Thus subjects learning list A would be expected to have lower scores than those learning list B. The mean score per subject for list A was -0.13 and that for list B was $+12.67$. A Mann–Whitney test[6] confirmed the predicted difference between the two groups ($P < 0.01$, 1 tail). Of the 8 pairs used, 7 were learned more rapidly in the compatible order, indicating that the result was not due simply to the inadvertent selection of one or two atypical syllables.

It was concluded that S-R compatibility effects analogous to those shown in sensori-motor skills occur also in verbal learning.

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Taste Thresholds and Food Dislikes

ALTHOUGH food likes and aversions are influenced by cultural, social and idiosyncratic variables[1], individual differences in the ability to taste certain classes of compounds may be one determinant of food rejections[2].

In the present work, forty-eight subjects checked food dislikes and aversions on an alphabetical listing of 118 foods previously tested on a college-age Ohio population[3]. Excluding foods unfamiliar or never sampled by each subject, the percentage of familiar foods disliked was used as the individual score. Scores ranged from 0–55 per cent ; the median was 10 per cent, as in the standard population.

Taste thresholds were determined for D-sucrose, sodium chloride and hydrochloric acid in forty-two subjects, and for quinine sulphate and 6-n-propylthiouracil[4] in all forty-eight subjects. The compounds were dissolved in double-distilled, copper-free water using twenty concentrations ranging from 3.66×10^{-7} M to 3.84×10^{-1} M, each numbered step representing a doubling of concentration. A preliminary training session, a later test session and a further retest session was used in all forty-eight cases.

Dislikes for foods could not be significantly related to a subject's sensitivity to, or thresholds of taste for, D-sucrose, sodium chloride, or hydrochloric acid. However, taste thresholds for 6-n-propylthiouracil and quinine, both bitter substances, show a relation to percentage of food dislikes. Two categories have been set apart, 0–10 per cent foods disliked (low) and 10–55 per cent foods disliked (high). Using the χ^2 test, the value of χ^2 was 3·0 for both quinine and 6-n-propylthiouracil, with low taste thresholds (high taste acuity) associated with a higher percentage of food aversions in both cases. On the basis of percentage of food aversions, analysis by the Mann–Whitney U test of goodness of fit[5] revealed a difference in taste thresholds, significant at the 1 per cent confidence level for the two categories.

The bimodal distribution of thresholds for 6-n-propylthiouracil partially accounts for our finding that the correlation between per cent of food dislikes and thresholds for 6-n-propylthiouracil is quite small.

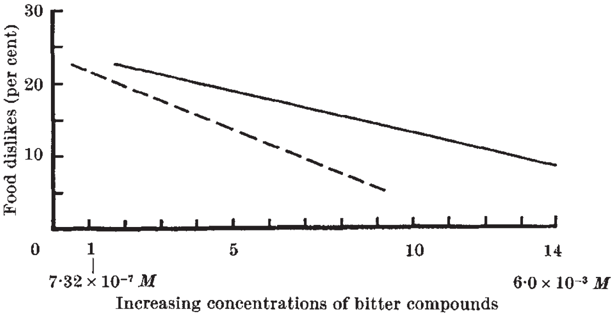

Fig. 1. Linear regression of the distribution of thresholds for 6-n-propylthiouracil and quinine related to percentage of foods disliked (N = 48). Numbers on the abscissa are concentrations of 6-n-propylthiouracil and quinine, each step representing a doubling of the concentration. – –, Quinine; ——, 6-n-propylthiouracil

Irrespective of this nearly zero correlation, however, the trend of the linear regression line of the percentage of food dislikes against thresholds of taste is similar to the regression line for quinine (Fig. 1). The equation of regression for 6-n-propylthiouracil is $Y = 23.8 - 1.14X$. The probability is 0·001 per cent that our sample came from a population with a slope of linear regression equal to zero.

The linear regression of percentage of food dislikes versus concentrations of quinine is $Y = 23.167 - 2.03X$. The probability that our sample came from a population of linear regression of zero is 0·001 using Student's t distribution.

The correlation between percentage food dislikes and quinine concentrations is $+0.272$. Although this accounts for only 7·5 per cent of the variance, it is significant at the 0·001 level of confidence.

While the source of food preferences and aversions is admittedly complex, the evidence indicates that taste-acute individuals have more food dislikes or that the number of foods disliked grows in proportion as the taste threshold for bitter compounds decreases. These findings bear on the adaptive significance of phenylthiocarbamide taste polymorphism[6], and they indicate the need for item-analysis of food aversions, and attention to the mediating effect of certain thyroxine precursors known to alter and to influence thresholds of taste[7].

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