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Exploring the moderating effect of children's nutritional knowledge on the relationship between product evaluations and food choice

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ABSTRACT

Objective: Although the last decade has seen multiple attempts to increase consumers' nutritional knowledge in expectation that this will result in healthier diets, extant knowledge about the influence of nutritional knowledge on children's food choices remains scarce due to mixed empirical evidence and limited inquiry into the role of product evaluations on the consumption of less healthy foods. Furthermore, no research has examined whether nutritional knowledge can effectively moderate the relationship between product evaluations and food consumption, leaving a gap in our knowledge about potentially effective intervention strategies to curb childhood obesity.

Method: Using survey data from children aged 7–13 years and their parents ($N = 354$) recruited at an annual fair visited by families in South Australia, regressions were performed to examine how product evaluations are associated with the consumption of less healthy foods and whether nutritional knowledge reduces the strength of these associations at different ages (7–8 years, 9–10 years, and 11–13 years).

Results: While children did not view fast foods to be fun or healthy, there was a positive association between appealing taste, perceived social acceptability and consumption of less healthy foods. Higher nutritional knowledge weakened the relationship between product evaluations and consumption in children younger than 11. Parents with higher nutritional knowledge had children who tended to consume less healthy foods less frequently. Although older children (11–13 years) possessed higher nutritional knowledge, it was not associated with their consumption; instead, taste and perception of social acceptability were the only factors associated with frequent consumption of less healthy products.

Conclusion: Practitioners are encouraged to test intervention strategies that concentrate on both product evaluations and nutritional knowledge to provide more effective outcomes. Further research about peer norms that endorse unhealthy eating is encouraged to facilitate a more comprehensive approach to unhealthy eating.

1. Introduction

Food is inherently embedded in our lives—it is a source of sustenance, occasional indulgence and a way to define oneself or a culture (Rappoport, 2003). Over time, economic development has led to an increase in the variety of available foods and grocery items (Drewnowski, 1997). This has coincided with a worldwide increase in rates of adult overweight and obesity (Benton, 2004), which has been labelled as an epidemic (Lobstein and Dibb, 2005). Two decades ago, overweight and obesity rates also began to increase significantly amongst children (Lobstein et al., 2004) and have since generally grown at a faster pace compared to those in the adult population (Allman-Farinelli et al., 2008; Hebden et al., 2012). While the prevalence of overweight and obesity is higher in economically developed regions (Lobstein et al., 2004), it is also increasing in developing countries (Gupta et al., 2012), highlighting the importance of research about factors associated with obesity and overweight. Because chronic diseases take decades to develop, and many of them have roots in childhood (CSPI, 2003), prevention of obesity amongst children and adolescents represents an important public health goal (Reisch and Gwozdz, 2011). The implications of childhood overweight and obesity are significant as they predispose children to risks of type 2 diabetes (Carter, 2006), breathing difficulties, increased risk of fractures, hypertension, cardiovascular

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disease, and insulin resistance (WHO, 2015). Generally, obesity developed during childhood is very likely to continue in adulthood (WHO, 2015), which is associated with further health complications (Phipps et al., 2004; Shunk and Birch, 2004). There is also an element of inheritance and environment in the current obesity pandemic, where obese children are more likely to remain obese in adulthood if both parents are obese (Lake et al., 1997), further highlighting the importance of obesity prevention research.

Successful intervention programmes to curb childhood obesity require an in-depth understanding of factors that lead to the development of unhealthy lifestyles (Reisch and Gwozdz, 2011) especially at a younger age when food preferences still develop (Birch, 1999). Food consumption represents an important outcome of consumer development due to the highly industrialised nature of today's food production, increasing reliance on takeaways by busy working families and extensive food advertising to children. For decades, scholars have been researching factors that could equip consumers with the necessary skills to make healthy food choices and there have been multiple attempts to increase consumers' nutritional knowledge in expectation that it will guide them towards healthier diets (Crites and Aikman, 2005). In general, nutritional knowledge increases with age (Wiman and Newman, 1989). Although it is related to a better understanding of nutritional information displayed on food products (Grunert et al., 2013), adult consumers do not utilise such knowledge consistently when selecting food products (Saarela et al., 2013). Similarly, empirical evidence about the role of nutritional knowledge in children's food consumption is also mixed (Gibson et al., 1998; Zive et al., 1998), which has led to criticism of this approach in preventing childhood obesity (Harris and Graff, 2012). Yet, most studies about the determinants of healthy eating have relied on the socio-cognitive approach (Bandura, 1998), where choices between healthy and less healthy foods are expected to be made based on self-efficacy and expectations of negative health consequences, assuming that food consumption is rational and is based on consumers' general knowledge (Bech-Larsen et al., 2010).

