Chinese researchers have successfully demonstrated that a polymorphism within the COMT gene interacts with a protective factor (i.e., parental warmth) and also with a risk factor (i.e., stressful life events) to influence decision-making. Previous pioneering studies have shown the influence of the COMT gene upon decision-making. The present study confirms these earlier studies and establishes that the ability to make advantageous decisions is not absolutely determined by COMT genotype. The authors show how key lifestyle and environmental factors, such as parental warmth during childhood, and stress during adulthood, interact with the COMT gene, then influence decision-making. This interaction explains why decision making choices varies among normal individuals. It also opens the possibility of using lifestyle changes to improve decision-making.

The present study is especially important as poor decision-making can affect an individual’s quality of life, education, and career, and make them vulnerable to conditions such as addiction, depression, and in extreme cases schizophrenia.

The study comprised 556 Chinese, male and female subjects. Once genotyped for the rs4680 SNP within the COMT gene, 310 were G/G homozygotes, 210 were G/A heterozygotes, 36 were A/A homozygotes. The researchers then split the subjects into low / high stress and low / high parental warmth groups.

**KEY FINDINGS:**
- There was a significant interaction between COMT genotype and stress
- A allele carriers with higher stress were more sensitive to rewards
- G/G homozygotes with higher parental warmth made better decisions than those with lower parental warmth

The present study shows that the COMT rs4680 polymorphism interacts with parental warmth and stressful life events to influence decision-making. Stressful life events causes COMT A allele carriers to pay too much attention to rewards. As stress is a risk factor for numerous unhealthy lifestyle behaviours, including poor diet, addictive behaviours, substance abuse, and many psychiatric disorders, individuals who are A allele carriers should be counselled to avoid making decisions during periods of high stress. This does not just mean avoiding major life decisions: if an A
allele individual is under stress due to deadlines or family pressures, then they should be aware of any detrimental dietary, drink, and substance choices they might make.

In extreme cases, addicts, sex offenders, abusers, and thieves, who are A allele carriers are more likely to make detrimental decisions during periods of stress.

In contrast, high parental warmth causes G/G homozygotes to make better decisions, and helps with social adjustment and educational achievement. G/G homozygotes who experience high parental warmth are less likely to display problematic adolescent behaviour or experience depression. Parental warmth acts as a protective factor in gene-environment interaction.

These important findings present novel ways of looking into problems of poor decision making and addiction, and suggest new directions for their treatment.

RESOURCES: