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The association between romantic relationship status and 5-HT1A gene in young adults

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What factors determine whether or not a young adult will fall in love? Sociological surveys and psychological studies have shown that non-genetic factors, such as socioeconomic status, external appearance, and personality attributes, are crucial components in romantic relationship formation. Here we demonstrate that genetic variants also contribute to romantic relationship formation. As love-related behaviors are associated with serotonin levels in the brain, this study investigated to what extent a polymorphism (C-1019G, rs6295) of 5-HT1A gene is related to relationship status in 579 Chinese Han people. We found that 50.4% of individuals with the CC genotype and 39.0% with CG/GG genotype were in romantic relationship. Logistic regression analysis indicated that the C-1019G polymorphism was significantly associated with the odds of being single both before and after controlling for socioeconomic status, external appearance, religious beliefs, parenting style, and depressive symptoms. These findings provide, for the first time, direct evidence for the genetic contribution to romantic relationship formation.

Introduction

Love is a complex phenomenon that involves both psychological and biological processes. While sociological and psychological factors are well-studied, the genetic basis of romantic relationship formation remains largely unknown. Serotonin, a neurotransmitter involved in mood regulation and social behavior, is a key player in this process. The 5-HT1A receptor gene (5-HT1A) is a candidate gene for various psychiatric and behavioral disorders, and its polymorphisms have been associated with serotonin levels and related behaviors. The C-1019G polymorphism (rs6295) in the 5-HT1A gene is particularly interesting because it has been shown to affect the binding affinity of the receptor. In this study, we investigated whether this polymorphism is associated with romantic relationship status in young adults. We found that individuals with the CC genotype (50.4%) were more likely to be in a romantic relationship compared to those with the CG (39.0%) or GG (10.6%) genotypes. This association remained significant even after controlling for various socio-psychological factors, suggesting a direct genetic contribution to romantic relationship formation.

Results

Genotype distribution and relationship status. The distribution of 5-HT1A genotypes (CC, CG, GG) and the corresponding relationship status (single, in a relationship) are shown in Table 1. The CC genotype was significantly associated with being in a relationship ($p < 0.05$). Logistic regression analysis indicated that the C-1019G polymorphism was significantly associated with the odds of being single both before and after controlling for socioeconomic status, external appearance, religious beliefs, parenting style, and depressive symptoms.

Supplementary Materials

Additional information is available in the Supplementary Materials section.



Table 1 | The effect of C-1019G (rs6295) polymorphism on the distribution of romantic relationship status

	Genotype frequency			Total
	CC	CG	GG	
In a relationship	182 (50.4%)	72 (38.9%)	13 (39.4%)	267 (46.1%)
Single	179 (49.6%)	113 (61.1%)	20 (60.6%)	312 (53.9%)

Note. N = number of individuals being in a relationship (single). The percentages were computed by dividing the number of individuals in a relationship (single) with the number of individuals having a particular genotype.

Supplementary Materials

$\chi^2 =$
 $df =$ $p =$
 $SE =$ $df =$ $\chi^2 =$ $p =$ $B =$
 $R =$ $\%$
 $ps >$

Supplementary Materials

$t =$ $p <$

Discussion

Individuals with the CG/GG genotype were more likely to be single than individuals with the CC genotype.

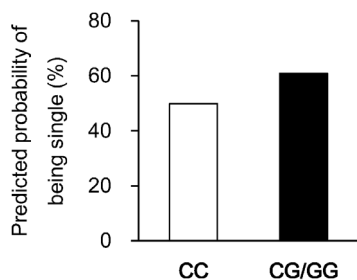


Figure 1 | Impact of the 5-HT1A C-1019G polymorphism on the predicted probability of being single after controlling for socioeconomic status, external appearance, religious belief, parenting style, and depression. Individuals with the CG/GG genotype were more likely to be single than individuals with the CC genotype.

5-HT1A
 5-HT1A
 5-HT1A

Methods

Supplementary Materials

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Author contributions

Wang, C. conceived the study, designed the experiments, and analyzed the data. Zhang, Y. performed the experiments. Li, X. provided technical assistance. All authors contributed to the writing of the manuscript.

Additional information

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