



HabEat

Determining factors and critical periods in food habit formation and breaking in early childhood: a multidisciplinary approach

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Executive summary

Children's vegetable intake is below the recommendations in many European countries. In order to understand children's vegetable intake and how to change their intake, it is important to know the determinants of children's vegetable intake. Therefore, the aim of this work was to identify specific situational factors that have influenced the effectiveness of the strategies that were applied to encourage children's vegetable consumption. We aimed to assess the impact of individual factors (related to the child and parent) and parental feeding practices on children's vegetable intake. So, this report focuses on the data that were collected via questionnaires.

Different studies were executed among children aged 2 to 6 years in France, Denmark, Greece and The Netherlands. The parents of the participating children completed a questionnaire about different individual and parental characteristics. One study conducted in France was not related to children's vegetable intake, but evaluated how children react to challenging eating situations where they can overeat: a snack was offered before a lunch (Caloric compensation paradigm) or palatable foods were offered after their lunch (Eating in the absence of hunger paradigm). Therefore, a different questionnaire was used in this study. Ten experimental studies had vegetable intake as main outcome. For these studies, a joint questionnaire was developed to facilitate comparisons across studies and across countries. The following topics were included: age (child and parent), gender, parental education and income, self-reported weight and height (child and parent), the Child Eating Behaviour Questionnaire (=CEBQ), the Child Food Neophobia Scale, vegetable liking, breastfeeding history, seven dimensions of the Comprehensive Parental Feeding Practices questionnaire (=CPFP). When not available in the country language, the existing questionnaires were translated.

Three different analyses were done. Firstly, Cronbach's alpha's were calculated for the dimensions of the different questionnaires that were used (Child Eating Behaviour Questionnaire, the Child Food Neophobia Scale and the Comprehensive Parental Feeding Practices questionnaire). The aim of this analysis was to check whether the items of each dimension are consistently measuring the same underlying construct of the questionnaire. This was done for each study and across all studies. A reliability of 0.60 or higher was regarded as satisfactory. Secondly, mean scores for each experimental group and across the study sample were calculated for these individual and parental variables. This analysis was done to investigate whether there were differences between the experimental groups for certain variables. Furthermore, this analysis helped us to assess the occurrence (intensity) of these child eating behaviours and these parental practices and it indicated whether there are

different patterns per country. Thirdly, the relationship between individual and parental characteristics and children's initial vegetable intake was investigated. Children's vegetable intake (in grams) during the first session of each study was the main outcome.

The first analysis showed that, in general, the reliability of the Child Eating Behaviour Questionnaire was good, as was the Child Food Neophobia scale (Cronbach's alpha >0.60 for each dimension). Although the overall WP3 analysis indicated only two parental practices that had a Cronbach's alpha below 0.60 (Modelling and Restriction for Health), the analyses per study showed that also other dimensions had an insufficient reliability. Only the dimensions Monitoring and Restriction for Weight showed satisfactory internal consistency for each individual study and across the studies.

The results of the second analysis showed that the differences between the experimental groups could be neglected; for each study, the groups were similar on fairly all individual and parental characteristics. Interestingly, a fairly consistent pattern across the different countries came up for the intensity of the children's eating behaviour characteristics and the parental practices. Children scored highest on Enjoyment of Food and lowest on Emotional Over Eating. Furthermore, Monitoring and Modelling were the parental practices most used among this sample of 2-6-year-old children, whereas Restriction for Weight was the practice least used.

The third analysis showed that Food Fussiness and Neophobia were negatively correlated to children's vegetable initial intake, whereas vegetable liking was positively related to children's vegetable intake during the first session. For some datasets, a positive relationship with initial vegetable intake was found for the child's age and Enjoyment of Food. Although none of the individual studies found a relationship between initial vegetable intake and gender, the joint data showed that boys ate more vegetables than girls. The relationship between parental characteristics and children's initial vegetable intake did not show a consistent pattern in our sample, but in the study that focused on challenging eating situations, it was found that the parental practice Food as Reward may be related to children's food intake regulation.

We conclude that the Child Eating Behaviour Questionnaire and the Child Food Neophobia scale are reliable measures across different European countries. Besides English language, these scales are now available in Greek, Danish and Dutch. Because internal consistency was not satisfactory, the Comprehensive Parental Feeding Practices questionnaire needs to be validated in further research. The intensity of the child's eating behaviour characteristics and parental practices showed a very consistent pattern across the ten different vegetable studies. Highest scores were reported for the child's Enjoyment of Food and the parental

practices Monitoring and Modelling, whereas lowest scores were reported for the child's Emotional Over Eating and the parental practice Restriction for Weight. This implies that the age of the children may determine the intensity of these child eating characteristics and parental practices to a larger extent than country-cultural factors. In addition, it may be fruitful to teach about healthy eating habits in this particular age group because of their enjoyment for food. The factors strongest related to children's initial vegetable intake were Food Fussiness and Neophobia (negatively) and children's vegetable liking (positively). To a lesser extent, evidence was found for a positive relationship between children's vegetable intake and the variables age and Food Enjoyment. Parental characteristics and parental feeding practices were not convincingly related to children's initial vegetable intake.

Future research should focus on investigating the effectiveness of various vegetable-stimulating strategies on different sub-groups of children, since the effectiveness may differ per sub-group. Subsequently, based on these results, targeted interventions should be developed and executed, as children who score high on Food Fussiness and Neophobia, and low on vegetable liking and Food Enjoyment, may need other strategies than the children that score the opposite. It seems that predictors of vegetable intake are pretty similar for familiar and unfamiliar vegetables. Still further research should confirm this finding and should elucidate possible exceptions.