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The genetics of temperament and behaviour problems



In collaboration with Professor Tony Jorm and Professor Simon Easteal from the Australian National University in Canberra, we are carrying out some exploratory studies of the genetics of temperament and behaviour. There is increasing world-wide interest and research activity in the genetic or inherited bases of behaviour. The Australian Temperament Project provides a golden opportunity to test out some of the existing theories about the genetics of temperament, personality and behaviour. Because the genetic links to behavioural traits may vary with age and stage of development, the project is especially important in its capacity to contribute to this kind of research, since we can look at relationships across time. Using cheek swabs to obtain saliva samples, we collected DNA (genetic material) from 660 children from the project.

One aspect of the serotonin transporter gene (5-HTTLPR) has been reported to be associated with anxiety-related personality traits in adults. Our first set of analyses investigated this relationship in the project sample. We did not find the same results as had previous studies of this relationship. However we did find that at ages 13–14 years and 15–16 years, the long/long genotype was associated with higher anxiety and temperamental shyness.

We have tested out another gene behaviour association reported by international researchers. This concerned a possible relationship between a particular region of the dopamine transporter gene and Attention Deficit Hyperactivity Disorder. We also looked for possible connections with temperamental features and with other types of behaviour problems. We found no evidence for particular associations for the dopamine transporter gene with any temperament or behaviour characteristics at any age, in our sample. Differences between our results and those of others may be because the associations found by others are not reliable, or because we were looking at a normal population with a lower rate of problems, rather than a sample of individuals referred to clinics for diagnosis and treatment, among whom such associations might be more evident.

We are currently analysing a number of other genetic associations, including those of the monamine oxidase A, dopamine D3 receptor, catechol-O-methyltransferase, apolipoprotein E, mu-opioid receptor and estrogen receptor genes. We will continue to explore genetic influences on temperament and behaviour in ongoing analyses.

Further reading

See items 62 and 79 in the list of Australian Temperament Project publications at the end of this book.