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## A concept test of novel healthy snacks among adolescents: Antecedents of preferences and buying intentions



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### ABSTRACT

The purpose of this empirical study was to test (1) which of eight novel healthy snack concepts based on fresh fruit and vegetables that 10- to 16-year-old adolescents in Denmark prefer and intend to buy, and (2) which factors explain preferences and buying intentions. Our results revealed that the adolescents are positive in their reported preferences and buying intentions, however with higher preferences than buying intentions. Furthermore, we found that preferences and buying intentions were not solely triggered by the same factors. A shared trait of the models was that being a girl and perceiving high need satisfaction will increase both preferences and buying intentions. Nevertheless, preferences will increase the more snacks are perceived as cool and the stronger the peer influence is perceived to be, whereas buying intentions will increase the higher the personal importance of the snack attributes is perceived to be, the higher the willingness to try new snacks among best friends at school and the lower the willingness to try new snacks among other peers outside school. The findings indicate the importance of considering both preferences and buying intentions in future product development processes and sales forecasts. Moreover, it is recommended that marketers first focus their distribution of novel healthy snacks targeted at adolescents on school canteens and later on food stores, as it may be easier to make adolescents buy novel healthy snacks in safe environments among peers, such as at school.

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### 1. Introduction

Previous research has investigated families' food purchases including the roles and influence of children and parents (e.g. Foxman, Tansuhaj, & Ekström, 1989; Nørgaard, Brunso, Christensen, & Mikkelsen, 2007). It was found that in a family context small in-between meals are highly influenced by adolescents aged 10–13 (Nørgaard et al., 2007), and that snack products are typically among the first food products that adolescents buy with their own money and for their own consumption outside a family context (Brown, McIlveen, & Strugnell, 2000; Nicklaus, Boggio, Chabanet, & Issanchou, 2004). Nevertheless, only few studies have investigated adolescents' snack purchases made with their own money outside a family context.

Many snacks today have a high content of saturated fat, salt and refined sugar; these dietary factors are believed to have negative health consequences (Lloyd-Williams, Mwatsama, Ireland, &

Capewell, 2009). Still, only few healthy snack alternatives on the market are based on fresh fruit and vegetables; most of these are targeted at adults or at parents with small children; only few are targeted directly at adolescents.

Previous research has reported that small European fruit and vegetable producers and small snack producers meet serious challenges in their product development processes including conducting continuing consumer tests which are seen as expensive (SyLOW, 2005). Research has found that involving consumers directly at several stages in new product development (NPD) processes is cost effective compared to using traditional manufacturer-based development methods (Franke & von Hippel, 2003; Franke, von Hippel, & Schreier, 2006; von Hippel, 2001). Nonetheless, there is a call for low-cost testing of the appeal of new product concepts at the early stages in the NPD process (Dahan & Srinivasan, 2000). The rapidly increasing importance of the Web provides unique opportunities for cheap Web-based survey research (Parackal & Brennan, 1999). Virtual tests may help reduce uncertainty as well as costs of new product introductions by allowing more idea concept testing and customer input at all stages of the NPD process (Dahan & Hauser, 2001; Dahan & Srinivasan, 2000). An increasing level of

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Web-based methods regarding customer insight has been explored (Liechty, Ramaswamy, & Cohen, 2001; Urban & Hauser, 2003). So far, only limited research on Web-based snack concept testing has been conducted among adolescents.

This paper presents research that focuses on development of novel healthy snack products based on fresh fruit and vegetables and targeted at adolescents aged 10–16 years. These snack products are meant for adolescents to buy with their pocket money for consumption outside their family context. The objective of the research presented in this paper is to explore which of eight novel healthy snack concepts, previously developed in our project, adolescents prefer and intend to buy, and moreover which factors determine preferences and buying intentions. The results will be used in further development of snack prototypes in our project, and may also be used as input in other NPD processes. Thus, the NPD process is the rationale behind this investigation as it puts the concept test into perspective. One key success factor in the launch of a new product is a well-defined, idea-generated product concept before venturing into the physical product development (Cooper & Kleinschmidt, 1990; Geissler & Gamble, 2002).

## 2. Previous studies and the objective of the present research

Consumer concept evaluation is a matter of making consumers indicate their liking and buying intention as regards proposed products presented as verbal descriptions consisting of product attributes (Geissler & Gamble, 2002; Green, Carroll, & Goldberg, 1981; Peng & Finn, 2010). In an evaluation of novel healthy snack concepts targeted at adolescents, this paper emphasises buying intentions and overall preferences in terms of liking as well as attribute liking.

