M21. THE ROLE OF THE GENETIC SEGMENTS 5-HTTLPR AND MAOA IN MODERATING THE ASSOCIATION BETWEEN DEVELOPMENTAL ENVIRONMENT AND SOCIAL AND EMOTIONAL ABILITIES

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Background 5-HTTLPR and MAOA, are genetic segments that influence serotonin and monoamine neurotransmitters. They were found to be associated with depression, suicidality, aggressiveness and anti-social behavior, with an evidence for a gene-environment (GXE) interaction. 5-HTTLPR was found to be associated with resilience to the effect of stressful life events on depression and suicidality, and MAOA was found to be associated with aggressiveness and anti-social behavior following childhood maltreatment. Findings demonstrated the negative aspect of this association, namely the interaction between a stressful environment and the gene, in a manner that reflects vulnerability to pathology. Investigation of the positive end of the association has been the target of studies in more recent years, trying to prove that these are not "vulnerability genes" but "plasticity genes". The aim of the current study was to further investigate the GXE interaction in this positive context. We hypothesized that 5HTTLPR and MAOA will moderate the relation between a good, beneficial environment and well-being.

Methods 201 Israeli college students were recruited to the study, representing a normative, healthy population. The participants provided a saliva sample for DNA extraction and completed self- reported questionnaires measuring attachment, perceived social support, experience of life events, well-being and empathy. Genotyping was done using PCR methods for 2 well-studied functional polymorphisms: 5-HTTLPR and MAOA VNTR 1.1(635). 166 participants, who completed the questionnaire, and had at least one genetic result (out of two), were included in the final analysis. ANOVA, Pearson correlation and linear regression analysis were used to examine the correlation between explaining variables and outcome measures (well-being and empathy). Stratification according to genotype allowed the study of its moderating effect.

Results No significant differences were found in measures of well-being and empathy between the 5-HTTLPR high activity group ("LL" genotypes) and low activity group ("Ls" or "ss" genotypes), or between the MAOA high, intermediate or low activity group (according to number of repeats). A significant association was found between one of the beneficial environment indices, the perceived support of friends, and the well-being score. This association was moderated by genotype. Individuals with the 5-HTTLPR short allele (s) or within MAOA intermediate and low activity groups were happier when they perceived higher support from their friends. This effect was not found for individuals with the long 5-HTTLPR allele (L) or individuals from the high MAOA activity.

Discussion The current study demonstrated a GXE interaction, where genotype moderated the influence of perceived support of friends on happiness. Among the 5-HTTLPR long allele group, and MAOA high activity group, happiness was not influenced by the perceived support of friends, while among the 5-HTTLPR short allele group and MAOA intermediate and low group, happiness was higher when the

perceived support of friends was higher. These results support the research hypothesis, according to which, these genetic polymorphisms provide their carriers with sensitivity to the environment, which exists also for a beneficial environment. Thus these genes confer not only resilience/vulnerability to stress as they were regarded in the past.

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