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Introduction:

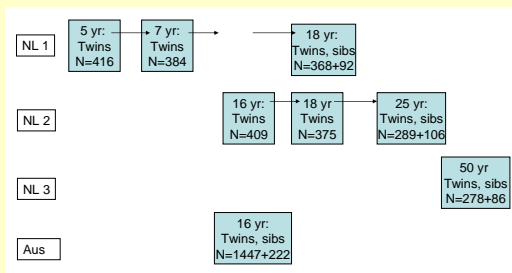
Head circumference gives an approximation of brain size, as in humans the foetal and postnatal skull bones enlarge because of outward pressure from the growing brain. What determines variation in head size at different ages?

Aim:

- I. Estimate heritability for variation in head size
- II. Linkage analysis

Samples:

Twins and siblings from the Netherlands and Australia.



Linkage samples: 328 Dutch and 385 Australian families

Statistical analyses:

Estimation of correlations in Mx
Linkage in Merlin (VC, with age and sex as covariates)

Conclusion:

High heritability (>80%) at all ages for variation in head size.

LOD score > 2 in Dutch data on chromosomes 8 and in Australian data on chromosome 6.

LOD score > 2.5 in Dutch data on chromosome 17, with possible replication in Australian data.

Measures:

Head circumference was obtained in most samples as part of EEG studies and was assessed with a tape measure using the 10-20 electrode placement system (Pivik et al. 1993) over the occiput and just above the eyebrows and ears.



Results: correlations

NL 1

<i>twins</i>	N / r 5	N / r 7	N / r 18	<i>sibs</i>	N / r 18
MZM	41 / .85	37 / .84	32 / .87	FF	30 / .50
DZM	44 / .44	41 / .58	32 / .44	MM	21 / .33
MZF	47 / .89	42 / .89	43 / .83	MF	37 / .43
DZF	37 / .59	34 / .51	38 / .44		
DOS	39 / .44	38 / .44	37 / .70		

NL 2

<i>twins</i>	N / r 16	N / r 18	N / r 25	<i>sibs</i>	N / r 25
MZM	37 / .79	35 / .88	30 / .85	FF	27 / .60
DZM	34 / .33	30 / .46	23 / .52	MM	24 / .21
MZF	47 / .90	42 / .89	32 / .64	MF	33 / .28
DZF	38 / .40	36 / .34	31 / .34		
DOS	41 / .49	37 / .46	27 / .31		

NL 3

<i>twins</i>	N / r 50	<i>sibs</i>	N / r 50
MZM	28 / .73	FF	18 / .22
DZM	13 / .62	MM	30 / .23
MZF	40 / .77	MF	38 / .57
DZF	32 / .12		
DOS	25 / .33		

OZ

<i>twins</i>	N / r 16	<i>sibs</i>	N / r 16
MZM	137 / .84	FF	61 / .13
DZM	103 / .36	MM	48 / .24
MZF	153 / .77		
DZF	112 / .24		
DOS	217 / .12		

