



HabEat

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

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SEVENTH FRAMEWORK PROGRAMME

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Overview on the short-term relative impact of key learning mechanisms and individual reactions

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Workpackage concerned: WP2

Concerned workpackage leader: ULeeds

Dissemination level: CO (confidential)

As some of the data contained in this report has not yet been submitted for publication, we changed the dissemination level from Public to confidential until the publications will be accepted. The summary is Public. The present version will remain confidential after publication. However, a public version will be prepared containing the abstracts and the links to the related papers.

Executive summary

Vegetables are an important part of the habitual diet since they are low in energy density, high in nutrients and contain antioxidant compounds that have been documented to prevent the onset of several types of chronic illnesses including certain types of cancer. However, research demonstrates that both children and adults are not consuming the recommended 3 portions of vegetables per day (in addition to two portions of fruit). In addition to low availability in the home, many children do not like the taste of vegetables. Infants are born with an innate liking of sweet tastes and must therefore learn to like bitter tasting foods such as vegetables. Learning to like vegetables can be achieved in a variety of ways in an experimental setting. The first way is via repeated exposure (RE) to an unmodified target vegetable, the second via flavour-flavour learning (FFL) where the vegetable taste is paired with a previously liked taste such as sweet. The last learning mechanism is flavour-nutrient learning (FNL) where the target vegetable is paired with a flavourless energy dense ingredient such as oil. WP 2.2.1 aimed to compare these learning mechanisms in pre-school children with an age range from 4 months to 36 months from three different EU countries, France (age 4-6 m) and Denmark and the UK (12-36 m). Children in this investigation were offered a novel target vegetable (artichoke) in one of three forms for ten exposures: RE a plain artichoke purée, FFL artichoke purée with added sweetness (sugar) and FNL, artichoke purée with added oil. Similarly in task 2.2.2 pre-school children (35 ±1.6 m) were offered novel vegetables soups (endive and spinach) that were either low or high in energy density in an attempt to compare RE with FNL. The results of tasks 2.2.1 and 2.2.2 demonstrate that overall RE is the most effective way of promoting the intake of a novel vegetable in pre-school children and that this effect is sustained up to 6 months following the intervention. The aim of task 2.3 (INRA, FRANCE) was to compare RE with FFL in pre-school children. Salsify, a novel vegetable, was either presented plain (RE) or with added salt or nutmeg (FFL) for eight exposures. Again RE was demonstrated to be the most effective at increasing intake of the target vegetable compared to FFL. A similar investigation using freeze dried vegetable chips (parsnip and beetroot) served with either a neutral (RE) or a preferred dip (FFL) was carried out by WUR (Netherlands). Results of this study confirm that repeated exposure is the most successful technique. To conclude, the results of all experiments conducted within tasks 2.2.2 and 2.3 demonstrate that RE is the most effective technique for promoting the intake of a novel vegetable in pre-school children. The technique of RE is advantageous compared to FFL and FNL since it does not require the addition of any other ingredients above and beyond regular preparation techniques and is likely to be the method most likely to be endorsed in public health messages.