Empirical Article

Shared Versus Nonshared Effects: Parenting and Children’s Adjustment

Alison Pike and Tina Kretschmer

Including more than one child per family in research enables the identification of nonshared family effects (resulting in sibling differentiation) as well as shared family effects (resulting in sibling similarity). This paper describes a model used to disentangle shared from nonshared processes in links between parenting and children's behavior. The sample consisted of 172 families with two children aged four to eight years. Children and parents provided reports of parenting, and parents also reported on the children's behavior problems. According to mothers, parenting of children within families was largely similar, however the children's reports (via puppet interviews) indicated substantial differential treatment. In addition, links between parenting and behavior problems were largely nonshared—reinforcing the message from behavioral geneticists that parenting functions on a child-by-child rather than family-by-family basis. That is, rather than serving to make their children similar to one another, these findings support the idea that parent-child interactions lead to unique developmental trajectories for children.

Keywords: siblings, nonshared environment, shared environment, parenting, problem behavior

The vast majority of socialization research examines one child per family, ignoring evidence that within-family variation can be at least as important as between-family variation (e.g., Reiss, Neiderhiser, Hetherington, & Plomin, 2000). This paper describes a structural equation modelling (SEM) technique designed to disentangle variance accounted for by these two sources of variance, using data from siblings within families. As an example, the links between parenting and children's behavior problems are considered. To place this methodology and analysis in context, a focussed review of socialization and parenting, within-family effects, and quantitative behavioral genetic modelling follows. Next, the present sibling model is described.

Socialization and Parenting

Traditional socialization research conceptualizes environmental agents as influencing children's development, with parents being the most influential of these agents. The literature documenting cross-sectional and longitudinal associations between parenting and children's outcomes is vast (see Parke & Buriel, 2006). Much of this research also acknowledges bi-directional influences, but children's effects on parents are still studied less often. That is, researchers recognize that children's characteristics such as temperament and cognitive abilities can affect parents, as well as par-
ents having an effect on their children (Bell, 1968; Kuczynski, 2003). Sibling designs provide a particularly strong instrument for detecting children's contributions, by enabling the comparison of different children's effects on the same parent.

It is still overwhelmingly the case, however, that socialization research involves one child per family. This presumes that the effects of socializing agents (e.g., parents) operate on a between-family basis. For example, by examining hostile parenting and children's behavior problems in the typical way, variation in parenting between families is related to variation in behavior problems between families. The limitation of this approach is that parents with more than one child do not treat their child in an identical fashion, nor do these children exhibit identical levels of behavior problems. In the next section, we review extant evidence documenting the importance of within-family differences in socialization.

**Within-Family Effects**

Twenty years ago Plomin and Daniels (1987) alerted developmental psychologists to a salient finding from behavioral genetic research. This research demonstrated that children within families often grow up very differently to one another, and that sibling similarity is primarily due to shared genes rather than to siblings sharing the same rearing environment. This began a wave of research (reviewed by Turkheimer & Waldron, 2000) examining links between within-family effects and differential sibling outcome.

An early example of this research was conducted by Dunn and colleagues (1990). Scores for maternal affection and control were obtained for a non-clinical sample of siblings in middle childhood. As an index of differential maternal treatment, difference scores were created. That is, parenting scores for two children within each family were obtained, and subtracted from one another yielding a difference score that includes both the magnitude and direction of differential treatment. Results indicated that maternal differential treatment was related to both internalizing and externalizing behavior. Differences in maternal affection and control combined to explain 34% of the variance in internalizing behavior and 27% of the variance in externalizing behavior (Dunn, Stocker, & Plomin, 1990). It is noteworthy that these effect sizes are at least as large as those reported in typical between-family socialization studies. Such findings imply that within-family (nonshared) processes deserve the same degree of attention as between-family (shared) processes. In a more recent study, results confirmed moderate links between maternal differential treatment and children's adjustment. Specifically, the findings suggested that mothers' reports of differential positive feelings were the most salient aspect of maternal differential treatment for older siblings whereas mothers' reports of negative feelings and positive discipline were the most salient aspects of maternal differential treatment for younger siblings (Coldwell, Pike, & Dunn, 2008).

