dyad per family, with the caveat that the "parent" member of the dyad was the primary preparer ( $\geq 3$  days/week) of the child's lunch. The Institutional Review Boards of both The University of Texas at Austin and The University of Texas Health Science Center at Houston approved the study in accord with guidelines for human participants in research. Parents provided written consent before participating in study activities.

### Study Design

In a quasi-experimental design, the centers were paired by size then randomly assigned to either an intervention ( $n = 3$ ) or comparison ( $n = 3$ ) group. Data were collected at baseline and again at follow-up 6 weeks later, following the 5-week intervention. Primary outcome measures were servings of FVWG packed in the children's lunches. Proximal outcome measures were K, OE, PC, SN, and I.

### Intervention Components

*Lunch is in the Bag* is a program for parents designed to be compatible with child care centers requiring lunches sent from home. The program is an adaptation of a handout series, The Lunch Box, originally developed by the Agricultural Extension Service in San Luis Obispo, CA.<sup>23</sup> The revised handouts were sent from the center to the home where lunch packing behaviors occur, to provide education and motivation to parents on an individual level. Classroom activities were designed to provide education for the child as well as prompt parent packing behaviors. The weekly center-based Educational Activity Stations, held outside the classrooms at pickup time, encouraged

engagement of the parent and child at the interpersonal level to reinforce healthful lunch-packing decisions and behaviors. The components were designed to fit into the child care centers' current method of communication with parents, classroom curriculum, and pickup time logistics. Childcare personnel received an hour-long training led by a registered dietitian that included program content and implementation strategies. Materials were developed for sixth-grade reading competency.<sup>24</sup> The 5-week duration was determined in interviews with developers and providers of the original Lunch Box handouts and tested in group interviews with parents and child care personnel. Cultural competence of the material content and imagery was evaluated and guided by an Advisory Panel and focus group testing by parents and child care personnel. The intervention strategies were drawn from TPB and SCT and are summarized in Table 1.

### Measurement

The 2 data sources for this study were questionnaires completed by the parents and direct observation of food packed in children's lunch sacks at baseline and at follow-up. Demographic data for the parents were obtained in the baseline questionnaire. The lunch contents of participating children were recorded by trained observers on 3 random nonconsecutive days to account for variability in food packed.<sup>25,26</sup> Food observers ( $n = 5$ ) were trained with a research-based protocol,<sup>27</sup> which was modified by training the observers to recognize food items and serving sizes common to lunches of preschool children.<sup>28</sup> Observers recorded the contents of the lunches during the midmorning hours, prior to the children's lunch time. Food amounts were classified by the age-appropriate serving sizes designated by the US Department of Agriculture Child and Adult Care Feeding Program.<sup>29</sup>

Questionnaires were adapted from published survey instruments,<sup>19,30,31</sup> and additional items were developed by the study investigators and pilot-tested at 3 additional child care centers. Psychosocial variables were measured separately for FVWG. Item

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