Effectiveness of teacher modeling to encourage food acceptance in preschool children

H.M. Hendy and B. Raudenbush

Department of Psychology, Penn State University and Department of Psychology, Wheeling Jesuit University

Although Social Cognitive Theory (Bandura, 1997) suggests that teacher modeling would be one of the most effective methods to encourage food acceptance by preschool children, opinions of experienced teachers have not yet been sampled, teacher modeling has rarely been examined experimentally, and it has produced inconsistent results. The present study considers opinions of teachers and conditions under which teacher modeling is effective.

Study 1 was a questionnaire in which preschool teachers ($N = 58$) were found to rate modeling as the most effective of five teacher actions to encourage children's food acceptance.

Study 2 and Study 3 were quasi-experiments that found silent teacher modeling ineffective to encourage either familiar food acceptance ($N = 34$; 18 boys, 16 girls) or new food acceptance ($N = 23$; 13 boys, 10 girls). Children's new food acceptance was greatest in the first meal and then rapidly dropped, suggesting a "novelty response" rather than the expected neophobia. No gender differences were found in response to silent teacher modeling.

Study 4 was a repeated-measures quasi-experiment that found enthusiastic teacher modeling ("Mmm! I love mangos!") could maintain new food acceptance across five meals, again with no gender differences in response to teacher modeling ($N = 26$; 12 boys, 14 girls).

Study 5 found that with the addition of a competing peer model, however, even enthusiastic teacher modeling was no longer effective to encourage new food acceptance and gender differences appeared, with girls more responsive to the peer model ($N = 14$; 6 boys, 8 girls). Thus, to encourage children's new food acceptance, present results suggest that teachers provide enthusiastic modeling rather than silent modeling, apply such enthusiastic modeling during the first five meals before children's "novelty response" to new foods drops, and avoid placing competing peer models at the same table with picky eaters, especially girls.

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Introduction

According to Social Cognitive Theory (Bandura, 1997), teacher modeling should be one of the most effective methods to encourage young children to accept foods during preschool lunch. Parents of preschool children also given high ratings to the effectiveness of adult modeling (Casey & Rozin, 1989; Stanek, Abbott, & Cramer, 1990). However, opinions of experienced preschool teachers have yet to be considered, and surprisingly little experimental research has been conducted on the effectiveness of adult modeling to encourage children's food acceptance, and available results are inconsistent. For example, two 20-year-old studies found that adult modeling was effective when used by parents at home or teachers at school (Harper & Sanders, 1975; Highberger & Carothers, 1977), but more recent research (Hendy, 1999) found teacher modeling to be the only ineffective

action of five mealtime actions to encourage children's new food acceptance across three mealtime presentations (modeling, dessert reward, choice-offering, insisting children try-one-bite, and control conditions of simple exposure).

The inconsistent results in past research on the effectiveness of adult modeling could be explained by differences in the conditions under which it was provided. For example, Social Cognitive Theory (Bandura, 1997) suggests that modeling would be more effective with additional presentations, if the model shows rewarding consequences for the behavior, or if the model is a peer. Thus, three possible explanations were offered for the failure of teacher modeling in recent research (Hendy, 1999) and they are addressed in the present study:

(1) Teacher modeling is effective, but slowly, especially if foods are new to children. Rozin (1990) suggests that the food neophobia often displayed by young children lowers the risk of poisoning, with a child's hesitancy to eat new foods providing an opportunity to see whether others experience unpleasant consequences as a result of consuming the foods. Social Cognitive Theory (Bandura, 1997) also suggests that it would be with new foods in particular that children would slowly gain confidence to accept the foods by modeling powerful adults or similar peers. Perhaps when modeling was found ineffective in recent research (Hendy, 1999), it was because the three presentations of new food used were insufficient time to reduce such neophobia and begin food acceptance. Thus, the present study examines the effectiveness of teacher modeling when used with both familiar and new foods, and across a number of mealtime presentations.

(2) Teacher modeling is effective, but only when the teacher displays enthusiasm for the foods, showing that rewarding consequences come from eating them. When teacher modeling was found effective in past research (Highberger & Carothers, 1977), it was presented with great enthusiasm and cheering and clapping when the children followed the teacher's example (which could be considered to provide a confound because the teacher then provides verbal praise as well as modeling). When teacher modeling was found ineffective in more recent research (Hendy, 1999), it was presented with mundane and nonspecific comments of "I like to try new foods". Thus, the present study considers the effectiveness of both silent teacher modeling and enthusiastic teacher modeling ("Mmm! I love mangos!").

(3) Teacher modeling effects are overshadowed by peer modeling effects. Peers have a powerful impact on the behavior of young children in many contexts (Bandura, 1997; Harris, 1995; Schunk, 1987), and past research has demonstrated the effectiveness of peers to encourage children's food acceptance by siblings at home (Greer *et al.*, 1991) or by classmates at preschool (Birch, 1980; Duncker, 1938). Other research shows that children frequently vocalize about foods, offer them to, and request them from other children (Birch & Billman, 1986). However, the question of whether adults or peers are more effective models has only been examined in one experimental study in a preschool setting, with peer modeling found more effective than teacher modeling (Highberger & Carothers, 1977). Thus, the present study examines both teacher modeling when used alone, and when used in direct competition with peer modeling.

In addition to considering conditions under which teacher modeling would be most effective (familiar foods or new foods, immediate acceptance or delayed acceptance, silent modeling or enthusiastic modeling, teacher modeling or peer modeling), the present study considers gender differences in the effects of modeling on children's food acceptance. Girls have been found to be at greater risk for food refusal and dieting concerns from as early as eight years of age (Dolan & Gitzinger, 1994; Garner, Garfinkel, Schwartz, & Thompson, 1989, Hsu, 1989; Rolls, Federoff, & Guthrie, 1991; Shapiro, Newcomb & Loeb, 1997; Thelen, Lawrence, & Powell, 1992). Perhaps preschool children already show signs of these later gender differences in food acceptance, especially when presented during shared meals. Past experimental research rarely considers gender differences in food acceptance behaviors of preschool children. However, Harper & Sanders (1975) found no gender differences in new food acceptance by preschool children, or in their response to modeling by mothers or unfamiliar adults. Similarly, Hendy (1999) examined the effectiveness of a number of teacher actions to encourage new food acceptance (modeling, dessert rewards, insist try-one-bite, choice-offering, simple exposure) and found no gender differences in response to new foods or in response to any of the five teacher actions. However, Fisher and Birch have recently reported that when children are restricted from eating highly palatable snack foods, boys show more verbal protest (Fisher & Birch, 1999a), and girls show more unrestrained consumption of the food when it is available (Fisher & Birch, 1999b). Thus, the present study again evaluates gender differences in response to teacher modeling under a variety of conditions (familiar foods and new foods, silent modeling and enthusiastic modeling, teacher models alone and with competing peer models).

Methods

Five studies were conducted to gather opinions of experienced teachers about the effectiveness of modeling