While nutritional knowledge reflects more rational involvement of consumers with foods, food choices may also be influenced by *product evaluations*, which reflect more aspirational and hedonistic aspects of food consumption (i.e., more emotional involvement). Adolescents' food choices in particular have been described in the literature as more irrational, symbolic and susceptible to social influences (Bech-Larsen et al., 2010; Stead et al., 2011). Product evaluation can form through various channels – as young consumers are exposed to food advertising, socialise with peers or try out different foods, they may form diverse evaluations associated with certain foods. For example, fast foods may be associated with lower nutritional value but appealing taste and popularity amongst peers (Bech-Larsen et al., 2010). Although the food industry has been using taste, fun and social appeals to advertise foods to children in an attempt to build positive product associations and brand loyalty for a long time (see Cairns et al., 2013; Folta et al., 2006; Hebden et al., 2011; Warren et al., 2007), product evaluations attracted scholars' attention only recently (Pettigrew et al., 2013). Children receive advertising and nutritional messages from various sources, and the influence of product evaluations and nutritional knowledge on food consumption needs to be carefully investigated in the current consumer environment characterised by integrated food marketing, aiming to influence not only young consumers' knowledge and attitudes but also dietary behaviour (Brand, 2007; IOM, 2006).

Past research unequivocally shows that *taste* represents an important influencer on food choices not only amongst children (Baxter et al., 2001; Jones and Kervin, 2010) but also amongst adolescents and adults (French et al., 1999; Glanz et al., 1998; Neumark-Sztainer et al., 2003). In addition to taste, qualitative research with parents suggests that fun appeals create greater connection between children and food brands (Roberts, 2005).

When it comes to how children evaluate products in terms of their nutritional value (i.e., *healthiness*), research is rather limited. On the one hand, older children certainly tend to be more health conscious than younger ones, but at the same time they consume less fruit and drink more soft drinks (Warwick et al., 1999) due to their increasing independence from parents and rising influence of peers (IOM, 2006). Furthermore, the dissonance between indulgence and health consciousness is prevalent amongst adolescents attempting to switch from unhealthy to healthier diets (Bech-Larsen et al., 2010), which suggests a general understanding of lower nutritional value of snacks and fast foods amongst older consumers. There is, however, little research assessing whether young consumers prefer less healthy foods as a result of false evaluations about their healthiness or lower nutritional knowledge. Furthermore, interactions with peers represent an important factor for consumer socialisation (John, 1999). Young consumers' decisions are generally adapted to peer groups to avoid social discrimination or teasing (Roper and Shah, 2007), and children's food consumption, in particular, needs to be considered in a social context; that is, it creates a self-image and conformity with peer norms (Stead et al., 2011). Due to vicarious learning and social interaction, young consumers accumulate knowledge about foods which are considered to be *popular*, and research generally supports peers' influence over low-involvement products such as snacks (Bech-Larsen et al., 2010; Nørgaard et al., 2012) in addition to high-involvement ones (Bachmann et al., 1993). Finally, perceptions of *what other people think is acceptable to consume* (i.e., social acceptability) represent another important factor potentially related to young consumers' behaviours which, again, has not been examined in detail in the context of children's food consumption (Lally et al., 2012). The construct of social acceptability goes beyond the impact of peers as it incorporates wider social influences, such as that of other significant people present in children's environment, conforming to the key tenets of social cognitive theory which suggests that behavioural patterns develop based on the types of models which dominate the immediate social environment (Bandura, 2002).

While qualitative research suggests that eating less healthy foods evokes positive experiences of taste, fun and coolness amongst adolescents (Bech-Larsen et al., 2010), the association between product evaluations and behaviour has never been assessed empirically. Notably, however, the application of children's nutritional knowledge to food consumption has not been studied while controlling for product evaluations, and the role of both on consumer decisions has yet to be examined. If nutritional knowledge is studied only in relation to weight (Reinehr et al., 2003) or food consumption (Gibson et al., 1998; Zive et al., 1998) without a detailed understanding of its association with product evaluations, the mechanism through which nutritional knowledge can lead to healthier food choices remains unclear. Given the urgency of the increasing childhood obesity rates on a global scale and the magnitude of this public health problem, this knowledge gap needs to be addressed. This study provides original contributions to the field of social marketing and public health by assessing not only the association between food consumption and nutritional knowledge, but also food evaluations. It has also examined for the first time the moderating role of nutritional knowledge in the relationship between product evaluations and children's consumption of less healthy foods. The latter has been chosen as a key outcome variable in this study because over time, children have gained a lot of influence over fast-food restaurant visitation (Spake, 2003) and unhealthy food selection in family purchasing (Nørgaard