How do affective health-related and cognitive determinants influence fish consumption? A consumer survey in five European countries

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Abstract— **This paper focuses on exploring whether and to what extent affective health-related and cognitive determinants have an impact on fish consumption behaviour. Cross-sectional data were collected through the SEAFOODplus pan-European consumer survey (n=4,786) with samples representative for age and region in Belgium, the Netherlands, Denmark, Spain and Poland. Consumers' belief that eating fish is healthy and their interest in healthy eating positively influence fish consumption behaviour. Subjective knowledge is found to be a more important predictor of fish consumption than objective knowledge. Age and education contribute significantly to explaining fish consumption behaviour. However, the age and education effects on fish consumption frequency are indirect and mediated by the affective health-related and cognitive factors, such as health involvement and interest in healthy eating and knowledge related to fish. The proposed model contributes to a better understanding of health-related and cognitive factors influencing fish consumption behaviour.**

Keywords— **consumer, fish, determinants, model**

I. INTRODUCTION

Fish and seafood products are recommended to take a prominent position in the human diet due to their high nutrients (e.g. proteins, vitamins A, D, E, Se, I, omega-3) content and beneficial role in the prevention of chronic degenerative diseases [1,2]. Therefore, health authorities and the food industry have a joint interest in stimulating fish consumption. Nevertheless, dietary recommendations of eating two portions of fish a week, of which one should be fatty fish, are not met by large groups of the population in many countries [3]. The objective of this study was to explore whether and to what extent affective health-related and cognitive determinants as well as socio-demographic variables have an impact on fish consumption behaviour in five European countries.

II. MATERIALS AND METHODS

Our data were collected through a quantitative cross-sectional consumer survey carried out in November-December 2004 in five European countries: Belgium, Denmark, the Netherlands, Poland and Spain. The total sample consisted of 4,786 subjects (n=800-1,100 respondents per country). The sample was composed of 3,652 women (76.3%) and 1,134 men (23.7%). This gender distribution reflects the criterion that all respondents were responsible for food purchasing within their household. A quota sampling procedure with age as main control variable was applied. Samples were representative within each country for age and region. The sample covers a wide range of consumers in terms of socio-demographics like education, income, and presence of children. The age of the respondents ranged from 18 to 84 years, with a mean of 42.7 (SD=12.6).

In order to simultaneously estimate the strength and direction of relationships between age, education, and the belief that eating fish is healthy, interest in healthy eating, health involvement and knowledge about fish in relation to fish consumption frequency, a conceptual model has been developed and tested by means of structural equations analysis using LISREL. The proposed model contributes to a better understanding of factors influencing fish consumption behaviour.

III. RESULTS

The proposed model (Figure 1) contributes to a better understanding of health-related and cognitive factors influencing fish consumption behaviour.

