



Short Communication

Predictors of children's food selection: The role of children's perceptions of the health and taste of foods

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ABSTRACT

Food selection, decisions about which foods to eat, is a ubiquitous part of our everyday lives. The aim of this research was to investigate the role of taste versus health perceptions in 4- and 6-year-old children's food selection. In this study, children and young adults were asked to rate the health and presumed taste of foods. Participants were also asked to indicate whether they would eat these foods in a food selection task. Overall, the results showed that taste was a strong predictor of individuals' food selection above and beyond the variance associated with age, health ratings, and interactions between age and presumed taste ratings as well as age and health ratings. These results contribute to our understanding of children's food selection, and the relative importance of a food's taste versus health in the development of these decisions.

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Introduction

Food selection, deciding what to eat, is a pervasive part of our daily lives. Adults estimate that they make over 200 food and beverage decisions a day (Wansink & Sobal, 2007). There are also frequent opportunities for children to engage in this decision-making process. By communicating to their parents their preferences, children exert great influence on what foods are available in the home and how they are prepared (Holsten, Deatrick, Kumanyika, Pinto-Martin, & Compher, 2012). Understanding children's food-related decision-making is critical given the marked rise in childhood obesity in the United States. Obesity has more than doubled in the last 30 years among children ages 2- to 5 years, and tripled among children ages 6- to 11 years. Presently, one in three children is considered overweight and obese in the United States (Centers for Disease Control, 2013). Children's decision-making is one piece of the complexity of childhood obesity that is examined in the present research.

Children's food selection is a dynamic process that is undoubtedly influenced by a variety of factors (see Wardle & Cooke, 2008). In the present research, we focus on properties related to food, particularly its taste and nutritional value. These properties of food are of particular interest because they embody distinctive information,

and sensitivity towards each kind varies with development, which may differentially impact children's food selection. Although both taste and health share some subjective and objective components, taste is mainly a hedonic assessment, a subjective matter of preference that is already evidenced early on in infancy, whereas health is mainly a cognitive assessment, based on knowledge of objective nutritional facts that emerges during the preschool years (see Nguyen, 2012 for discussion). In particular we are interested in the extent to which children's perceptions of the taste versus the health of foods predict children's food selection. We examine developmental changes by including 4-year-olds, 6-year-olds, and young adults, which allows us to see if and when cognitive appraisals of healthfulness overtake hedonic assessments in driving food selection. This age range was selected to capture any possible developmental changes, especially in light of the independent bodies of research to be described below that document how taste strongly influences children's food selection (Anliker, Bartoshuk, Ferris, & Hooks, 1991) versus adults (see Drewnowski, Mennella, Johnson, & Bellisle, 2012, for review) and how children's food cognition strengthens between the preschool, school, and adulthood years (e.g., Nguyen, 2008).

In this section, we review the potential influence of different factors on children's food selection including social, physical, and cognitive determinants. While the following review is by no means exhaustive, as such a review would be beyond the scope of this paper, it nevertheless offers a broader context to situate the present research. Much of the past research on children's food selection has focused on the myriad social and environmental factors that

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contribute to children's food choices such as peers (e.g., Frazier, Gelman, Kaciroti, Russell, & Lumeng, 2012), parents, caregivers, and other adults (e.g., Howard, Mallan, Byrne, Magarey, & Daniels, 2012), all of whom are effective models in shaping children's food choices. The types of foods that are available and acceptable for children to eat are also determined by food advertising and marketing (e.g., McGinnis, Gootman, & Kraak, 2006), as well as the socio-cultural context including the child's family and feeding practices (e.g., Rozin, 1996).

Past research has also found that food selection is a function of the properties of the food itself. There are potentially many characteristics of food that guide children's choices including its familiarity (e.g., Aldridge, Dovey, & Halford, 2009), energy density (e.g., Gibson & Wardle, 2003), as well as its sensory attributes, such as visual, olfactory, and tactile (Rose, Laing, Oram, & Hutchinson, 2004). It is well documented that taste, in particular, is a prominent force in guiding food selection; children like intensely sweet tastes and dislike bitter tastes, and prefer to eat more foods that they like the best, namely sweets (Anliker et al., 1991). This pattern contrasts with adults, who show more variability in their taste preferences and food intake (see Drewnowski et al., 2012, for review).

Currently, there is limited research on the role that children's cognition plays in children's food selection. Most studies have focused primarily on documenting children's ability to categorize food based on their nutritional value, as opposed to understanding its implications for food selection. This body of research has found that by age 4 years, children are capable of categorizing foods as healthy or unhealthy and that this ability improves significantly with development during the school age years and adulthood (e.g., Nguyen, 2008).

