Relation of Eighth Graders' Family Structure, Gender, and Family Environment With Academic Performance and School Behavior

Lawrence A. Kurdek
Wright State University

Ronald J. Sinclair
Huber Heights School District
Huber Heights, Ohio

The purpose of this study was to assess how family structure, gender, and family environment were related to both academic performance (end-of-the-year grades and quantitative and verbal achievement factor scores) and school behavior (number of days absent, number of days tardy, and number of in-school detentions). Subjects were 219 middle-class eighth graders (96 boys, 123 girls). Generally, students in two-parent nuclear families had better academic performance and less problematic school behavior than did students in either mother-custody or stepfather families. Boys had more detentions than did girls. Despite significant differences among the three family structures, the family structure variable accounted for at most only 7% of the variability in academic performance and school behavior. A family environment that emphasized achievement and intellectual pursuits accounted for variability in end-of-the-year grades beyond that accounted for by family structure, gender, and family conflict. The joint consideration of family structure, gender, and family environment accounted for at most 17% of the variance in academic performance and in IQ scores (Ganong & Coleman, 1984).

Because the number of children growing up without both biological parents is expected to increase (Glick & Lin, 1986), the purpose of this study was to assess the relation between family structure and children's school functioning. Six features of the design of this study are of note. First, unlike researchers who compared children from two-parent homes with those from single-parent homes, we compared children from two-parent nuclear, divorced, and stepfamily families. Second, subjects were eighth graders, and thus the sample was somewhat older than those of previous studies. Third, we controlled SES factors by selecting students from the same public junior high school that served a middle-income community. Fourth, in keeping with the traditional emphasis in this area on father absence, all children from divorced families and stepfamilies lived with their biological mothers. Fifth, school functioning was assessed via academic performance (end-of-the-year grades and quantitative and verbal achievement scores) as well as school behaviors (number of days absent, number of days tardy, and number of in-school detentions). Last, in order to identify family processes related to academic performance and school behavior, students provided information on the extent to which their family environments were characterized by low conflict and an emphasis on achievement and intellectual pursuits.

Three specific questions were of interest. First, are there differences in the academic performance and school behavior among students in two-parent nuclear, mother-custody, and...
stepfather families? Gender was also considered in light of findings that the academic performance of boys in divorced families is especially negatively affected (Guidubaldi et al., 1983; Guidubaldi & Perry, 1985).

Second, what is the relative amount of variance in academic performance and school behavior accounted for by family structure, gender, and family environment? Although results of previous studies have indicated that family structure is related to academic outcomes, few researchers have reported the actual strength of that relation. Typically, the amount of variance actually accounted for is quite small, often as low as 1% (Svanum et al., 1982). Thus it is possible that family processes may be more critical to academic excellence than is family structure per se. We examined two such processes: conflict among family members and a family environment that emphasized achievement and intellectual pursuits.

Conflict among family members was of interest because it has been identified as being particularly pathogenic in intact families for both sociopsychological function (e.g., Block, Block, & Gjerde, 1986; Enos & Handal, 1986) and academic performance (Westerman, La Luz, Cavallaro, & Tanaka, 1986). Thus we were interested in assessing the amount of variance accounted for by family conflict over and above that already accounted for by family structure and gender.

Families that valued achievement and intellectual pursuits were selected because of demonstrated linkages between parental values and academic achievement (Hess & Holloway, 1984). Of particular interest was whether a family environment with a strong achievement and intellectual orientation would account for variability in academic performance and school behavior beyond that already accounted for by family structure, gender, and family conflict.

Third, what is the relation between father involvement and both academic performance and school behavior for children living without their biological fathers? There is some evidence supporting the view that fathers' involvement, modeling, and availability may facilitate school functioning, especially in the quantitative area and particularly for boys (Forehand, Long, Brody, & Fauber, 1986; Hetherington et al., 1983; Shinn, 1978). If this view is valid, then father involvement in the lives of children, especially boys, in mother-custody and stepfather families should be positively related to academic performance, particularly in the quantitative area.

Method

Subjects

Subjects were 219 eighth graders (96 boys, 123 girls) from the same public junior high school. Students in special education classes and students not enrolled for the entire academic year (178 days) were excluded. Most of the students (93%) were White, with a mean age of 13.84 years (SD = 0.58). Students came from middle-class families (determined on the basis of neighborhood housing costs), and only 5% received free lunches (i.e., were below the poverty line). The two-parent nuclear family group was represented by 67 boys and 85 girls, the mother-custody group by 15 boys and 17 girls, and the stepfather group by 14 boys and 21 girls.