General consumer behaviour theories like the *Theory of Planned behaviour* (ToPB), hypothesises that buying intentions influence actual buying behaviour including product choices (Ajzen, 1991; Fishbein & Ajzen, 1975). In concept tests buying intention and purchase probabilities have both been found to be good predictors of actual purchases (Brennan, Esslemont, & Hini, 1995; Juster, 1966; Peng & Finn, 2010). Still, only limited research exists on antecedents of adolescents' novel healthy snack buying intentions in concept tests. We assume various factors to predict adolescents' novel snack buying intentions. ToPB is a general consumer behaviour theory which was not specifically developed for food products. In food research, e.g. sensory consumer research, the focus is on liking. Tuorila-Ollikainen, Lähteenmäki, and Salovaara (1986) suggest the inclusion of liking as an additional antecedent of buying behaviour in the ToPB-model.

Food preferences are one of the primary predictors of food choice and consumption (Birch, 1999). Recent research among adolescents aged 11–16 years found a high predictability of snack preference ratings on real snack choices (Mielby, Nørgaard, Edelenbos, & Thybo, 2010). Research finds that familiar flavours may increase children's willingness to taste novel foods (Pliner & Stallberg-White, 2000). Consequently this indicates that the level of snack novelty and familiarity should be balanced. When children reach adolescence, they seek food experimentation and variety in social settings outside the family home (e.g. among peers) in order to develop independence traits distancing them from their parents (Brown et al., 2000). At the same time, their food preferences expand and increase in complexity (Zeinstra, Koelen, Kok, & de Graaf, 2007). Perceived food complexity has been found to influence food preferences (Lévy, MacRae, & Köster, 2006) indicating that snacks for adolescents should have several levels of complexity in terms of combinations of various types of products.

A recent study among adolescents aged 11–16 years found that from a selection of existing snack products, boys chose baked

savoury and sweet snacks whereas girls chose fruit snacks (Mielby, Edelenbos, & Thybo, 2012). These gender differences indicate that snacks for adolescents should satisfy various needs including hunger state.

The perceived importance of snack attributes changes with age along with, for instance, children's consumer socialisation (John, 1999). From the age of 7 to 11 years, children focus on more cognitively based attributes such as healthiness and adulthood (Bahn, 1989), and 11- to 12-year-old adolescents start to understand how nutrients are incorporated into the diet and how these can affect the body (Contendo, 1981; Ton Nu, MacLeod, and Barthelemy, 1996). Thus, various attributes may be important for adolescents, and they are able to handle comparisons of various attributes (John, 1999). They know that they should eat healthy, but on the other hand other aspects such as taste, peers, adulthood and distance to parents may be very much in focus too. Still, not much research indicates which snack attributes adolescents find to be most important.

As a consequence, we assume that there are number of factors that influence adolescents' snack buying intentions; included in these are snack preferences and snack attribute importance. Also, we assume that various factors influence adolescents' snack preferences; included in these are snack attribute importance.

Food preference theories hypothesise that neophobic reactions to food are an element of children's predisposition influencing their food preferences (Birch, 1999). In psychology, neophobia is defined as a fear of trying something new. Food variety seeking and food neophobia have both been found to influence adults' food choices (Lähteenmäki & Arvola, 2001) and to be likely to take place in young children (Nicklaus, Boggio, Chabanet, & Issanchou, 2005). Pliner and Hobden (1992) developed the *Food Neophobia Scale* (FNS) that measures food neophobia (i.e. trait neophobia) among young adults using ten items on a seven-point agreement scale. Loewen and Pliner (2000) adapted the FNS scale to fit self-report measurement among 7- to 12-year-old children, the *Food Situations Questionnaire* (FSQ). Research using the FSQ scale among 7- to 12-year-old children found that the oldest were more willing to taste novel foods than the youngest ones (Loewen & Pliner, 2000). As children reach adolescence, food preferences tend to change. At this stage, adolescents may be more at liberty to select foods in accordance with their own individual preferences. They start turning to product choices, for instance in the snacking category, that distinguish them from their parents, which supports their development as individual consumers (Brown et al., 2000; Nicklaus et al., 2004; Ton Nu et al., 1996). Thus, adolescents aged 10–16 years may represent other aspects of food variety seeking and neophobia than the younger ones. Still, limited research investigates 10- to 16 year-old adolescents' snack neophobia.

Consumer behaviour theories, like ToPB, hypothesise that social influence in terms of perceived social norms predicts buying intention (Ajzen, 1991; Fishbein & Ajzen, 1975). Among the factors influencing food choice are social norms and social agents like peers (Birch, 1980; Stratton, 1997). Family and peers are the most important social influence agents in children's consumer socialisation process (John, 1999). Social influence plays different roles in different time frames (Feunekes, de Graaf, Meyboom, & van Staveren, 1998). Early studies found peer influence to increase with age as parental influence wanes (Moschis & Churchill, 1978; Ward, 1974). In the transition period when children reach adolescence, the influence and behaviour of peers is one of the most important influence sources (Elverdarm & Sørensen, 2003; Linn, 2006; Moschis & Moore, 1979). Recent research on adolescents in the 13- to 15-year age group found that peer pressure and a desire to be like the others were strong determinants of the consumption of less healthy snack products (Bech-Larsen, Jensen, & Pedersen, 2010). Adolescents aged about 10–16 years are socially aware,

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