Whether children's cognitive assessment of health has an impact on children's food selection remains an open question. This is a central issue given the staggering rate of overweight and obesity among preschool-aged children in the United States (Centers for Disease Control [CDC], 2013).

A key way to begin promoting children's healthful food consumption is by investigating potential factors that influence children's food selection including taste and health. By understanding the relative influence of these factors, we can predict children's food choices, which can provide a basis for tailoring interventions with these factors in mind. Investigating these potential factors during the preschool years is especially important given that this is a time of rapid development in children's learning and experience within the domain of food (e.g., Birch & Fisher, 1998).

In the present investigation, we examine the relative importance of children's perceptions of the taste and health of foods in determining children's food choices. We had two main competing hypotheses. On the one hand, taste may be a more powerful determinant of food selection than health and the age of the participant, in which case participants' hedonic assessments of taste should drive food selection. On the other hand, health may be a more powerful determinant of food selection than taste and the age of the participant, in which case participants' cognitive assessments of health should drive food selection. The former hypothesis is more consistent with prior research documenting the major influence of taste in children's food selection (Anliker et al., 1991) whereas the latter hypothesis is more consistent with prior research documenting children's increasing ability for food cognition.

Materials and methods

Participants

There were 72 participants total ($M_{age} = 10.03$, $range = 4.13$ – 24.47 , 35 females, 37 males). Specifically, there were twenty-four

4-year-olds ($M_{age} = 4.51$, $range = 4.13$ – 4.93 , 12 females and 12 males), twenty-four 6-year-olds ($M_{age} = 6.14$, $range = 5.46$ – 6.94 , 11 females and 13 males) and 24 young adults ($M_{age} = 19.45$, $range = 18.05$ – 24.47 , 12 females and 12 males). All of the participants were recruited from preschools and a university in a predominantly middle class, European-American city located in the Southeastern United States.

Materials

The materials included 21 color photographs of food that were selected based on pre-testing of children's familiarity with these foods. Each photograph was printed separately on a piece of 8.5×11 in. white paper. To minimize concerns regarding the potential influence of packaging on participants' responses, the photographs included images of only the target foods or these foods placed in nondistinctive containers (e.g., milk in a glass). There were three foods from each of the following seven food groups inspired by the USDA food pyramid: dairy (cheese, milk, yogurt); fats (French fries, nachos, potato chips); fruits (apples, bananas, oranges); grains (bread, cereal, noodles); meats (beef, chicken, fish); sugars (candy bar, cake, cookies); and, vegetable (broccoli, peas, spinach).

Procedure

Participants completed three tasks: health, presumed taste, and food selection. For the health task, participants were presented with 21 foods, one at a time, and asked to rate their health (i.e., "How healthy is this broccoli?") using a scale ranging from 1 to 3 (1 = *not at all healthy*, 2 = *kind of healthy*, 3 = *very healthy*). For the presumed taste task, participants were asked to rate the same foods based on their taste (e.g., "How yummy is this broccoli?") using a scale also ranging from 1 to 3 (1 = *not at all yummy*, 2 = *kind of yummy*, 3 = *very yummy*). For the food selection task, participants were asked if they would eat the foods from the seven food groups presented in the health/presumed taste tasks (e.g., "Would you eat this broccoli?").

Results

Participants' responses were summed and averaged into a mean score for the health ($M = 47.34$ out of 63, $SD = 4.21$), presumed taste ($M = 51.61$ out of 63, $SD = 5.07$), and food selection ($M = 16.87$ out of 21, $SD = 3.36$) tasks.

We first calculated Pearson correlation coefficients to examine the relationship between participant's food selection and the three variables of participant's age (calculated in years and months), presumed taste ratings, and health ratings. Results indicate that food selection is strongly correlated with both age and presumed taste ratings, such that as participants' age or presumed taste ratings increases, participants' tendency to say that they would be willing to eat a food also increases, $r's(70) = 0.34, 0.53, p's < .05$. However, there was no correlation between food selection and health ratings, $r(70) = -.04, p > .05$.

Next, we conducted a simultaneous multiple regression analysis that included participants' age (calculated in year and months), health ratings, presumed taste ratings, the interaction between age and health ratings, and the interaction between age and presumed taste ratings as the predictor variables with food selection as the outcome variable. The results indicate that presumed taste ratings ($p < .05$) predict food selection above and beyond the variance associated with age, health ratings, and the interaction terms. Together, these variables accounted for 42% of the variance in food selection (see Table 1).

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