



Do parents form their children's sweet preference? The role of parents and taste sensitivity on preferences for sweetness in pre-schoolers



Frida Felicia Fry Vennerød^{a,b,*}, Valérie Lengard Almli^a, Ingunn Berget^a, Nanna Lien^b

^a Nofima AS, P.O. Box 210, 1431 Ås, Norway

^b Department of Nutrition, Institute of Basic Medical Sciences, University of Oslo, PO Box 1046, Blindern, 0316 Oslo, Norway

ARTICLE INFO

Keywords:

Children
Preference
Sweet
Parental influence
Parental attitude
Sensitivity

ABSTRACT

Children generally have a high acceptance for sweetness, but differ in their preferences for the intensity of the taste. This study investigates how food exposure, parental attitudes and behaviours, and children's taste sensitivity are associated with five-year olds' preferences for sweetness.

Preference data were collected from 135 children at ages four (Mean age: 46.3 months, SD: 3.4, 56% boys) and five years old (Mean age: 57.5 months, SD: 3.3; 58% boys) in a ranking by elimination procedure in the springs of 2015 and 2016. The taste carriers were fruit-flavoured beverages and dark chocolate, both with three levels of sugar content. Quantitative descriptive analysis testified three distinct levels of sweetness in each sample triad. The same children were also tested for sweetness and bitterness taste sensitivity in a paired comparison procedure. The protocols did not require the children to respond verbally, and included elements of gamification in order to engage the children. In addition, a parental questionnaire enquired about exposure to different foods, parental food attitudes and behaviours as well as socio-demographic characteristics.

Path modelling using PLS-SEM indicated that differences in children's preference for sweetness could be explained by differences in exposure to foods, including more frequent exposure to sweet foods and snacks associated with a higher sweet preference. More frequent exposure to fruit and bitter snacks, were associated with a lower sweet preference for the drink and chocolate, respectively. Parental attitudes and behaviours as well as children's sensitivity to sweetness and bitterness were significantly associated with what foods the children were frequently exposed to, and to their sweetness preferences in beverages and chocolate.

1. Introduction

Healthy food habits for children are important both during childhood and in a longitudinal perspective. Food habits are relatively stable throughout the childhood years (De Cosmi, Scaglioni, & Agostoni, 2017; Maier-Nöth, Schaal, Leathwood, & Issanchou, 2016; Mannino, Lee, Mitchell, Smiciklas-Wright, & Birch, 2004; Nicklaus, 2016), and food variety persists from childhood to adolescence and early adulthood (Nicklaus, Boggio, Chabanet, & Issanchou, 2004). To establish healthy habits, it is important to understand the factors that influence these habits. Food preferences have been found to be the main predictor of food habits in children (Cooke, 2007; Liem & Mennella, 2002), and the correlation between food preferences and actual consumption of foods are significantly higher for children than adults (Birch, 1979).

Highlighting the importance of understanding preferences, preference for sweet taste is related to overweight in children (Lanfer et al., 2012), and a diet with high levels of sugar is not in line with the recommendations for healthy food habits (Commission of the European

Communities, 2007; Helsedirektoratet, 2015; WHO, 2016).

2. Theory

2.1. Development of sweet taste

The innate preference for sweet taste is identified and universally accepted (Lawless, 1985; Schwartz, Issanchou, & Nicklaus, 2009), as infants generally prefer sweet taste to no taste (Mennella, Finkbeiner, Lipchok, Hwang, & Reed, 2014; Schwartz et al., 2009). Furthermore, children have a higher preference for sweet taste than adults do (Lawless, 1985; Schwartz et al., 2009). However, there are large differences in preferences for sweetness also among children, and the reasons for these differences are not fully understood. The higher preference for sweetness in children compared to adults might be due to lower sensitivity, in particular for sucrose (De Graaf & Zandstra, 1999). Supporting the link between taste sensitivity and preference, sensitivity for the bitter agent quinine has been found to indicate a preference for

* Corresponding author at: Department of Nutrition, Institute of Basic Medical Sciences, University of Oslo, PO Box 1046, Blindern, 0316 Oslo, Norway.
E-mail address: Frida.vennerod@nofima.no (F.F.F. Vennerød).

higher sucrose intensities (Duffy, Peterson, Dinehart, & Bartoshuk, 2003; Hayes & Duffy, 2008). More bitter-sensitive variants of the bitter receptor gene TAS2R38 have also been associated with both higher sugar intake in children (Joseph, 2015) and sweet preference (Mennella, Pepino, & Reed, 2005). Additionally, adult PROP-tasters find vegetables to be both more bitter and less sweet than non-tasters (Dinehart, Hayes, Bartoshuk, Lanier, & Duffy, 2006), highlighting the complex relationship between sweetness and bitterness, but more research is needed to understand this relationship in children.

Two other individual factors that could influence sweet preferences are age and gender. A general increase in sweet preference through the preschool years has been found (Cooke & Wardle, 2005; Lanfer et al., 2013), but as far as we know, there are no longitudinal studies investigating this with pre-schoolers. Regarding gender, Cooke and Wardle (2005) reported boys to have a higher liking for sweet items than girls do, while Liem and De Graaf (2004) did not find a gender effect on children's sweet preferences.