These examples are typical of the difference score approach that has been used in most of the existing research of this kind, and is illustrated in the article by Richmond and Stocker (2009). A limitation of this approach is that although it quantifies
within-family effects, it does not simultaneously quantify between-family effects. The present paper describes an SEM that does just this, by adapting existing quantitative genetic model-fitting techniques.

Quantitative Genetic Modelling

Basic univariate genetic models decompose the variance of traits into their genetic, shared environmental, and nonshared environmental components (see DeThorne et al., 2009, for details). Quantitative genetic theory has also been used to decompose the covariance between two traits or behaviors into their genetic, shared environmental, and nonshared environmental components. A schematic of a “common factors” model is presented in Figure 1. Using such a model, it is possible to calculate the association between an environmental variable (e.g., harsh parenting) and a child outcome variable (e.g., antisocial behavior), and to what degree that association is due to common genes influencing both variables, common shared environmental experiences, or common nonshared environmental experiences. For this example, the common genes would include those genetic propensities responsible for both eliciting harsh parenting and children's antisocial behavior. The estimate of common shared environment indexes the effect of between-family effects of harsh parenting (once genetic effects have been accounted for), and the estimate of common nonshared environment indexes the influence of within-family effects of harsh parenting.

![Figure 1. Schematic behavioral genetic common factors model. A=genetic, C=shared environmental, E=nonshared environmental influences common to parenting and antisocial behavior; a1=genetic, c1=shared environmental, e1=nonshared environmental influences unique to harsh parenting; a2=genetic, c2=shared environmental, e2=nonshared environmental influences unique to antisocial behavior.](image)

This approach has been used to document the genetic and environmental factors common to parenting and adolescent outcome (e.g., Jacobson & Rowe, 1998; Pike, McGuire, Hetherington, Reiss, & Plomin, 1996), and implicates both shared and
nonshared processes. This approach is limited, however, to genetically sensitive designs, such as twin or adoption designs. Such specialist designs are relatively rare, and expensive to conduct. In addition, as experiments of nature, twins and adoptees may differ from the general population. It is therefore valuable to examine such processes among “garden variety” siblings.

The Sibling Model

The model proposed here is a bridge between the approaches typically taken by sibling researchers and behavioral geneticists. As a simplification of the genetically sensitive common factors model presented above, the sibling model disentangles shared and nonshared effects. A schematic of the model is depicted in Figure 2. These effects, however, do not distinguish between genetic and environmental factors. Therefore, the nonshared effects include nonshared genes as well as nonshared environment, and the shared effects include shared genes as well as shared environment.

The utility of the model is in examining the relative importance of shared versus nonshared processes, regardless of the origins of such processes. Concretely, such a model can inform as to whether a mother’s level of harsh parenting is important when compared to other mothers in the population (i.e., is she generally more or less harsh than other mothers), or whether the key factor for children’s outcomes is whether a child is treated more or less harshly than his/her brother or sister. Answers to such questions have clear theoretical and practical implications. Theoretically, this model can pinpoint the process whereby socialization occurs. Practically, such an analysis identifies the relative importance of a parent’s general style versus the importance of equity within families.

![Figure 2. Schematic sibling model. S=shared, N=nonshared influences common to parenting and antisocial behavior; s1=shared, n1=nonshared influences unique to harsh parenting; s2=shared, n2=nonshared influence unique to antisocial behavior.](image)
Current Study

The current study had three aims:
1. To describe the sibling model for detecting shared and nonshared family effects for environment-outcome associations.
2. To present results for parenting (candidate environmental variable) and children's behavior problems (candidate outcome variable).
3. To interpret these results in light of traditional socialization research and theory.

