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# Stimulating UK Adolescents' Seafood Consumption

Dawn Birch<sup>1</sup>, Juliet Memery<sup>2</sup>, Nick Johns<sup>2</sup> and Maria Musarskaya<sup>2</sup>

<sup>1</sup> University of the Sunshine Coast, Australia

<sup>2</sup> Bournemouth University, UK

## Abstract

The health benefits of seafood consumption are well known, however average per-capita consumption levels in the UK remain below recommended levels of two servings per week, despite an abundant availability of fresh seafood. In particular, seafood consumption is beneficial for adolescents, as it is associated with physical and mental well-being, lower levels of obesity, and improved cognitive performance and academic achievement. However, based on research which reveals low consumption of other healthy foods such as fruit and vegetables, consumption of seafood is anticipated to be low among UK adolescents. This study aimed to investigate current consumption, preferences and attitudes toward seafood among UK adolescents and identify strategies for increasing their seafood consumption. Seven focus groups were conducted in two schools with diverse socio-economic student profiles to explore the research aims. Findings revealed that while many of the students like seafood, consumption levels vary considerably among individuals and preparation typically takes a less healthy form (e.g. fried and battered fish and chips). Key drivers of seafood consumption included health and taste, while barriers were typically associated with the sensory qualities of seafood including dislike of taste, bones, smell and texture. A range of intervention strategies were identified and new product ideas students identified as potentially increasing their consumption ranged from fun, fast-food, snack-style products to healthy meal options.

Keywords: seafood consumption, adolescents, intervention strategies

## Conceptual Background

### *Benefits of Consuming Seafood*

The health benefits of eating seafood (defined as all fish and shellfish available for human consumption) are widely recognized for people of all ages (Tabbakh & Freeland-Graves, 2016). Omega-3 unsaturated fatty acids associated particularly with oily fish are beneficial for the cardiovascular system, and assist neurological health and development (Bonafini et al. 2015; Daviglius, Sheeshka & Murkin, 2002; Kim et al., 2016; Li et al., 2013). Fish is also a rich source of micronutrients including calcium, iodine, magnesium, selenium, copper and zinc (Calderon-Garcia et al., 2013; Sheeshka & Murkin, 2002). These health benefits have encouraged various national and international bodies to make recommendations for fish intake in order to promote healthy eating. However, perceptions of the actual quantity of fish necessary to promote health vary considerably across countries, depending upon the availability of fish and its prominence in the national diet, with a review of 14 countries revealing a range from 97g (in Georgia) to 550g (in Greece) per head per week (Thurstan & Roberts, 2014). In the US, the recommendation is two "average meals" (6 oz; 170g) per week, avoiding species high in mercury (U.S. Food and Drug Administration, 2014). In the UK, the recommendation is for two 140g portions of fish per week, of which one should be an oily fish (Food Standards Agency, 2010). However, a study of day-to-day food choices in the UK found fish, even when welcomed in the diet, is seen, along with vegetables, as involving complicated and time-consuming preparation, and often tends to be replaced by convenience foods (Carrigan, Szmigin & Leek, 2006).

## *Adolescents and Fish Consumption*

Knowledge of adolescents' fish consumption is very limited, but is certainly less than government recommendations (Groot, Ouwehand & Jolles, 2012) and probably less than that of the general population, since for example, it is known that individuals aged 16-24 years are less likely than other age groups to meet the five-a-day recommendation for fruit and vegetables (Mintel, 2012). It has been shown that adolescents often eat snacks, especially in front of the TV, and given the availability of both healthier snacks containing fruit or vegetables, and energy-dense snacks, they tend to prefer the latter (Pearson et al., 2016). Parents have been shown to have a more positive attitude towards fish products than adolescents (Olsen et al., 2008), and this may be partly due to them tending to have a better understanding of the principles of healthy eating (Laguna-Camacho & Booth, 2015). According to Olsen (2004), fish consumption is driven more by perceptions of moral obligation and health than by taste and preferences, although this is disputed by Verbeke and Vackier (2005).

