



Evidence of attitude change through taste experience in 10–19 year-olds



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ABSTRACT

This study examines attitudes towards eating fish for dinner in 10–19 year-olds and how these attitudes are affected by a taste experience with different fish and seafood. The main objective is to better understand how taste experiences, good or bad, influence attitudes towards eating fish for dinner. 211 children and teenagers responded to items measuring attitudes on two occasions, before and after a taste experience (i.e. pre-intervention and post-intervention). Data analyses included Wilcoxon Signed Rank Tests to assess the taste experience's impact on attitudes and Kruskal–Wallis Tests to examine differences in attitudes between subgroups (e.g. gender, age groups). It was found that taste experience can contribute to a positive attitude change, and further that there was a significant difference in attitudes between age groups. Early exposures to fish and seafood are suggested to be a promising intervention strategy to increase consumption. Further research into this topic is needed.

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Introduction

The Norwegian Directorate of Health emphasizes the importance of increasing the fish consumption in the Norwegian population (Johansson, 2012). Olsen (2003) found that age is positively related to the frequency of seafood consumption, meaning that younger people eat less seafood than their parents and grandparents. This tendency has been proven repeatedly (Myrland, Trondsen, Johnston, & Lund, 2000; Trondsen, Braaten, Lund, & Eggen, 2004b; Verbeke & Vackier, 2005). The relationship between age and seafood consumption is however mediated by attitudinal and motivational variables (Olsen, 2003). In Verbeke and Vackier's (2005) study of fish consumption in Belgium they found that households with children consume less fish than households of only adults. The authors argue that this observation could be due to the fact that persons with children under 18 in the household mainly take the opinion of their partner and children into account. A Norwegian study however found that seafood consumption is positively related to household size (Myrland et al., 2000).

Eating habits and patterns develop from early childhood, when children learn what, when and how much to eat by direct experience with foods and by observation of others (Birch, Savage, & Ventura, 2007). Children need positive and repeated experiences with healthy foods to learn to like and appreciate such foods (Savage, Fisher, & Birch, 2007). Ton Nu, MacLeod, and Barthelemy (1996) observed a gender and age effect on food habits and

preferences in French 10–20 year-olds. Habits have also been found to influence consumption of fish (Trondsen, Braaten, Lund, & Eggen, 2004a; Verbeke & Vackier, 2005), and Sveinsdóttir et al. (2009) argue that it is important to build a foundation for fish consumption early in life to increase the likelihood of growing up to be fish consumers. Liem and de Graaf (2004) found that after an 8-day repeated exposure to an orange beverage in childhood, children's preferences for that beverage significantly increased. Several other studies show the same (Anzman-Frasca, Savage, Marini, Fisher, & Birch, 2012; Hausner, Hartvig, Reinbach, Wendin, & Bredie, 2012; Lakkakula, Geaghan, Zanovec, Pierce, & Tuuri, 2010; Wardle, Herrera, Cooke, & Gibson, 2003). The effects of repeated exposure on food acceptance are positively related to the number of exposures, i.e. that the more frequently a food item is tasted the better it is liked (e.g. Birch & Marlin, 1982; Pliner, 1982). The success of taste exposure paradigms as a means of increasing children's acceptance and liking of previously unfamiliar or disliked foods have been established (Heath, Houston-Price, & Kennedy, 2011). However, the number of exposures required to induce changes may vary both with the child's age and the initial liking of the food offered (Hartvig, Hausner, Wendin, Ritz, & Bredie, 2015). Lakkakula et al. (2011) demonstrated a change in liking for apricots, peaches and pears after only two exposures among school-aged children, while others report of 10–15 exposures being necessary to induce changes. Cooke (2007) proposes that familiarity is one of the most important determinants of children's liking of a particular food, arguing that children like what they know and eat what they like. Changes in food preferences as a result of exposure are however also contingent on the type of exposure. Comparing the relative

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effectiveness of two intervention strategies (looking vs. tasting), Birch and colleagues found that to achieve positive changes in preferences the exposure must include tasting the food (Birch, McPhee, Shoba, Pirok, & Steinberg, 1987). The present study used a single-exposure design to investigate the effect on attitudes towards eating fish for dinner. To the authors' knowledge this is the first study to investigate the effect of a single taste experience with fish on attitudes.

Attitudes are suggested to be one of the main antecedents to consumption (Olsen, 2003, 2004), and as for children parental attitudes and behavior are central in the development of eating habits (Scaglioni, Salvioni, & Galimberti, 2008). Attitudes are defined as evaluations of items (e.g. fish) that summarize information regarding those items (e.g. taste, smell, appearance) (Aikman & Crites Jr., 2007). An attitude item (or object) comprises anything a person may hold in mind, including things, people, groups, and ideas (Bohner & Dickel, 2011). The evaluations of attitude objects can be positive, negative or neutral and vary in extremity (Petty, Wheeler, & Tormala, 2003). Extremity is one of the most frequent studied features of attitude strength (Skitka, Bauman, & Sargis, 2005) and refers to the degree to which a score deviates from the scale midpoint (Krosnick, Boninger, Chuang, Berent, & Carnot, 1993). Food preferences play a central role in food choices and consumption, and can be described as a general predisposition for a particular food expressed by degree of liking (Babiczy-Zielinska, 1999; Nicklaus, Boggio, Chabanet, & Issanchou, 2004). The term preference can also be used to indicate choice and purchase decision, but within food research preference is often used as a synonym for liking (Mela, 2001). In the present study preference refers to a hedonic evaluation of six different fish and seafood.