Method

Sample

The sample consisted of 172 families with at least two children. 83% of the older children in the study were the eldest in their family, and 79% of the younger children in the study were also the youngest in their family. 63% of the families who took part had two children, 31% had three, and 6% had four or more children. Fifty-four were single-mother families and the remaining 118 were two-parent families. Thirty-nine boy-boy pairs, 52 boy-girl pairs, 41 girl-girl pairs and 41 girl-boy pairs took part. The average age of the older sibling taking part in the study was 7.4 (SD=.84) years, and the average age of the younger sibling 5.2 (SD=.61) years. Families came from a mix of working class and middle class backgrounds and there was a wide range of educational attainment amongst the families. The families were almost exclusively Caucasian (92% of mothers), reflecting the population from which this sample was drawn. Further details of the study can be found in Pike, Coldwell, & Dunn, 2006.

Procedure and Measures

Families were visited at home where parents and children were interviewed and parents completed questionnaires. A description of the content of the measures is given below.

Parenting: Child Reports. The Berkeley Puppet Interview (BPI; Ablow & Measelle, 1993) is a technique that obtains questionnaire type data from young children using interview questions from two puppets. During the audiotaped interview, two identical puppets make opposing statements about a member of their family (e.g. “my mom is nice to me” “my mom is not nice to me”) and then ask the child about themselves (e.g. “how about your mom?”). Children’s responses were subsequently coded on a 7-point scale where 1 is the most negative score and 7 the most positive. When a child chooses a response option as expressed by the puppet a code 2 (for a negative response – “my mom is not nice to me”) or a code 6 (for a positive response – “my mom is nice to me too”) is used. When a child amplifies a statement (e.g. “my mom is horrible to me” or “my mom is really nice to me”) a code 1 (negative) or 7 (positive) is used. A code 3 or
5 indicates a response that is qualified in some way (e.g. “my mom isn’t nice to me all the time” or “My mom is nice to me most of the time”). Finally, a code 4 is used when a child indicates that both response options apply to them.

The interview was composed of 2 subscales related to parenting, warmth and hostility. Internal consistencies for the BPI subscales ranged from α=.62 to .74. The parent-child relationship subscales of the BPI each contain six items. The warmth subscale includes items such as “my mom is nice to me” versus “my mom is not nice to me” and the hostility subscale contains items such as “my mom is mean to me” versus “my mom is not mean to me”. After initial coding, scores were calculated such that higher scores indicate more hostility and warmth respectively.

Parenting: Mother reports. In order to create warmth and hostility scales that were as equivalent as possible to the children’s puppet reports, we selected items from the Expression of Affection Inventory (Hetherington & Clingempeel, 1992), the Parent-Child Relationship Scale (Hetherington & Clingempeel, 1992), the Parental Feelings Questionnaire (Deater-Deckard, 2000), and the Parental Discipline Interview (Deater-Deckard, 2000). For each of the items from the children’s puppet interview, we selected the item closest in terms of content. For example, mothers were asked how often they shouted at their child (from the Parent Discipline Interview), which we deemed a match for the puppet item “my mom shouts at me a lot”. Average warmth and hostility scores were thus constructed for mothers’ reports of their parenting towards the older and younger siblings. Adequate alphas (ranging from .62 - .79) were achieved, especially in light of the fact that each sub-scale contained six items.

Behavior Problems. The Strengths and Difficulties Questionnaire (Goodman, 1997) is a parent report of children’s strengths and difficulties. Mothers were asked to indicate how true different statements of behaviors were about their child within the last six months, using a three point scale ranging from “not true” (1) through “sometimes true” (2) to “certainly true” (3). The total difficulties (behavior problems) scale was formed by items measuring 4 scales: hyperactivity (5 items: e.g. “restless, overactive, cannot stay still for long”); emotional symptoms (5 items: e.g. “many worries, often seems worried”); conduct problems (5 items: e.g. “often fights with other children or bullies them”) and peer problems (5 items e.g. “rather solitary, tends to play alone”).

Results

Preliminary analyses

Descriptive information for all study measures is provided in Table 1. Also included are the sibling intraclass correlations. As can be seen, children’s reports of maternal warmth and hostility were not significantly correlated whereas mothers reported substantial similarity in the treatment of their two children. Concerning older and younger children’s behavior problems, a moderate association was found. Next, cor-
relations between the parenting measures and the older and younger siblings’ behavior problems were calculated (see Table 2). As expected, these correlations were moderate to substantial for maternal reports of parenting. In the case of children’s puppet reports, the correlations were more modest in magnitude.

