

## **The power of senses: savoury taste phenotypes influence food acceptance, consumption and body mass index in a large population cohort**

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The aim of the study is to explore the relationship between taste system functionality, eating habits, attitudes towards food and nutritional status in a large population cohort from the Italian Taste project (<https://www.it-taste.it/>). 2878 volunteers (54.5% F; age: 18–30y, 33.8%; 31–45y, 29.8%; 46–60y, 34.4%) rated overall liking and perceived intensity of 3 sensations (salty, umami and overall flavor) for a model food (bean purée) spiked with 4 increasing levels of a prototypical tastant (i.e., sodium chloride). Individuals self-reported anthropometric information (weight and height), psycho-attitudinal traits (Sensitivity to Punishment, SP and Sensitivity to Reward, SR) as well as consumption data of 19 food categories were also considered. K-means clustering performed on Pearson's coefficients calculated individually to estimate the relationship between liking and responsiveness to the target sensations revealed two clusters characterized by distinct sensory-liking patterns: Savoury taste 'Likers' (n=1845) and 'Dislikers' (n=1033) phenotypes for which liking, respectively, increased or decreased along with NaCl concentration in the model food. The 'Likers' phenotype was characterized by a lower sensitivity to salty ( $p<0.05$ ), umami ( $p<0.05$ ) and overall flavor ( $p<0.05$ ), consumed more frequently caloric meals ( $p<0.001$ ), presented higher SR scores ( $p=0.06$ ) and showed a higher BMI ( $p<0.01$ ) than the 'Dislikers' phenotype. The present data suggest that taste is an important explanatory variable in the development of unhealthy eating patterns which might be associated with weight gain and stress the importance of considering chemosensory factors for the implementation of personalized dietary interventions.

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