DIW BERLIN

Differentielle Psychologie
Psychologische Diagnostik
Universität des Saarlandes
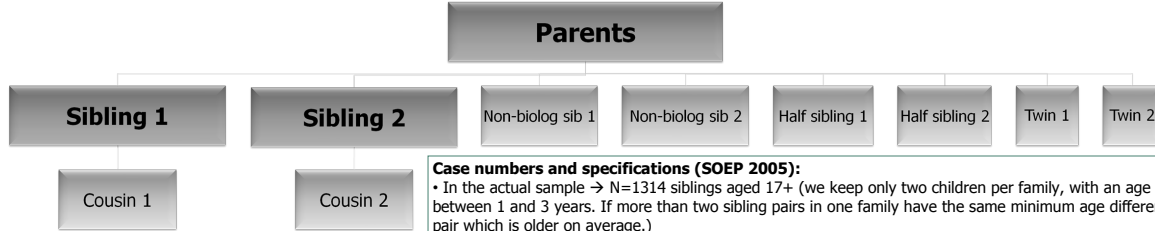
SOEP

The German
Socio-Economic
Panel Study

Feasibility Study for an Extended Twin-Family Design
Related Study based on SOEP

Frank M. Spinath[1], Elisabeth Hahn[1], Jürgen Schupp[2,5], Thomas Siedler[3,5] & Gert G. Wagner[4,5]

1 - Saarland University; 2 - FU Berlin; 3 - University of Essex; 4 - Berlin University of Technology; 5 - SOEP

Family Data in the SOEP

Parents

Sibling 1 — **Sibling 2** — Non-biolog sib 1 — Non-biolog sib 2 — Half sibling 1 — Half sibling 2 — Twin 1 — Twin 2

Cousin 1 — Cousin 2

Case numbers and specifications (SOEP 2005):
• In the actual sample → N=1314 siblings aged 17+ (we keep only two children per family, with an age difference between 1 and 3 years. If more than two sibling pairs in one family have the same minimum age difference, we keep the pair which is older on average.)
• Non-biological children → N=53 (15 mothers have one biological and one non-biological child and 19 mothers have 2 non-biological children)
• Half siblings, foster children and cousins yet to be identified. Potential spouses of both generations are possible to identify.

Extended Twin-Family-Design
by an extra-sampling of genetically informative groups
Test with a related sample is underway

Extended Twin-Family Design
Combination of offspring and parent data to separate different genetic and environmental factors

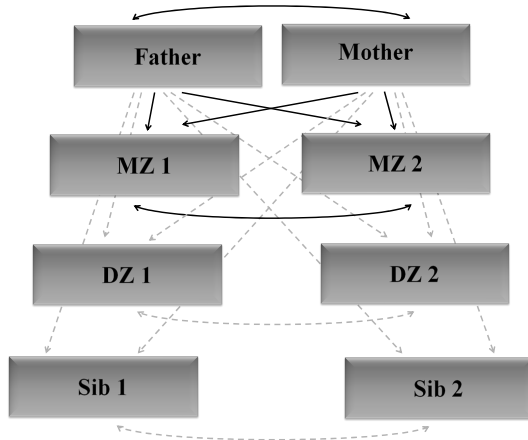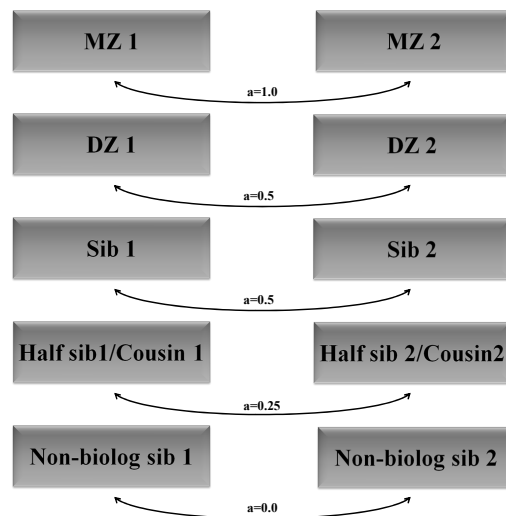Father — Mother
MZ 1 — MZ 2
DZ 1 — DZ 2
Sib 1 — Sib 2

Figure caption:
MZ= monozygotic twins; DZ= dizygotic twins; Sib= full siblings; Half sib= half siblings; Cousin= children of siblings; Non-biolog sib= adoptive children, step children or foster children; 1 and 2= first and second member of a pair; a= additive genetic relatedness

Multi-Group Design
Simultaneous comparison of covariances within different groups varying in genetic and environmental similarity

MZ 1 — MZ 2 (a=1.0)
DZ 1 — DZ 2 (a=0.5)
Sib 1 — Sib 2 (a=0.5)
Half sib1/Cousin 1 — Half sib 2/Cousin2 (a=0.25)
Non-biolog sib 1 — Non-biolog sib 2 (a=0.0)

Actual sample size:
• MZ → N=358 individuals, 179 pairs (Jena, TwinPaw, Infratest)
• DZ → N=268 individuals, 134 pairs (Jena, TwinPaw, Infratest)
• Sib → N=1314 individuals, 657 pairs (SOEP)

Methodological possibilities

Extended Twin-Family Design
• Differentiation of common environmental and non-additive genetic effects
• Increased power to discriminate between additive und non-additive genetic effects
• Increased power to detect the effect of assortative mating
• Reliable estimation of cultural transmission

SOEP and Registries
• Measurement in the home (incl. possibilities for tests)
• Greater flexibility regarding psychometric and diagnostic requirements
• Representative longitudinal design (incl. all members of a family)
• Tailoring of assessments along the line of content requirements
• Interdisciplinary data sets (psychological, social und economic research topics)

Multi-Group Design
• Consideration of gene-environment (G-E) correlation
• Investigation of gene-environment (G×E) interaction
• More robust estimates of genetic and environmental components than classical twin design
• Greater generalizability to population
• Possibility of examine the sensitivity of results to variations in modeling assumptions
• Possibility of testing the equal environment assumption and specific twin environments

References
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