Table 1. Descriptive statistics for all study measures.

<table>
<thead>
<tr>
<th></th>
<th>Older sibling</th>
<th>Younger sibling</th>
<th>Intraclass sibling correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children’s reports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warmth</td>
<td>5.57 (0.75)</td>
<td>5.41 (0.81)</td>
<td>.11</td>
</tr>
<tr>
<td>Hostility</td>
<td>3.58 (1.17)</td>
<td>3.30 (1.06)</td>
<td>.02</td>
</tr>
<tr>
<td>Mothers’ reports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warmth</td>
<td>0.0017 (0.62)</td>
<td>-0.0038 (0.62)</td>
<td>.60*</td>
</tr>
<tr>
<td>Hostility</td>
<td>0.000 (0.69)</td>
<td>0.0137 (0.70)</td>
<td>.66*</td>
</tr>
<tr>
<td>Behavior Problems</td>
<td>10.46 (5.92)</td>
<td>9.75 (5.22)</td>
<td>.34*</td>
</tr>
</tbody>
</table>

Note. * p < .001

Table 2. Correlations between parenting and behavior problems.

<table>
<thead>
<tr>
<th></th>
<th>Older Sibling Behavior Problems</th>
<th>Younger Sibling Behavior Problems</th>
</tr>
</thead>
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<td></td>
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<tr>
<td>Warmth</td>
<td>-.18*</td>
<td>-.11</td>
</tr>
<tr>
<td>Hostility</td>
<td>.20*</td>
<td>.03</td>
</tr>
<tr>
<td>Mothers’ reports</td>
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<td></td>
</tr>
<tr>
<td>Warmth</td>
<td>-.46***</td>
<td>-.28***</td>
</tr>
<tr>
<td>Hostility</td>
<td>.37***</td>
<td>.43***</td>
</tr>
</tbody>
</table>

Note. *** p < .001, ** p < .01, * p < .05

Univariate sibling model

Shared and nonshared components of variance for maternal warmth and hostility as well as the children’s behavior problems were calculated using the model-fitting program Mx (Neale, Boker, Xie, & Maes, 2004). The univariate model consisted of two observed variables and three latent variables (see Figure 3). Taking the example of children’s reports of maternal warmth, the observed variables represent OS’ and YS’ ratings for that measure. The latent variable S represents the shared component of variance (i.e., the overlap in variance between siblings). The latent variable N represents the nonshared component of variance (i.e., unique to each sibling), and also contains any variance due to measurement error. Separate models were calculated for all four parenting measures and children’s behavior problems, yielding estimates of shared and nonshared components of variance (see Table 3). It should be noted that all path coefficients in these models are standardized and therefore represent the percentage of
variance that is explained by shared and nonshared components. Shared components were substantial and significant for the mothers’ reports of parenting. However, most of the variance for total difficulties was explained by nonshared factors. The nonshared components were also substantial for the children’s reports of maternal warmth and hostility. In essence, these univariate models replicate the preliminary sibling intraclass correlation results. There are good reasons, however, for including these more formal models. The first is that the model makes the assumption of equal variances for older and younger siblings explicit. In fact, any departure from a perfect fit in these models must be due to variance differences. For example, the variances for mother rated warmth were .381 & .383 for older and younger siblings, respectively, yielding near perfect fit indices. The worst fit emerged for problem behaviors due to the discrepancy in variances – 34.998 and 27.281 respectively. The second reason for presenting the univariate model is to foreshadow the bivariate sibling model.

Figure 3. Full univariate sibling model. s=shared, n=nonshared influences on maternal warmth.

Table 3. Univariate model fitting results.

