



Underlying Sources of Overlap between Adolescents' Perceptions of General Family Functioning and Family Conflict

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Introduction

Adolescents' perception of family functioning is assumed to be directly associated with positive and negative outcomes (e.g. Millikan et al., 2002). Genetic effects have been found to substantially influence environmental measures like family functioning (Plomin & Bergeman, 1991). It is likely that these genetic effects have an indirect effect through gene-environment interaction (GxE).

Aims: (1) test for GxE in adolescents' perception of general family functioning (GFF) and level of family conflict (FC); (2) test whether the same genetic and environmental factors influence GFF and FC in males and females; (3) test whether the number of siblings in the family moderated genetic and environmental variance in GFF and FC.

Methods

Sample: All subjects were registered with the Netherlands Twin Registry (NTR). Data on GFF and FC were obtained from surveys and were available for 2,030 Dutch adolescent twin pairs and their non-twin siblings. There were 326 MZM, 281 DZM, 457 MZF, 356 DZF, and 610 DOS twin pairs.

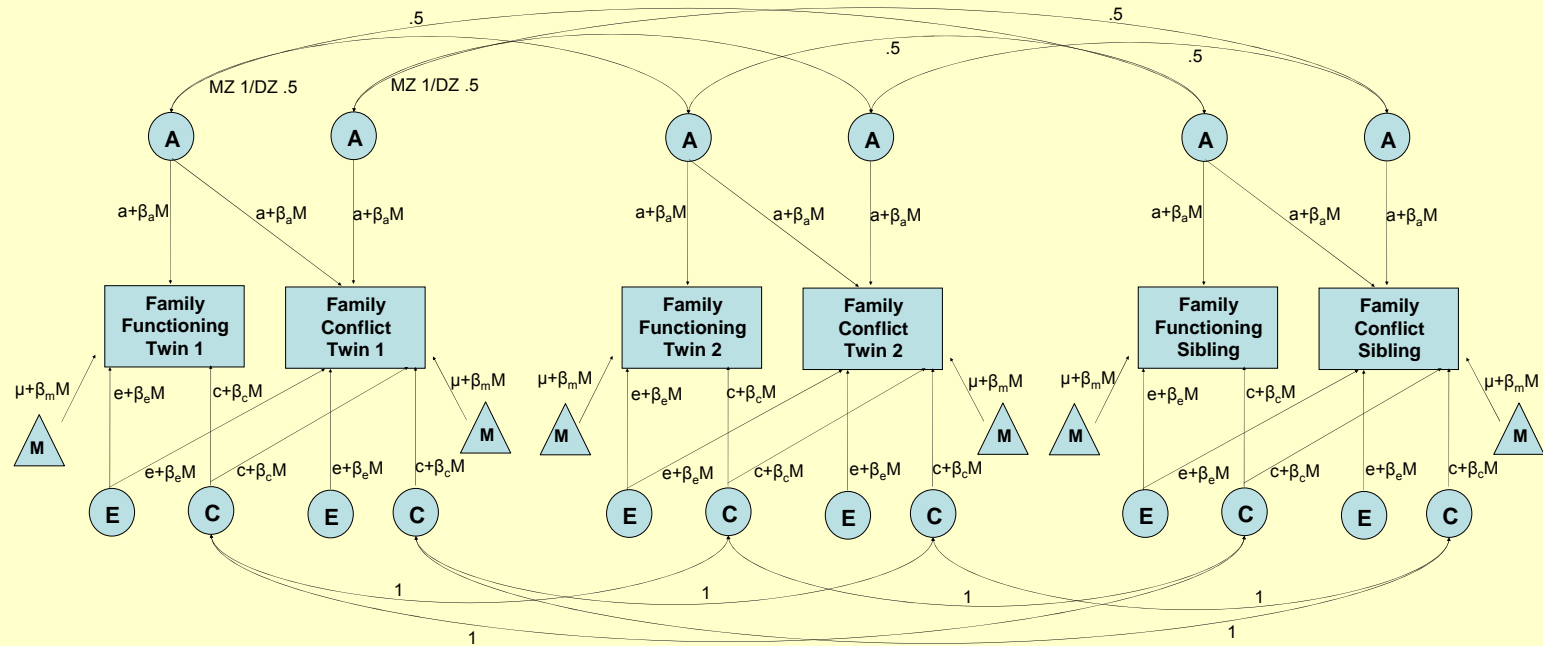
GFF: Subscale from McMaster Family Assessment Device

FC: Subscale from Family Environment Scale

GxE interaction: correlation between intrapair sumscores and difference scores in MZ twin pairs (Jinks & Fulker, 1970).

Using structural equation modeling in Mx (Neale et al., 2006), a bivariate Cholesky decomposition (Figure 1) was fitted to the data to estimate additive genetic (A), shared environmental (C), and nonshared environmental (E) effects on variance in and covariance between GFF and FC. The number of siblings in the family was modeled as a moderator (M) on the means and variance components to test for main and interaction effects respectively.

Figure 1: Bivariate Cholesky decomposition for GFF and FC with the number of siblings in a family as a moderator (M)



Results and Conclusions

Significant negative correlations between intrapair sumscores and difference scores for FC in MZM ($r = -.27$) and MZF ($r = -.16$). This suggests that adolescents who perceive higher levels of FC are more susceptible to nonshared environmental influences: GxE.

In females the genetic correlation was .41, suggesting that a substantial part of genes underlying perception of GFF and FC are common. In males and females, the shared environmental correlation was 1, suggesting that perception of GFF and FC share the same underlying shared environmental influences. The nonshared environmental correlation was .27 in males and .19 in females, suggesting that a limited part of nonshared environmental influences are common.

Significant negative main effect of the number of siblings on GFF ($\beta = -.06$) and FC ($\beta = -.12$), indicating that GFF and the level of FC are perceived as worse with higher numbers of additional siblings within the family.

No significant moderation of the number of siblings on (co)variance components A, C, & E. Thus, no evidence was found that the number of additional siblings in the family does interact with genetic or other environmental factors influencing adolescents' perceptions of GFF and FC.

Table 1. Contributions of additive genetic and shared and nonshared environmental effects to variance in and covariance between GFF and FC

	Males			Females		
	A	C	E	A	C	E
GFF	.26	.22	.52	.45	.10	.45
FC	.27	.38	.35	.43	.32	.25
Cov.	--	.71	.29	.44	.42	.15