Scents and Sensibility: Demographics and Heritability of Olfaction and Its Association With Mental Health, Migraine, and Substance Use

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Olfaction or the sense of smell plays a fundamental role in the animal kingdom's survival and may serve a marker for human disease, including mental disorders. This study’s objectives are: 1) To examine the age and sex specific patterns of olfactory function and its heritability; 2) To ascertain whether olfactory function is associated with mood disorders and migraine; 3) To examine the association between olfactory function and smoking, alcohol use and drug use. The sample is a subset of participants from the National Institute of Mental Health (NIMH) Family Study of Affective Spectrum Disorders. Interviews assesses lifetime and current mood disorders, migraine, and substance use. Olfactory function tests administered included the University of Pennsylvania Smell Identification Test (UPSIT). 451 participants completed the UPSIT test. Analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC, USA). Rates of mood, anxiety, and substance use diagnoses by sex were tested using Chi-square test. Means of UPSIT variables by diagnosis were evaluated using T-Test. Mixed effects linear regression models, which included both fixed and random effects, were used to evaluate the familial aggregation of the olfactory tests. Female subjects had better olfactory function (p-value 0.0489), compared to males, however no significant trends were seen by age. Smell scores of Bipolar I subjects were significantly lower than controls (p-value 0.0175) and the data also showed familial aggregation among probands and relatives (p-value 0.0286). Odor identification is a familial trait and maybe a marker for mood disorders such as Bipolar Disorder I.

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