<table>
<thead>
<tr>
<th></th>
<th>Shared component</th>
<th>Nonshared component</th>
<th>Chi-Square</th>
<th>RMSEA</th>
</tr>
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<td>Children’s reports</td>
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<td>Warmth</td>
<td>.13</td>
<td>.87*</td>
<td>0.847</td>
<td>.000</td>
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<tr>
<td>Hostility</td>
<td>.03</td>
<td>.97*</td>
<td>1.520</td>
<td>.055</td>
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<td>Mothers’ reports</td>
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<tr>
<td>Warmth</td>
<td>.60*</td>
<td>.40*</td>
<td>0.002</td>
<td>.000</td>
</tr>
<tr>
<td>Hostility</td>
<td>.66*</td>
<td>.34*</td>
<td>0.047</td>
<td>.000</td>
</tr>
<tr>
<td>Behavior Problems</td>
<td>.35*</td>
<td>.65*</td>
<td>3.028</td>
<td>.109</td>
</tr>
</tbody>
</table>

Note. * p < .05

Bivariate Sibling Model

After confirming modest to moderate associations between parenting and children’s behavior problems, the bivariate sibling model was used in order to disentangle this association into its shared and nonshared components. The common factors model used
requires that the correlation between the observed variables be positive. To achieve this, the parental warmth scores were reverse-coded prior to model fitting. Maximum-likelihood analyses were performed using MX (Neale, Boker, Xie, & Maes, 2004). Figure 4 represents the full bivariate sibling model with four latent variables. The latent variables at the top of the figure (S and N) reflect the shared and nonshared factors that are common to both measures. The latent variables at the bottom of the figure (s and n) reflect shared and nonshared factors unique to the parenting and behavior problems measures.

![Figure 4. Full bivariate sibling model. S=shared, N=nonshared influences common to parenting and behavior problems; s1=shared, n1=nonshared influences unique to parenting; s2=shared, n2=nonshared influences unique to behavior problems.](image)

The model defines the shared and nonshared components at the level of the correlations between the latent variables. The curved double-headed arrow linking the common shared factors (S) for the siblings is set to 1 thereby defining the shared component. The common nonshared factors (N) are not joined by a curved double-headed arrow because this factor indexes that component not shared by siblings. It should be noted here that the common nonshared factor does not include measurement error. This is because the model is decomposing covariance rather than variance, and this is free from random error (Pedhazer & Schmelkin, 1991). The curved double-headed arrows linking the unique shared factors (s1 & s2) represent the correlation of the unique influences for the two siblings, and are again set at 1.

Sibling variance/covariance matrices for each parenting-behavior problem association were analyzed. Figure 5 represents only one half of the full model, which is...
sufficient given that both siblings are constrained to have equal values. Using the example of maternal warmth (mothers’ reports) and behavior problems, the following paragraph describes the results of these analyses. Concerning the association between maternal warmth and total difficulties, the paths that link both measures via the non-shared component were both significant (.61 and .41), though not those paths linking these measures via the shared component (.31 and .34). Given that all path coefficients in this model are standardized, the extent to which shared and nonshared components explain the correlation between maternal hostility and children’s total difficulties can be calculated. To do this, the path coefficients linking both measures via the latent factors are multiplied. For the current model this yielded an estimation of contributing shared factors of .11 (.31 x .34) and a contribution of nonshared factors of .25 (.61 x .41). Summing these estimates reveals the model’s estimate of the correlation between maternal warmth and children’s total difficulties, \( r = .36 \). Referring back to Table 2, it can be seen that the model’s estimate is mid-way between the actual correlation for the older \( (r = -.40) \) and younger \( (r = -.28) \) siblings. The estimates for shared and non-shared contributions can then be divided by the model’s estimate of the correlation to calculate the percentage contribution from shared and nonshared processes. Within the current model, 30% shared and 70% nonshared processes accounted for the link between maternal warmth and children’s total difficulties.

![Figure 5. Bivariate sibling model for maternal warmth (mothers’ reports) and problem behavior. * p<.05.](image)

Table 4 contains the results for all four models. The associations between parenting and behavior problems were primarily explained by nonshared processes. In the case of the children’s reports of parenting, the associations with behavior problems were entirely accounted for by nonshared influences. For the mothers’ reports, shared influences also accounted for about a third of the associations. Next, we explored reasons that the models did not fit the data perfectly. A major constraint of the proposed model is that
older and younger siblings are presumed to have equal variances and covariances. To test whether departures from this assumption were responsible for departures from fit, the models were recalculated using correlation rather than covariance matrices. Chi-squares and RMSEA for these models supported a good model-data fit with $\chi^2$ ranging from 0.997 to 4.445 (all $p>.10$) and RMSEA between .000 and .091.