Factors that inhibit fish consumption in adolescents include habit and unfamiliarity, due mostly to a low consumption frequency in the home environment (Groot, Ouwehand & Jolles, 2012; Honkanen; Olsen & Myrland, 2004). Negative attitudes about fish bones, the smell and appearance of fish and the perceived inconvenience and difficulty of preparing and cooking it also create barriers (Olsen, 2004; Rortveit & Olsen, 2009; Verbeke & Vackier, 2005). The attitudes of friends (Prell, Berg & Jonsson, 2002) and parents (Dwyer et al., 2017) are found to be influential, since eating fish may be seen by contemporaries as not "cool" or by some parents as an expensive option (Ruxton, 2011).

Fish is especially important in the adolescent diet, as fish consumption is related to cognitive performance and academic achievement (Groot, Ouwehand & Jolles, 2012; Kim et al., 2010). However, adolescents tend to place their long-term health below other concerns, and this affects their attitude towards healthy eating (Neumark-Sztainer et al., 1999). They are prone to food neophobia, which may mitigate against trying infrequently encountered foods (Flight, Leppard & Cox, 2003). Adolescent neophobia has been shown to be correlated with parental neophobia, to decrease with age in girls, but not in boys, and to reduce overall protein intake, presumably because it reduces the intake of less frequently consumed high-protein foods such as fish (Roßbach et al., 2016). Food neophobia is negatively correlated with the frequency of consumption of fruits, vegetables and fish (Knaapila et al., 2011). The home environment, and especially maternal nutritional knowledge is known to encourage healthy eating among adolescents, and this extends to products such as fruit, vegetables and fish (Tabbakh & Freeland-Graves, 2016). However, as children mature their food preferences change (Nicklaus et al., 2004) and there is a tendency to move towards more high-energy and convenience foods, especially snacks (Casini et al., 2013; Sjöberg et al., 2003).

Studies of the food-related behavior and attitudes of adolescents have tended to focus on general aspects, such as the mechanism of choice (Nørnberg et al., 2016), and the impact of food perceptions on eating behavior. Most of these research studies deal primarily with fruit and vegetables, rather than fish. Yet fish consumption is arguably more important for the health of adolescents (whose development it is known to enhance) than for other segments of the population. Several studies that have developed novel fish products and then evaluated them with adolescents (among others) (Altintzoglou et al., 2010; 2012) have shown that this approach may increase young people's positive attitudes to eating fish (Altintzoglou et al., 2015). Adolescents, who are undergoing a major change in tastes and food preferences, also offer an opportunity to counter negative factors such as food neophobia and build beneficial food attitudes and habits in a way that will persist through adult life (Caine-Bish & Scheule, 2009). It is easier to build new behaviors than to change existing ones (Pearson et al., 2016) and this is likely to be more facile and more lasting than current government initiatives, which mostly aim to inform the public as a whole, without considering the different needs, attitudes and perceptions of particular age groups and consumer segments.

This study sought to fill a gap in the existing healthy eating literature by examining UK adolescents' preferences, attitudes and behavior in relation to consuming seafood. In particular, the study focused on identifying strategies for increasing fish consumption among adolescents.

## **Methodology**

Upon approval from a Bournemouth University Ethics Committee, seven focus groups of adolescents aged 13–19 years, ranging from 2 to 7 students in each group (29 students in total) were conducted at two schools in South West England. One school attracts students from wealthier families and the other, students from lower socio-economic backgrounds. The focus groups were facilitated by members of the research team, lasted from 1 – 1.5 hours and conducted with a teacher present. The students were asked about their current seafood consumption, preferences, attitudes, drivers and barriers, and what they considered would encourage UK teenagers to consume more seafood. The students worked in teams of 2-3 to create product ideas and promotional strategies for seafood products and promotional strategies that would be appealing to UK teenagers.