Measures and Procedure

All measures were administered by school personnel on a single day. A general information sheet and the measure of family environment were completed before the achievement tests. Students were assured that their responses to the general information sheet and family environment measure were voluntary and confidential. Data regarding the receipt of free lunches, end-of-the-year grades, absences, tardiness, and detentions were culled from school records.

General information. Students provided information regarding gender, age, and family structure. We assessed the latter variable by having students choose one of six descriptions that characterized their current living situation. The three of interest were (a) "I live with my natural mother and my natural father" (two-parent nuclear); (b) "My parents are separated or divorced. I live with my natural mother who has not remarried" (mother-custody); and (c) "My parents are divorced and my mother has remarried. I live with my natural mother and stepfather" (stepfather).

Father involvement. As part of the general information sheet, students who lived with their mothers alone or with their mothers and stepfathers completed three ratings regarding contact with their biological fathers. These involved frequency of visitation (1 = never, 7 = everyday), regularity with which the father showed up for scheduled visits (1 = never, 4 = all of the time), and frequency of phone contact (1 = never, 7 = daily). Seventeen children (7.8% of the total sample and 25.4% of the father-absent children) never saw their fathers. We computed a composite father involvement score by transforming each of the three scores to z scores and summing them. Cronbach's alpha for this composite score was .87.

Family environment. The Family Environment Scale (Moos & Moos, 1981) is a 90-item scale written in a true/false format. Three scales, with nine items apiece, were of interest: conflict among family members, achievement orientation, and intellectual/cultural orientation. Because of the similarity in content and in an effort to improve scale reliability, items from the achievement orientation and intellectual/cultural orientation scales were combined to form a single achievement-intellectual orientation scale. Cronbach's alphas for the conflict and achievement-intellectual orientation scales, based on the present sample, were .79 and .54, respectively.

Grades. End-of-the-year grades were recorded for English, reading, math, science, and social studies (on a scale from F = 1 to A = 5). Because Cronbach's alpha for the summed composite score was .91, a mean grade score was used in all analyses.

Achievement scores. Sequential Tests of Educational Progress (STEP) raw scores (with sample mean and standard deviation) were available for reading (M = 36.79, SD = 6.76), vocabulary (M = 21.41, SD = 4.20), writing skills (M = 37.76, SD = 6.17), mathematical computation (M = 42.31, SD = 8.50), and mathematical concepts (M = 39.15, SD = 6.96). Sample means for verbal and quantitative School and College Ability Tests (SCAT) raw scores were 33.14 (SD = 6.83) and 32.46 (SD = 8.20), respectively. In order to reduce the number of achievement scores, the intercorrelations among the four STEP scores and the two SCAT scores were submitted to a principal-components factor analysis with varimax rotation. Two eigenvalues exceeded 1.00 (3.63 and 1.15) and together accounted for 68% of the total variance. The two factors were easily labeled Quantitative (with loadings of .91 for mathematical computation, .62 for mathematical concepts, and .82 for quantitative reasoning) and Verbal (with loadings of .82 for reading, .88 for vocabulary, .68 for writing skills, and .41 for verbal skills). Factor scores were derived by means of the regression method.

Absences and tardiness. End-of-the-year data were gathered on the number of days absent and the number of days tardy. Because
Excused and unexcused absences ($r = .37, p < .01$) and excused and unexcused tardies ($r = .21, p < .01$) were each positively related, they were summed.

**Detentions.** The number of detentions for the whole academic year were also recorded. Typical offenses that resulted in detention were use of obscenities, talking in class, cutting class, aggression against a fellow student (e.g., pushing on stairs, tripping), chewing gum, and throwing paper.

**Results**

**Score Intercorrelations**

For descriptive purposes, we present in Table 1 Pearson correlations between the independent variables of family structure (represented by two dummy-coded variables, FS1 and FS2, which indicated membership or nonmembership in two-parent nuclear or mother-custody family, respectively), gender, family conflict, and achievement-intellectual orientation. Means and standard deviations for the total sample are also presented. Pearson correlations between the dependent variables (grades, quantitative factor score, verbal factor score, absences, tardies, and detentions) are presented in Table 2, along with sample means and standard deviations. The low correlations between the independent variables (see Table 1) indicate that multicollinearity was not a problem. The low correlations in Table 2 indicate that the academic performance and the school behavior scores did not overlap extensively.

**Family Structure and Gender Effects**

A $3 \times 2$ (Family Structure $\times$ Gender) multivariate analysis of variance (MANOVA) of the six academic performance and school behavior variables (grades, quantitative factor score, verbal factor score, absences, tardies, and detentions) yielded significant effects for family structure, $F(12, 418) = 2.01, p = .02$, and gender, $F(6, 208) = 3.52, p = .002$. All multivariate $F$s are based on Pillai’s trace statistic (Bird & Hadzi-Pavlovic, 1983). The Family Structure $\times$ Gender interaction was not significant. Subsequent univariate analyses of variance (ANOVAs) indicated that the family structure effect was attributable to differences among the three family structure groups on grades, the quantitative factor score, and absences, $F(2, 213) = 4.70, 5.46$, and 4.97, respectively, $p < .01$.