Table 4. Bivariate sibling models.

<table>
<thead>
<tr>
<th></th>
<th>$S_p$</th>
<th>$S_{bp}$</th>
<th>$N_p$</th>
<th>$N_{bp}$</th>
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<th>$s_{bp}$</th>
<th>$n_p$</th>
<th>$n_{bp}$</th>
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<th>$N%$</th>
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<tr>
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<td>.34</td>
<td>.44*</td>
<td>.41*</td>
<td>.39*</td>
<td>.81*</td>
<td>.50*</td>
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<td>.18</td>
<td>--</td>
<td>100</td>
<td>6.339*</td>
<td>.112</td>
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<td>.42*</td>
<td>.24</td>
<td>.89*</td>
<td>.51*</td>
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<tr>
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<td>.41</td>
<td>34</td>
<td>66</td>
<td>5.607*</td>
<td>.110</td>
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</table>

Note. $S_p$ = common shared contributions to parenting; $S_{bp}$ = common shared contributions to behavior problems; $N_p$ = common nonshared contributions to parenting; $N_{bp}$ = common nonshared contributions to behavior problems; $s_p$ = unique shared contributions to parenting; $n_p$ = unique nonshared contributions to parenting; $s_{bp}$ = unique shared contributions to behavior problems; $n_{bp}$ = unique nonshared contributions to behavior problems; $Pc$ = Phenotypic correlation; $S\%$ = Shared %; $N\%$ = Nonshared %. * $p < .05$.

Discussion

The sibling model described in this paper is a simplification of a quantitative genetic “common factors” model. As such, it enables data from sibling pairs to reveal the extent that shared versus nonshared processes influence child development. Because of its derivation, the model provides an analytic and conceptual framework bridging the gap between behavioral genetic modeling and traditional sibling research techniques.

To illustrate the approach, we analysed parenting and behavior problems in middle childhood. From the children's perspectives, parenting within families was inconsistent. That is, the puppet interviews with the older siblings within families were not predictive of the answers given by the younger children to the puppets. In contrast, mothers reported substantial consistency in their parenting of the children. This is probably in part due to the maternal reports stemming from a single rater, whereas the children's reports were from both children's puppet interviews. We propose that the “truth” most likely lies between these two extremes (see Pike, Reiss, Hetherington, & Plomin, 1996). In any event, these findings highlight the importance of using multiple reporters, and indicate that parents may be valuable informants of shared family factors while children within families may be particularly attuned to nonshared elements.

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Replicating decades of previous research, we found moderate links between parenting and the children’s behavior problems. Next, we turned to our main goal – revealing the extent of shared and nonshared processes underlying these links. As expected given the univariate results discussed above, shared processes did not underlie either of the associations between the children’s reports of parenting and their behavior problems. Shared processes did account, however, for about a third of the associations between maternal reports of parenting and the children’s problem behaviors. Interpretation of this aspect of the results is quite straightforward—those mothers who tend to treat their children with more warmth and less hostility report that their children display less behavior problems. The fact that this is a shared component indicates that similarity in maternal treatment—whether nasty or nice—is linked to congruent adjustment in the children. As with all cross-sectional non-experimental designs, we cannot determine the direction of effects, however these findings are consistent with traditional socialization theory and interventions aimed at reducing children’s problematic behaviors by encouraging parents to use more positive strategies with their children (Scott, 2007).

The results regarding shared processes were dwarfed, however, by our nonshared findings. In the case of the children’s puppet reports, links with problem behavior were entirely accounted for by nonshared processes, and even in the case of the maternal ratings, the lion’s share of the links were “explained” by nonshared factors. These findings were foreshadowed by previous behavioral genetic studies (see Reiss, Neiderhiser, Hetherington, & Plomin, 2000) as well as by previous sibling studies using difference score methodology (e.g., Deater-Deckard et al., 2001). Even we were somewhat surprised, however, at the size of the nonshared versus shared effects. These results indicate that within-family variability in parenting may be the more potent element for problem behaviors, as these analyses show that parenting-child behavior links encourage sibling differentiation rather than uniformity. It is worth noting, however, that a different pattern of results is emerging for other developmental outcomes. For example, shared environmental processes have been shown to be important for delinquency (Burt, McGue, Krueger, & Iacono, 2007) as well as substance use (see Slomkowski et al., 2009).

