



Music and literary talents: evidence for genetic influences?



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Introduction

Some scientist suggest that the only requirement for expertise in a field, e.g. playing an instrument, is practice (Ericsson, et al., 2005). Others think there are more factors that influence achievement (Ruthsatz, et al., 2007). We tested if special talents cluster in families and whether this clustering has a genetic basis.

Subjects

The Netherlands Twin Register collects data by mailed surveys. Twins were recruited through City Councils. We used data from the 1991 survey for 3372 twins (54% female). Average age was 17.7 yr (SD=2.3). For same-sex twins zygosity was based on DNA polymorphisms (434 pairs) or from survey items.

Measures

Self report information for nine competences was collected on a 4 point scale, ranging from no talent or no knowledge at all, to a superior level. Talents included music, arts, writing, language, chess, mathematics and sports.

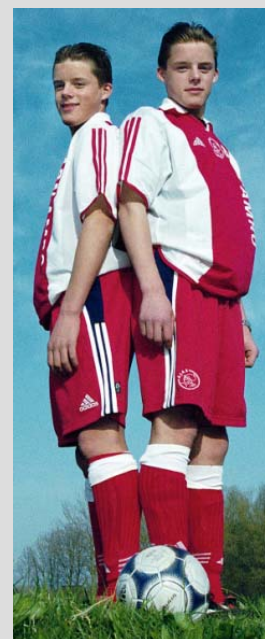
Statistical Analysis

Twin correlations were estimated by maximum likelihood based on a liability model. Answers on the 4 point scale are assumed to reflect an individual's score on an underlying normal distribution of liability with zero mean and unit variance. Thresholds divide the distribution into ordered categories. Polychoric correlations reflect resemblance between twins on the liability scale.

Results: Twin correlations (polychoric correlations based on liability model with 2 thresholds)

Zygosity	mzm	dzm	mzf	dzf	dos
N of pairs	284	248	381	299	481
Music	.74	.45	.80	.63	.42
Arts	.54	.36	.64	.29	.22
Writing	.47	.11	.46	.09	.23
Language	.63	.42	.76	.39	.31
Chess	.48	.20	.51	.07	.01
Mathematics	.66	.19	.68	.30	.14
Sports	.63	.39	.81	.65	.16
Memory	.43	.15	.51	.01	.19
Knowledge	.58	.30	.51	.25	.31

mz=monozygotic
dz=dizygotic, m=male
f=female, os=opposite sex



Conclusion

MZ twins resemble each more than DZ twins: this is evidence for a contribution of genetic factors to special talents.