## **Findings**

### *Adolescents' Fish Consumption Behavior, Preferences and Attitudes*

The findings revealed that the majority of the adolescents in this study like fish, typically in less healthy formats such as fish and chips (battered cod), , sushi and calamari (squid). A few were more adventurous indicating a liking for more exotic species such as lobster and crab. Universally, the teenagers did not like oysters, primarily due to their appearance and texture. Some students only consumed canned tuna and opinions on salmon were divided with some preferring smoked salmon over fresh and others disliking salmon altogether. Overall the students reported good levels of seafood consumption, with some students consuming seafood a few times per week, but a few reported very low levels of consumption, less than 1-2 times per month.

In line with previous studies of seafood consumption, primary drivers of fish consumption were taste and health benefits (e.g. Brunso, Verbeke, Olsen, & Jeppeson, 2009; Pieniak, Verbeke, Scholderer, Brunsø, & Olsen, 2008; Verbeke & Vackier, 2005), with a few students noting that fish was a lighter meal option. Key barriers to consumption included dislike of the smell, appearance, texture and bones, as has been identified in previous research (e.g. Olsen, 2004; Rortveit & Olsen, 2009; Verbeke & Vackier, 2005). While price is commonly cited as a key barrier to seafood consumption (e.g. Brunso et.al, 2009; Olsen, 2004; Trondsen et al., 2003), only a few students said that fish was an expensive meal option. Possibly this is because they were not the one's paying for the seafood and also perhaps because commonly consumed seafood products such as canned tuna and frozen breaded fish are relatively inexpensive in the UK.

### *Suggestions for Increasing Adolescent Seafood Consumption*

In terms of strategies for encouraging increased fish consumption, teenagers identified a need for increased marketing communication (advertising and publicity) of seafood and a need to change people's opinions. Advertising strategies included making eating seafood more fun, and stressing the health benefits of fish and the variety of fish available. Combining fish with other tasty foods (e.g. smoked salmon and eggs), replacing meat with fish (e.g. fish kebabs, seafood pizza) and showing people different ways of cooking fish were also suggested. Some students highlighted the need to make fish more affordable and more readily available and changing people's cooking habits. However, they emphasized that attention needs to be paid to the appearance of the seafood and how it is presented. The role of the parents in influencing fish consumption by teenagers was highlighted, along with a need to educate consumers about the benefits of eating fish, and to promote seafood as a healthy and delicious alternative to fast food. Students also emphasized a need for communication

from the National Health Service (NHS), since they felt there was a lack of knowledge about recommended levels of two fish meals per week.

In terms of seafood offerings that would appeal to UK teenagers, ideas revolved around developing a variety of snack boxes or meal deals and making eating seafood more fun. The snack-sized McDonalds-style concept (“McFish”) was considered to be more appealing for teenagers who are “not a massive fan ... of fish ... then you’d prefer to have just a one-a-day snack than a full meal”. Recommended strategies for making eating fish more fun included cutting the fish into shapes, eye-catching, bright and “cheerful” packaging, adding a small toy (e.g. “Nemo”) or collectable/sharing items such as stickers or swap cards as well as catchy product names such as “Fishy Dish”, “Super Fishy Dishy”, “Funky Fish”, “Fishy Meal Deal” and “Fish Snacks”. The teenagers recommended that particular attention be paid to the appearance of the seafood and other sensory qualities, and development of seafood products that have no skin, bones, head or tails.

Promotional strategies focused on relevant television shows, use of cartoon characters (such as “Super Salmon” or “Cod Boy”), comic strips, slogans (“Healthy and Delicious”) and jingles, (“When you fancy something from the sea, come and have a fishy meal deal”). Recommended promotional strategies included the use of social media such as Facebook, Instagram, and Snapchat which would allow sharing, and Spotify and YouTube with “annoying Internet pop up ads”. Electric billboards and buses were also considered to be effective media vehicles for reaching teenagers. Taste testing at seafood festivals and popular outdoor settings such as the beach or an ice rink were proposed. The adolescents considered that the products should be endorsed by celebrities including UK celebrity chefs such as Jamie Oliver and Gordon Ramsay, music artists such as Ed Sheeran and Justin Bieber, or for healthier offerings, elite swimmers such as Olympian Michael Phelps and Paralympian Alice Tai. Despite the focus on fun products and campaigns, most groups recommended that some information be provided on or inside the packaging related to health and nutritional benefits, serving suggestions, instructions for cooking, and (having learnt about sustainability earlier in the focus group) some environmental information.