Attitudes that are formed through direct experience with an attitude object are found to better predict behavior than attitudes formed through indirect experiences (Fazio, Zanna, & Cooper, 1978; Smith & Swinyard, 1982). Direct experiences with a product are in addition associated with stronger attitudes which are harder to change (Eagly & Chaiken, 1998). Regan and Fazio (1977) suggest that direct experience produces attitudes that are more clearly, confidently, and stably maintained as compared to attitudes formed through more indirect means. Product trials may therefore contribute to the formation of stronger attitudes, and further to a greater correspondence between attitude and behavior (Smith & Swinyard, 1983). Millar and Millar (1996) exemplify the distinction between indirect and direct experience with foods, arguing that after tasting a food (direct), attitudes are probably formed on the basis of a "gut" or emotional reaction and not on the basis of a list of attributes or cognitions about the food (indirect). In addition, taste significantly predicts attitudes towards and selection of most foods (Aikman, Min, & Graham, 2006). The favorable effects of a direct product experience are however highly dependent on having a favorable product experience (Smith & Swinyard, 1983).

Attitude change are defined as a person's evaluation of an attitude object being modified from one valence to another, often relative to the person's initial attitude (Petty & Wegener, 1998). Polarization and depolarization are two concepts central in their definition of attitude change, the former occurring when people move in the direction of their initial tendency and the latter when moving toward neutrality. Attitudes can also change from being non-existent to having some valence, as well as crossing the neutral point and change valence (Petty et al., 2003). Olsen (2003) suggests that people change their attitudes and motives over the life course, which in turn contributes to changes in eating habits. This, he argues, can be a driver in food consumption behavior.

The main objective of the current study is to better understand how a single taste experience influences attitudes towards eating fish for dinner among young consumers. It is hypothesized that a positive taste experience will contribute to a positive attitude

change. Further, as attitudes towards eating fish previously have been shown to positively relate to age, age differences in attitudes will be investigated. Studies of gender differences in preferences for different food items have shown mixed results (Cooke & Wardle, 2005). In their study of children's food preferences significant gender effects was found for fruits, vegetables, fatty and sugary foods, meat and eggs. The former two food categories were more liked by girls whereas the latter four categories were more liked by boys. No difference was found for fish. In a study of Norwegian 16–21 year-olds, Lien, Lytle, and Klepp (2001) found gender differences in consumption frequency of fruits and sugar-containing soft drinks, where girls ate more fruits and drank less soft drinks than boys. Gender effects on attitudes and preferences will be investigated.

Materials and methods

Design

This study applied a quasi-experimental one-group pretest–posttest design with no control group to examine changes in attitudes towards eating fish for dinner subsequent to a taste intervention.

Recruitment and participants

Participants were pupils in primary schools (age 10–11), lower secondary schools (age 13–15) and upper secondary schools (age 15–19), recruited from schools in and adjacent to Aalesund, Norway. Both urban city schools and schools in more rural areas participated. The schools were contacted by e-mail or telephone to ask if they were interested in participating. Ten classes from nine schools agreed to participate. Questionnaires were completed by pupils in 2012 and 2013. Parents of pupils under the age of 18 provided parental consent for their child to participate, while participants over 18 consented themselves. The study is exempt from the need for formal ethical approval according to the Data Protection Official's guidelines as no personal data with the potential to identify the participants was collected.

A total of 211 pupils completed the study satisfactory (response rate 89.4%), 104 boys and 107 girls, with a mean age of 13.58 years ($SD = 2.1$, range 10–19). Dropouts (10.6%) were either absent from school one or more days of the study or failed to complete the questionnaires in an adequate manner. Table 1 gives a description of the sample.

Procedures

The first questionnaire was a pre-intervention measure of attitudes towards eating fish for dinner, distributed by teaching staff and completed individually by pupils during lessons. A similar post-intervention attitude measure was conducted subsequent to a fish and seafood tasting session (intervention). The intervention

Table 1
Description of the sample ($N = 211$).

Total sample	%	Mean age	SD
<i>Gender</i>			
Boys	49.30	13.57	2.30
Girls	50.70	13.60	1.86
<i>School level</i>			
Primary school (PS)	30.30	10.92	.27
Lower secondary (LS)	46.00	13.90	.40
Upper secondary (US)	23.70	16.38	.88

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