Theoretical Implications

Our results in no way discount the importance of parenting in children’s lives, however they do reinforce the message from behavioral geneticists that parenting functions on a child-by-child rather than family-by-family basis. That is, rather than serving to make their children similar to one another, these findings support the idea that parent-child interactions lead to unique developmental trajectories for children. Findings such as these also do not discount the results of the thousands of one-child-per-family parenting studies. What is clear, however, is that parents adjust their parenting strategies to the individual characteristics of their children, and that these nuances, rather than a parent’s over-arching personality, are reflected in children’s behavior.
These results may be interpreted to mean that differences in parental treatment necessarily cause differences in siblings’ outcomes. Since both the parenting and adjustment measures were assessed at the same time, this study cannot address the direction of effects. These associations may, in fact, be child-driven. For example, a child's greater degree of problematic behavior might cause that child to elicit more maternal hostility than his/her sibling. A more likely scenario is that this is a bidirectional relationship, in which the children and their parents affect each other (Kuczynski, 2003). This approach, incorporating both shared and nonshared effects, also falls in line with family systems theory, with its focus on the mutual influence of family members and the synergistic effects of family sub-systems (Minuchin, 1988).

Practical Implications

Findings revealing the importance of within family variation are also not in opposition to classic parenting interventions (Scott, 2007). In fact, within family effects highlight the importance of parental sensitivity, a central plank to many parenting programs. In addition, although non-experimental studies of parenting from unselected populations can reveal potentially useful factors/strategies/interaction styles for changing child behavior, non-experimental work describes what is in terms of family life, rather than what could be which is the territory of intervention trials.

Nonetheless, we put forward that results such as ours are consistent with models of therapy that take a family-wide approach rather than only focussing on an individual child. Existing research has shown that part of the potency of within-family differences in parental treatment stems from children’s perceptions of differential treatment, real or imagined. It would be too simplistic, however, to merely advocate that parents treat their children in an equal fashion. Children within families have different needs, for example, in terms of their developmental level, gender, and temperament. Previous research has demonstrated that what matters most is how children interpret parents’ behavior. For example, a study of adolescents found that siblings were less worried by differences in how parents treated them than whether they felt they were treated fairly (Kowal & Kramer, 1997). This confirms our belief that children’s subjective views are particularly important. Parents might do well to explain to siblings why they are acting as they are, and parent educators could highlight the importance of ‘fairness’ to children’s well being.

Future Directions

The current sample included working- and middle-class families; however, the population from which the sample was drawn is primarily Caucasian. Future research including ethnic minority groups and families across different cultures has the potential to increase the generalizability of patterns of nonshared versus shared influences or to uncover cultural variations reflecting differing family processes. Relatedly, our findings

pertain to a specific developmental period (middle childhood), and future research may reveal that shared and/or nonshared influences change across the life course.

As our exemplar, we chose the most often studied nonshared environmental candidate—parental differential treatment. Given that the effect of such factors should be the differentiation of siblings, we propose that extra-familial environmental factors are key candidates. In addition, the model can be extended to include more than one environmental factor. In fact, the existing models used to analyse data from behavioral genetic studies provides a large bank of possibilities for researchers with sibling data (see www.vcu.edu/mx/ for an archive of analytic scripts), including longitudinal extensions that could begin to unravel the direction-of-effects issue, tests for sex differences, and many more.

The sibling model described here is limited to use with information from two children per family. Although it is a minority of families that contain more than two children, it is a limitation that this model cannot incorporate information gleaned from all children in larger families, nor singleton children. The subject of the paper by Jennifer Jenkins and colleagues (2009), multi-level modelling, describes an analytic tool capable of analysing such data.

References


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