Student Newman-Keuls comparisons ($p < .05$) indicated that students in two-parent nuclear families had higher grades than those in either mother-custody or stepfather families ($Ms = 3.60, 3.21$, and 3.21, respectively) and higher quantitative factor scores than did students in stepfather families ($Ms = 0.17$ and $-0.39$, respectively). Last, students in mother-custody families had more absences than did students in either two-parent nuclear or stepfather families ($Ms = 12.95, 8.25$, and 8.16, respectively). Subsequent ANOVAs also indicated that the gender effect was attributable to boys’ having more detentions than did girls ($Ms = 0.77$ and 0.31, respectively), $F(1, 213) = 8.79, p = .003$.

**Relative Importance of Correlates of Academic Performance and School Behavior**

The purpose of the next set of analyses was to assess (a) the amount of variance in each of the six academic performance and school behavior scores accounted for by family structure and (b) the amount of successive incremental variance accounted for by each of the following variables: gender, conflict among family members, and an achievement-intellectual orientation of the family. Multiple regressions were run in four steps for each of the six scores. The two dummy-coded family structure variables described earlier (FS1 for membership in a two-parent nuclear family and FS2 for membership in a mother-custody family) were entered together first and followed successively by gender, conflict among family members, and the achievement–intellectual orientation score. The probability of $F$ to enter was $.05$, and the probability of $F$ to remove was .10. The multiple $R^2$ associated with each step of
the analysis are presented for each academic performance or school behavior score in Table 3. The standardized beta weights associated with the final regression equations are also presented only if the final multiple $R$ was significant.

Several patterns in the regression results are of note. First, although family structure accounted for a significant portion of the variance for grades, the quantitative factor score, and absences (as already shown by the MANOVA mentioned earlier), the actual amount of variance explained was modest (5%-7%). Second, the inclusion of gender provided an increase in variance accounted for only in cases of absences and detentions. Third, in no instance did family conflict account for variance beyond that already accounted for by family structure and gender. Fourth, the achievement-intellectual orientation family environment variable provided a significant increase in the variability accounted for in grades beyond that already accounted for by family structure, gender, and family conflict. Fourth, the final multiple $R$ was significant for grades, the quantitative factor score, and absences; the combination of scores accounted at most for 17% of the variability. Last, given the set of predictors examined, the standardized beta weight indicate that the variability in grades was best explained by a combination of family structure and the achievement-intellectual orientation family environment score; in the quantitative factor score, by family structure; and in absences, by a combination of family structure and gender.

### Table 3

**Summary of Hierarchical Multiple Regression Findings for Each Academic Performance and School Behavior Score**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Step 1</th>
<th>Step 2: Gender</th>
<th>Step 3: Family conflict</th>
<th>Step 4: Achievement/intellectual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple $R^2$</td>
<td>.07**</td>
<td>.07**</td>
<td>.09**</td>
<td>.17**</td>
</tr>
<tr>
<td>$\beta$</td>
<td>.31**</td>
<td>.12</td>
<td>.04</td>
<td>-.11</td>
</tr>
<tr>
<td>Quantitative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple $R^2$</td>
<td>.07**</td>
<td>.07**</td>
<td>.07**</td>
<td>.07*</td>
</tr>
<tr>
<td>$\beta$</td>
<td>.31**</td>
<td>.13</td>
<td>.01</td>
<td>-.01</td>
</tr>
<tr>
<td>Verbal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple $R^2$</td>
<td>.02</td>
<td>.05*</td>
<td>.05</td>
<td>.06</td>
</tr>
<tr>
<td>Absences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple $R^2$</td>
<td>.05*</td>
<td>.08**</td>
<td>.08**</td>
<td>.10**</td>
</tr>
<tr>
<td>$\beta$</td>
<td>.6</td>
<td>.24**</td>
<td>.17*</td>
<td>.05</td>
</tr>
<tr>
<td>Tardies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple $R^2$</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Detentions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple $R^2$</td>
<td>.00</td>
<td>.05*</td>
<td>.06*</td>
<td>.06</td>
</tr>
</tbody>
</table>

**Note:** Two-parent (FS1) is a dummy-coded variable reflecting membership/nonmembership in a two-parent nuclear family. Mother-custody (FS2) is a dummy-coded variable reflecting membership/nonmembership in a divorced family in which the mother has custody of the children. Gender is coded as 0 = male and 1 = female. Standardized beta weights are presented for the final equation.