While the majority of ideas focused on fun, fast food, snack-style products, some groups focused on “tasty looking”, healthier options including tinned fish and adding vegetables which “will help teenagers with skin problems and acne”. For these healthier options, promotion would focus on health and nutritional benefits including “protein, vitamins, omega” and “minerals” and be promoted by the National Health Service (NHS) because people might “trust it” and “think they know what they’re talking about”. Students argued that “people are generally starting to care more about their diet now... diet conscious, body conscious, and health conscious”. Messages would emphasize recommended portions of seafood, meal planning and getting people to replace unhealthy foods with healthy fish meals, recognizing the need to establish a long term habit of eating recommended levels of seafood. The teenagers noted the benefit of targeting younger children with the health benefits of fish and make eating fish “a natural everyday thing”. They proposed that supermarkets have a role in spreading the message with messages being targeted at people with different motivations around health versus taste. One group suggested a more hands-on approach involving a dedicated, sponsored television cooking show called “Fish Party”, whereby a celebrity chef, such as Jamie Oliver, would “show how we can cook fish in different ways and how people our age and younger could get involved”, supported with “... a game or an app that shows all the different combinations of things you could have with fish”. The television show would be supported with “seafood stands at food festivals” and online competitions.

## **Conclusion**

In summary, seafood consumption among UK adolescents varies, with some teenagers consuming very low levels of seafood. Seafood preferences tend towards less healthy options such as fried and

battered fish with chips. Key drivers for seafood consumption of adolescents in the UK include taste and health, while dislike of the sensory qualities of seafood including smell, appearance and texture are major barriers to seafood consumption. Increased communication through advertising and education around benefits by “trusted” bodies such as the National Health Service may lead to increased seafood consumption among UK adolescents. Making eating seafood more fun with snack-style, meal-deal fast-food concepts (including collectible and swapping items), accompanied with health messages would appeal to teenagers, along with promotional strategies in line with their interests (e.g. music) and media habits (including television and social media). Further research is required to empirically test these findings along with potential intervention strategies across the UK to capture regional, socio-economic, and gender differences.

**Dawn Birch** is an Associate Professor in Postgraduate business, specializing in consumer behavior. She researches and publishes in the areas of consumer behavior related to food with a special interest in local and sustainable food and seafood. Dawn has undertaken research consultancies for CEFAS focusing on stakeholder perceptions of aquaculture, the Australian Queensland Government investigating consumer attitudes toward local food, and the Australian Seafood Cooperative Research Centre researching seafood consumption behavior.

**Juliet Memery** is Professor in Marketing at Bournemouth University. Her early research examined the role of ethical and social responsibility issues in food and grocery shopping decisions in the UK. She continued this research, focusing in particular on food shopping behavior with regard to ethical considerations, in both Europe and Australia. Themes emerging from this research resulted in further exploration of local and regional food, and seasonal food, with current work looking at food security, sustainable fish, food waste, and consumer decision-making models.

**Nick Johns** is Senior Research Fellow in Tourism at Bournemouth University. He has interests in a range of areas, several of which focus upon food service and its impact upon food choice and diet. He has worked in various academic institutions in the UK and also in Scandinavia, Hong Kong and Switzerland and has extensive publications in hospitality and service management journals.

**Maria Musarskaya** is a Lecturer in Marketing at Bournemouth University. Her research has focused on sustainable seafood consumption in the UK. Her PhD builds on this area of interest with a specific focus on the role of parents in creating healthy and ethical consumption behavior among primary school children.

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