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Liking for and consumption of vegetables in European adolescents: Healthy eating, liking, food neophobia and food choice motives

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A high vegetable consumption is associated with many health benefits, yet vegetable consumption across Europe is lower than recommended for health reasons, particularly in adolescents⁽¹⁾. Low vegetable consumption is often attributed to the bitter taste of many vegetables^(2,3), yet not all vegetables are bitter-tasting and not all bitter tastes are disliked. This study investigated the individual characteristics and attitudes associated with the liking for and regular consumption of four bitter and four sweet vegetables in European adolescents.

Questionnaire data were collected from 736 adolescents (aged 12–19 years) from Denmark (N = 178), France (N = 206), Italy (N = 197) and the UK (N = 155). Data were collected on liking for and regular consumption of eleven frequently consumed vegetables (4 bitter vegetables: broccoli, cauliflower, green salad and spinach⁽⁴⁾; 4 sweet vegetables: carrot, peas, sweetcorn and tomato⁽⁴⁾; and 3 neither bitter nor sweet vegetables: courgette, green beans, other beans⁽⁴⁾), demographic characteristics: gender, age, family social affluence; and individual healthy eating habits (Adolescent Food Habits Checklist), food neophobia (fear of novel foods) (Food Neophobia Scale), dietary restraint (Dutch Eating Behaviors Questionnaire), and food choice motives (Food Choice Questionnaire).

Using regression, the regular consumption of both bitter and sweet vegetables was associated with higher healthy eating habits (smallest $\beta = 0.10$, $p = 0.01$) and a higher liking for bitter/sweet vegetables respectively (smallest $\beta = 0.50$, $p < 0.01$). Higher liking for bitter vegetables was associated with a lower food neophobia and higher motivations to consume natural foods (smallest $\beta = 0.09$, $p < 0.01$). Higher liking for sweet vegetables was associated also with a lower food neophobia, and with higher healthy eating habits and higher motivations to consume foods for sensory reasons (smallest $\beta = 0.10$, $p < 0.01$). Some effects of gender and country were also found.

These findings suggest that strategies to increase vegetable consumption in adolescents should focus on increasing healthy eating, and increasing vegetable liking. Various techniques can be used to change taste preferences⁽⁵⁾. From our data, increasing liking for both bitter and sweet vegetables may also benefit from strategies to reduce neophobia. Liking for bitter vegetables may benefit also from increasing motivations to consume natural foods, while liking for sweet vegetables may benefit also from increasing healthy eating and from increasing motivations to consume foods for sensory reasons.

1. European Food Safety Authority. *Concise Database summary statistics - Total population*. Available at: <http://www.efsa.europa.eu/en/datexfoodcdb/datexfooddb.htm>. Accessed 2nd March, 2018
2. Brug J, Tak NI, te Velde SJ, Bere E, de Bourdeaudhuij I (2008) Taste preferences, liking and other factors related to fruit and vegetable intakes among schoolchildren: results from observational studies. *Br J Nutr* **99**, suppl 1: S7–S14.
3. Larson NI, Neumark-Sztainer DR, Harnack LJ, Wall MM, Story MT, Eisenberg ME (2008) Fruit and vegetable intake correlates during the transition to young adulthood. *Am J Prev Med* **35**, 33–37.
4. Martin C, Visalli M, Lange C, Schlich P, Issanchou S (2014) Creation of a food taste database using an in-home taste profile method. *Food Qual Pref* **36**, 70–80.
5. Wadhwa D, Capaldi-Philips ED, Wilkie LM (2015) Teaching children to like and eat vegetables. *Appetite* **93**, 75–84.