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Distinct types of life events interact with 5-HTTLPR in the development of depressive symptoms in an age-dependent manner

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Recent life events especially in interaction with risk genetic variants have a major impact on the development of depression. Different types of life events, however, may have distinct effects, and may be associated with different levels of stress depending on various factors. Recently we demonstrated that 5-HTTLPR mediates the effect of financial difficulties, but not other types of recent life events (related to illness/injury, intimate relationship problems, or social network disturbances) in the development of depressive symptoms [1]. Furthermore,

contrary to previous findings this effect was observable only in men, suggesting that distinct types of life events may play a different role in the two genders in the emergence of depression. Beyond gender, previous reports also indicate different effects of 5-HTTLPR in different age groups [2] and age may also influence the relative impact and stressfulness of different types of recent life events. The aim of the present study was to analyse the role of four distinct types of recent negative life events in interaction with 5-HTTLPR in the development of depressive symptoms in different age groups.

Interaction between 5-HTTLPR genotype and four different types of recent life events (intimate relationship problems, financial problems, illness/injury, and social network disturbances) [3] measured by the List of Threatening Experiences on current depressive symptoms measured by the Brief Symptom Inventory was investigated in 2588 subjects aged 18–60 years in Manchester and Budapest with linear regression separately in those ≤ 30 and >30 years old. Additive and recessive genetic models were tested with population, age, gender and main effect of genotype and life event variable as covariates. Nominal significance threshold was $p < 0.05$, and false discovery rates with bootstrapping were calculated to correct for multiple testing.

5-HTTLPR was in Hardy–Weinberg equilibrium in our sample ($p = 0.77$). In those ≤ 30 years old, only the interaction between 5-HTTLPR and social network disturbances (recessive model, $p = 0.0092$, $q = 0.0333$), while in those >30 years only the interaction with recent financial difficulties (recessive model, $p = 0.0060$, $q = 0.0333$) but not other types of recent life events had a significant effect on the development of depressive symptoms after correction for multiple testing.

Following our report concerning the interaction of 5-HTTLPR and recent financial difficulties but not other types of life events, and only in males, in the development of depression, in the present study we found that 5-HTTLPR mediates the effect of recent financial difficulties only in those older than 30 years, while in those aged 30 years or younger 5-HTTLPR was found to interact only with recent social network disturbances. Financial difficulties may be a unique type of stressor as they represent a pervasive existential threat and also a loss of traditional role as provider for the family especially in case of males and those living independently or supporting a family which is more characteristic of those older than 30 years. This specificity of interaction with only particular types of life events, and distinct effects in different age groups may also help to explain previous contradictory findings regarding the role of the 5-HTTLPR.

References

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