* Multiple $R$ in these cases was nonsignificant; therefore betas are omitted.
* $p < .05$. ** $p < .01$.

### Relation Between Father Involvement and Academic Scores

Pearson correlations were computed between the composite father involvement score, ranging from no involvement to high involvement, and each of the academic performance and school behavior scores for students in mother-custody families, students in stepfather families, boys, and girls. Only the correlation between father involvement and the quantitative factor score for girls was significant ($r = .29, p < .05$).

### Discussion

The purpose of this study was to compare the academic performance and school behavior of eighth graders from two-parent nuclear families, mother-custody families, and stepfather families, and to identify the amount of variability in academic performance and school behavior accounted for by family structure and the incremental amounts of accounted variability provided by gender, family conflict, and family encouragement of achievement-intellectual pursuits.

In accordance with previous studies (Guidubaldi et al., 1983; Guidubaldi & Perry, 1985; Hetherington et al., 1983; Kinard & Reinherz, 1986), students from two-parent nuclear families had higher end-of-the-year grades than did students in either mother-custody or stepfather families, and higher quantitative factor scores than students in stepfather families, and had fewer absences from school than students in mother-custody families. However, two findings differ from those of previous studies. The academic performance of children in stepfather families was not equivalent to that of students in two-parent nuclear families (cf. Ganong & Coleman, 1984), and boys in father-absent families did not perform more poorly than girls in father-absent families (cf. Guidubaldi et al., 1983). These discrepancies might be attributable to differences between samples in the length of time living in mother-custody or stepfather families. One of the major limitations of this study was that this variable could not be considered because students were unreliable reporters of or did not know this information. Also, the SES range of the sample was restricted to middle-class families.

It is of note that children from the three family structures had equivalent verbal factor scores, numbers of times tardy, and numbers of detentions. The findings regarding the verbal score in particular are consistent with Hetherington et al.'s (1983) conclusion that family structure comparisons are less striking for verbal scores than for quantitative scores.

In general, the amount of variability in academic performance and school behavior accounted for by family structure, gender, conflict among family members, and family encouragement of achievement-intellectual pursuits considered as separate variables was low. However, when the full regression equations were considered, 18% of the variability was accounted for. If we assume that academic performance and school behavior are determined by multiple factors (Dweck & Elliott, 1983; Eccles, 1983; Hess & Holloway, 1984), then this modest amount of variance accounted for becomes relatively important.
The results of the regression analyses indicated that family structure and family process variables were significantly related to grades, quantitative achievement, and absences from school. Of more importance was that they also indicated that even when the effects of family structure, gender, and family conflict were taken into account, end-of-the-year grades were related to family environments that value achievement and intellectual activities. Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh (1987) found that adolescents' grades were positively related to authoritative parenting style regardless of type of family structure. This parenting style is characterized by clear setting of standards, firm enforcement of these standards, and encouragement of independence and individuality. Thus it is likely that parents who value achievement and intellectual pursuits may engage in a larger pattern of authoritative parenting. Because grades are more likely than achievement scores to reflect the combined effects of intellectual capacity and modifiable environmental/psychological factors (e.g., parent supervision, study skills, expectancies for success, and academic self-concept; Eccles, 1983), it is understandable that the family environment characteristics of interest here would be related to them.

The expectation that family conflict would account for variability in academic performance and school behavior beyond that accounted for by family structure alone was not supported. At best, the inclusion of family conflict increased the significant multiple $R^2$ for grades by only 0.02. Academic pursuits such as reading and studying have been seen as one type of escape from family conflict (Hetherington et al., 1983), and so the deleterious effects of family conflict may be more salient in the domains of psychological adjustment and personality functioning (Block et al., 1986; Enos & Handal, 1986; Kurdek & Sinclair, 1988).

Last, the hypothesis that father involvement would be positively related to academic performance and school behavior for children living without their fathers was not supported despite the multidimensional assessment of father involvement. Although this assessment was more quantitative than qualitative, this finding indicates that the poor academic performance of father-absent children is not likely attributable to lack of paternal availability, lack of opportunities to identify with a "masculine" problem-solving approach, and anxiety over losing an attachment figure (Hetherington et al., 1983; Shinn, 1978). Consequently, future studies should address directly how academic performance in children from father-absent families is related to financial resources; the adequacy of parents' and even stepparents' interest, supervision, and encouragement of academic pursuits; attributional styles for explaining success and failure; values, goals, and self-schemata related to school performance; and instructional and classroom variables (cf. Eccles, 1983).

References