Parental health attitudes and behaviours are important throughout the preschool years, as the parents usually decide what food is available for their children at home. Mothers generally do not serve their children food they dislike themselves (Skinner, Carruth, Bounds, & Ziegler, 2002), indicating that food preferences can be learned through shared environmental exposure.

Additionally, adults with low health concern tend to prefer sweeter foods (Pohjanheimo & Sandell, 2009), and let their children eat sweets more often (Schneider, Jerusalem, Mente, & De Bock, 2013). This heightened exposure to sweet foods can influence the children in two ways: Firstly, it will familiarize the children to these items, and the children might thus end up preferring higher intensities of sweetness (Liem & Mennella, 2002). Secondly, a high sweet preference might be inherited through modelling, as children learn through observations and modelling from others (Bandura, 1977). Parents are the most important role models for children (Kildegaard, 2011), and might thus model their own preferences on to their children through their own dislikes or likes of certain foods. Support for this model is found in studies indicating that the diet of children is directly influenced by their parents' diet (Brown & Ogden, 2004).

The parental use of food as a reward for good behaviour has been found to influence children's food preferences, and is commonly used (Casey & Rozin, 1989; Schneider et al., 2013). Using food as a reward reinforces the positive relationship towards the food rewarded (Schneider et al., 2013); but only if it is liked (see Cooke, Chambers, Añez, & Wardle, 2011, for a review). The conditioned response to frequently being given sweet foods as a reward might therefore be a heightened preference for sweet items (Birch & Fisher, 1998; Newman & Taylor, 1992). Additionally, a higher preference for very sweet items might develop even though sweet items are rarely consumed, if the sweet items are given as rewards. Children of parents who use food rewards also consume more sweets (Vereecken, Keukelier, & Maes, 2004).

The number of children can also alter the parents' behaviours: Children with older siblings are exposed to more snack foods than children without older siblings (North & Emmett, 2000; Robinson et al., 2007), whereas first-born children are exposed to more fruit and vegetables (Scott, Chih, & Oddy, 2012). North and Emmett (2000) explain this difference as being due to parental time-constraint, increasing the amount of ready-meals and snacks, and decreasing fruits and vegetables, as well as younger children receiving snacks just because their older siblings do. Hence, family size influences parental behaviours, and therefore their children's food exposure.

2.2. Hypotheses

This study investigates how food exposure, parental attitudes and behaviours, taste sensitivity, as well as gender and age influence preferences for sweetness intensities in fruit-flavoured beverages and dark

chocolate. We formulated three main hypotheses.

H1. Children's diet influences their sweetness preference

In particular, we propose that more high-sweet food and snacks exposure will lead to a higher preference for sweetness, more fruit exposure will lead to a lower sweet preference, and more bitter snacks exposure will lead to a lower preference for sweetness/higher preference for bitterness in dark chocolate.

H2. Parental attitudes and behaviours influence their children's sweet preferences, both directly and indirectly through their effect on food exposure

We propose that children of parents who use a higher level of food rewards will have a higher preference for sweetness. Additionally, children of parents with less healthy attitudes will be more frequently exposed to sweet foods, and less frequently to both fruit and bitter snacks. Having older siblings will also contribute to a higher exposure to sweet food and snacks, and a lower exposure to fruits.

H3. Children's taste sensitivity influences their sweetness preference and sweet items exposure

We propose that children with a lower sensitivity for sweetness will have a higher preference for high sweetness intensities, and will more frequently be exposed to high-sweet food and snacks. Finally, we propose that children with a higher sensitivity for bitterness will have a lower preference for high sweetness intensities, and will be more exposed to bitter snacks and less to high-sweet items.

3. Materials and methods

3.1. Study overview

Two types of data have been collected, both from the first and second year of a longitudinal study investigating taste preferences during the preschool-years from age four to age six. Firstly, sweet preferences in chocolate and beverages, as well as taste sensitivity for sweetness and bitterness, were tested with children in their kindergartens. Secondly, their parents received a web-questionnaire regarding both the child's food exposure, and parental attitudes and behaviours regarding food and meals for their child. The children were recruited from 16 different kindergartens in the Follo region in Norway. In total 175 children were invited of which 145 received parental consent to participate for at least one year during the data collection, and 135 participated during both years. Before each test, the children had to agree verbally to participate. The main characteristics of the participants are given in Table 1.

The experimenters visited each kindergarten four times each year in spring, in a pattern of once a week during four weeks. The first visit aimed at familiarising the children with the experimenters, the second and third visits were sensitivity testing sessions and the last visit was the preference testing session on beverages and chocolate. Nine experimenters in total managed the test sessions, and the same two experimenters tested each kindergarten across all sessions each year. The overall design of the testing sessions is presented in Vennerød, Hersleth,

Table 1
Main characteristics of the participants.

Year	Respondent population (Invited)	Min age - Max age in months	Mean age in months (SD)	Boys
1	140 ^a (170)	39–51	46.3 (3.4)	56%
2	140 ^a (145)	49–61	57.5 (3.3)	58%

^a One hundred and thirty-five children participated in the study in both years. Five children dropped out of the kindergartens in the study after Year 1, whereas five new children started in one of the kindergartens between Year 1 and Year 2 in the study.

Download English Version:

<https://daneshyari.com/en/article/5736023>

Download Persian Version:

<https://daneshyari.com/article/5736023>

[Daneshyari.com](https://daneshyari.com)