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Introduction:

The thought problem (TP) subscale of the CBCL (Child Behaviour Checklist; Achenbach, 1991) has been studied less extensively than the other CBCL-scales. TP has been related to OCD, psychotic disorders and autism spectrum disorders in a variety of studies. The present study employs ratings from both parents of young twins. CBCL ratings were categorized into three classes (low, middle, high), to make the data comply with multivariate normality, required for the application of normal theory Maximum Likelihood (ML). The Psychometric rater model was then used to investigate the genetic, environmental and rater effects on variation in thought problems in 7-year old twins.

Aim:

To study the genetic and environmental effects on variation in thought problems; on the phenotype agreed upon by both parents and on the parts that are uniquely assessed.

Sample:

CBCL Parental ratings of 8190 7-year old twin pairs from the Netherlands Twin Register. There were 1402 MZ males, 1398 DZ males, 1569 MZ females, 1321 DZ females and 2660 DZ opposite-sex twin-pairs.



Methods:

Structural equation modeling (SEM) in Mx (Neale et al. 2006) was used to estimate the genetic and environmental effects. The threshold models that were fitted assume that the ordinal data has an underlying liability with a continuous and normal distribution. The two thresholds in these models represent the values that discriminate between the three classes of thought problems (low, middle, high).

After estimating the thresholds and twin correlations, the genetic and environmental parameters of the full psychometric model were estimated.

Conclusion:

This is one of the first applications of the liability model to parental rater data. Individual differences in thought problems are accounted for by genetic and environmental factors. Shared environmental influences on the reliable phenotype were very low to absent. Rather large influences of rater specific shared environmental influences, including rater bias, are found. Finally, significant father specific genetic influences are found, indicating that fathers provide extra information regarding thought problems in their children.

Results:

Figure 1: The psychometric model

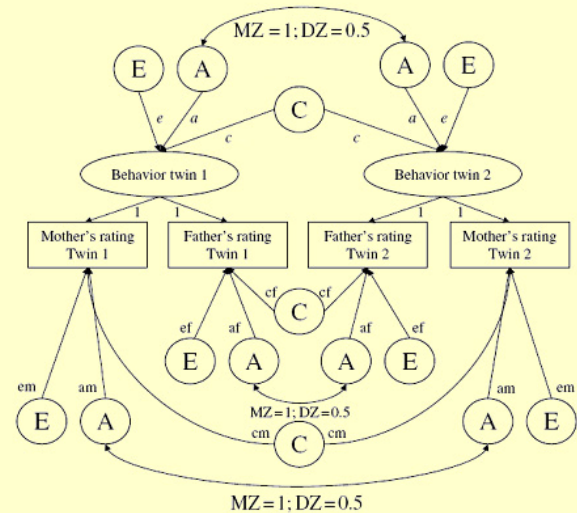


Table 1: Estimates of the genetic and environmental influences

	Maternal Ratings		Paternal Ratings	
	Boys	Girls	Boys	Girls
Genetic influences:				
Common part	45 %	48 %	45 %	48 %
Unique part	0 %	8 %	19 %	22 %
Shared environmental influences:				
Common part	5 %	0 %	5 %	0 %
Unique part	21 %	18 %	10 %	7 %
Non-shared environmental influences:				
Common part	16 %	17 %	16 %	17 %
Unique part	13 %	9 %	5 %	6 %