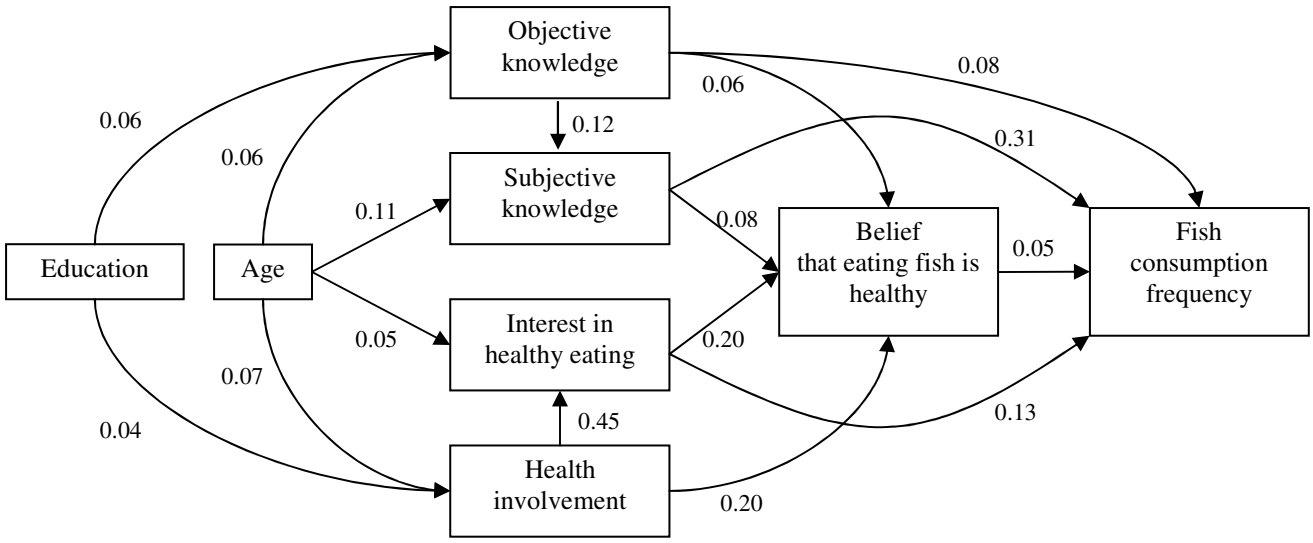

Fig. 1 Structural model (standardized solution)

All designed paths are significant at $p<0.001$. Goodness-of-Fit statistics for the pooled data: $\chi^2(51) = 352.48$, $p< 0.001$; RMSEA = 0.035; GFI = 0.99; CFI = 0.99

Consumers' belief that eating fish is healthy and their interest in healthy eating positively influence fish consumption behaviour. However, the association found between the belief that eating fish is healthy and fish consumption is weaker than might have expected. Our result is very important as it suggests that a very positive belief, which holds true for the majority of respondents, that eating fish is healthy, is actually not sufficient to convince/encourage people to eat fish (more) frequently. Improving this belief is superfluous, since it is already very strong and leaves little room to be further improved. Nevertheless, this study highlights the importance of considering consumers' general interest in healthy eating as a target variable e.g. in communication aiming at stimulating fish consumption and aligning it with public health recommendations.

Health involvement has a significant and relatively highly sized direct effect on interest in healthy eating. Additionally, interest in healthy eating had a direct positive effect on total fish consumption; interest in healthy eating can be upheld as a full mediator between health involvement and fish consumption frequency.

Subjective knowledge is found to be a more important predictor of fish consumption than objective knowledge; the prediction ability (power) of objective knowledge is found to be much weaker. This weak correlation between objective knowledge and total fish consumption found in our study might be a result of measuring only food-specific attribute knowledge. Although this might be a rather speculative finding from the current analysis, this would suggest that nutrition education should concentrate rather on improving consumers' awareness about tangible benefits from eating a particular food, rather on the composition of the food in the strict sense.

Both interest in health in general, and the more concrete interest in healthy eating in particular, that provides people with a stronger belief that eating fish is healthy. Furthermore, people who evaluated themselves as having better knowledge about fish and those who actually were more knowledgeable about nutritional aspects of fish consumption held a stronger belief that eating fish is healthy. This indicates that the

association of fish with health is clearly a part of consumers' cognitive representations of fish, but therefore not necessarily leading to higher fish consumption frequency.

Age was significantly associated with health involvement and healthy eating in particular. Hence, elderly people were found to be more involved in health and more interested in healthy eating, as compared to younger people. Furthermore, a positive relationship between age and both constructs of knowledge was found, indicating that older respondents had a higher factual knowledge about fish and also perceived themselves as more knowledgeable about fish than younger respondents. However, the association between age and subjective knowledge is stronger than between age and objective knowledge. Finally, objective knowledge and health involvement were found to be positively affected by education level, meaning that higher educated people are more involved with health issues and more knowledgeable about fish. Although significant, these effects were rather weak.

Age and education contribute significantly to explaining fish consumption behaviour. However, the present study indicates a rather complex pattern of age and education effects on fish consumption behaviour. The estimations provide empirical evidence that the relationship between socio-demographic characteristics such as age and/or education is mediated by attitudinal and motivational variables or attitudinal strength dimensions. Interestingly though, the age and education effects on fish consumption frequency are indirect and mediated by the affective health-related and cognitive factors, such as health involvement, interest in healthy eating, subjective and objective knowledge related to fish.

IV. CONCLUSIONS

Consumers' health-related beliefs were found to be important factors influencing fish consumption. This result entails opportunity for public health authorities in creating more effective communication – with specific reference to the potential health benefits from consuming fish – with respect to fish consumption. Additionally, improving consumers' subjective knowledge is more likely to cause an increase in their fish consumption as compared to strategies aiming at increasing consumers' objective or factual knowledge about fish. Nutrition education aiming at increasing fish consumption frequency should not necessarily concentrate on increasing consumers' objective knowledge in terms of nutrients and product content, but rather on communicating benefits of fish consumption and increasing consumers' subjective knowledge.

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