

Using Sibling Designs to Understand Development

Although sibling relationships, and particularly sibling rivalry, have featured prominently in religious texts, literature, and the popular media (Bart Simpson would certainly not be the same without his foil of a sister Lisa), siblings are often neglected in scientific research. Even among family researchers, the prominence of the parent-child relationship in comparison to the sibling relationship is staggering. A perusal of this year's Society for Research in Child Development program yields a ratio of 20:1 for parent-child: sibling presentations. This is in spite of the fact that children's time spent with siblings often outstrips that spent with parents (Larson & Richards, 1994), and that in some cases the contribution of siblings is at least as great as that made by parents in fields as diverse as gender development (McHale, Updegraff, Helms-Erikson, & Crouter, 2001) and antisocial behaviour (Garcia, Shaw, Winslow, & Yaggi, 2000).

As well as the sibling relationship being an important context for children's individual development—as some of the articles in the issue will demonstrate—data from siblings also allow for specialized analytic possibilities. When I was invited to guest edit a special issue about siblings, it was the opportunity to disseminate these methodological prospects that appealed to me. Therefore, I solicited contributions that would demonstrate the value of sibling designs, regardless of whether a researcher is interested in siblings *per se*.

The crux of sibling designs is that they allow researchers to examine within-family processes as well as between-family processes. Arguably, we have behavioral geneticists to thank for our appreciation of within-family effects. In 1987, Robert Plomin and Denise Daniels published an article, "Why are children in the same family so different from each other?" which highlighted the fact that once genes are taken into account, most environmental influence works within families, making siblings different to one another, rather than between families (which would lead to sibling similarity). The articles that make up this special issue showcase different techniques that have been developed to understand children's development using sibling designs to pinpoint both between- and within-family processes.

The first article by Richmond and Stocker (2009) uses a difference score approach to quantify within-family variation. Sibling differences in experience of marital conflict and parent-child hostility are shown to link with sibling differences in the children's externalizing problems. This elegant tool has stood the test of time because it is a simple, elegant, powerful method that is unsurpassed in terms of reader friendliness.

In the second article Tina Kretschmer and I (Pike & Kretschmer, 2009) use structural equation modelling to quantify both shared (between-family) and nonshared (within-family) sources of correlation. This method is a simplification of models developed for twin and/or adoption data by behavioral geneticists. In our exemplar

analyses, we disentangle the shared versus nonshared contributions to the association between parenting and children's behavior problems.

More recently, multi-level modelling has been used to analyze data from multiple children within families. The particular strength of this method in comparison to the first two is that data from any number of children can be used within the same analysis. That is, multilevel modelling allows singleton families, two child families, three child families, etc. to be analyzed simultaneously. A stumbling block for many researchers including myself has been that such analyses are complex, and the results often difficult to comprehend. We are very fortunate that Jenny Jenkins and colleagues (2009) agreed to write their article that explains the method very clearly.

The next two articles (Rende et al., 2009; Slomkowski et al., 2009) take a different tack in sibling design. In the first, Rende and colleagues describe a technique for capturing siblings' behavior in real time, using Ecological Momentary Assessment (e.EMA). Through the technique, Rende and colleagues were able to capture the real-life contexts in which siblings have been described as "partners in crime." In the second, Slomkowski and colleagues use microsocial coding of sibling interactions to address the process whereby older siblings may influence the drinking behavior of their younger siblings, likening siblings to agents of contagion. Taken together, these two papers are exemplars of a new wave of sophisticated methodologies designed to reveal the processes whereby siblings themselves can act as socializers.

The final two papers use siblings of differing genetic relatedness when assessing shared versus nonshared environmental influences to children's development. Specifically, these two papers demonstrate the utility of twin designs for identifying (and then controlling for) genetic influences when assessing between- versus within-environmental influences. DeThorne and Hart (2009) provide a description of the twin method, and analysis of conversation data with accompanying discussion that clarifies how such analyses should be interpreted, and the implications that can be drawn from such data. As an added bonus, DeThorne and Hart also describe how the most simple of quantitative genetic analyses can be used to uncover sophisticated evocative gene-environment effects. The final paper in the issue (Ganiban et al., 2009) uses more complex quantitative genetic modelling. The paper is an excellent example of the way in which genetic designs can be used to inform mainstream developmental theory. Specifically, the analyses that Ganiban conducts test different theoretical accounts of the structure of personality.

The aim of this Special Issue was to pull together a selection of papers that might just make one or two readers consider including more than one child per family in their research. Time will tell as to whether that aim is met!

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