

# Parenting of Divorced Mothers as a Link between Social Status and Boys' Academic Outcomes: Unpacking the Effects of Socioeconomic Status

David S. DeGarmo, Marion S. Forgatch, and Charles R. Martinez, Jr.

Socialization theories posit parenting practices as mechanisms linking socioeconomic status (SES) and children's academic outcomes. A mediational parenting model was tested examining separate effects of maternal education, occupation, and income for a sample of 238 divorced or recently separated mothers of 6- to 9-year-old sons. For the SEM path models, each indicator of SES was associated with better parenting, and parenting in turn had indirect effects on achievement through home skill-building activities and school behavior. The direct effect of maternal education on achievement was mediated by home skill-building activities, the direct effect of maternal occupation on achievement was not mediated, and income measures had no direct effects on achievement. These findings underscore the importance of unpacking the effects of SES and the relevance of effective parenting practices as a protective factor in the home and school environment for young boys' school success during postdivorce adjustment.

## INTRODUCTION

It is widely accepted in the social sciences that a family's socioeconomic status (SES) is one of the most important contextual factors related to a child's academic development. Because of differing operational definitions, however, some aspects of the relation between SES and achievement remain unclear. These include the effect size of SES, the specific mechanisms that account for the association between SES and achievement, and the unique effects of socioeconomic indicators. To address some of these issues, the present study identifies specific parenting practices (coercive discipline and problem solving) as mediators of unique SES components within a sample of divorced families who are at risk for developing academic problems.

A moderate to strong association between SES and achievement has been documented for some time, ranging from as low as .15 to as high as .73 (Coleman, 1966; Jenks, 1972; White, 1982). In White's meta-analysis of nearly 200 studies, a more moderate correlation was reported of .22 when controlling for factors such as range restriction in SES, range restriction in achievement, grade level, and aggregate school data versus individual family level data. The correlation was inflated to .55 when family environmental characteristics such as home atmosphere, amount of reading materials, and cultural activities were used as proxy indicators of family SES. Findings from the National Longitudinal Survey of Youth have shown that maternal occupational conditions and hourly wages predicted better home environments (Menaghan & Parcels, 1991), and better home environments predicted greater verbal facility in 3- to 6-year-old children (Parcels & Menaghan, 1990). Similar effects have been

found in representative samples of older school-aged children (Grissmer, Kirby, Berends, & Williamson, 1994; Peterson & Zill, 1986). Taken together, these findings underscore (1) the importance of defining SES as a construct, and (2) the importance of parenting mechanisms in the association of SES and achievement.

Research on SES and achievement has operationalized SES in various ways, including indicators such as family income, education, family size, ethnicity, and mobility, to name a few (White, 1982). Two or more of these indicators are often combined into one factor reflecting social class or human capital (in sociology, cf. R. P. Coleman & Rainwater, 1978; J. S. Coleman, 1988) or social address (in psychology, cf. Bronfenbrenner, 1987). Although researchers may differ on specific concepts and measures of SES, there is agreement that parental occupation, education, and income are important components of SES (House, 1981; McLoyd, 1998; Taylor, Repetti, & Seeman, 1997). We examine these traditional indicators as they relate to achievement, but focus on their unique effects in a parenting process model.

When analyzed separately, White (1982) reported moderate associations between achievement and parental education, occupation, and income. When combined, however, the relation with achievement varied depending on which indicators were used to define a construct of SES. This suggests unique predictive validity of the individual indicators. Income and occupational status, for example, are likely to be less stable than educational attainment. For less stable socioeconomic characteristics, *change* itself may be a

more important measure. This is particularly relevant for divorced mothers who may for the first time have to work outside of the home, employ child care, move to less desirable neighborhoods, and change their children's schools (Kitson & Morgan, 1990; Lorenz et al., 1997; Milardo, 1987; Patterson & Forgatch, 1990). McLoyd (1998) stated that stable poverty is detrimental to child development and further descent into poverty adds to adjustment problems even if the descent is transitory. We focus on change in income following divorce as well as predivorce income in the current analyses.

The literature provides strong evidence for contextual effects of SES on child achievement; however, it does not answer the more interesting question of how certain contexts predict academic outcomes. What are specific parenting mechanisms that link SES to children's school success or failure? Far less is known about the protective factors within at-risk families that promote success than is known about risk factors (Furstenberg & Hughes, 1995). This question is important for single mothers who are at risk for disrupted parenting and changes in SES following divorce.

There is much evidence on the positive relation between parenting skills and children's achievement. For example, parental acceptance, autonomy, and behavioral control predict higher child-reported grade point averages (Dornbush, Ritter, Liederman, Roberts, & Fraleigh, 1987; Steinberg, Elmen, & Mounts, 1989; Steinberg, Lamborn, Dornbush, & Darling, 1992). Conversely, research on parenting styles has shown that divorced parents who report an authoritarian style when a child misbehaves are more likely to have children rated by teachers as lower in independent learning (Guidubaldi, Cleminshaw, Perry, & McLoughlin, 1983). We believe that research on parenting and achievement can be further explicated by identifying parenting mechanisms in the process of a child's academic development. The present study tests unique theories of socialization in both sociology and psychology that specify parenting factors as mediating variables of SES.

### Theoretical Parenting Models of Child Achievement

Theories in both sociology and family psychology posit parenting mechanisms as causal links between SES factors and child achievement. From sociology, social structure theory argues that educational and occupational conditions influence parents' ability to socialize their children. Within this framework, parents who work in occupations permitting greater autonomy will be more likely to socialize autonomy and

self-direction in their children (Kohn & Schooler, 1983; Luster, Rhoades, & Haas, 1989). Conversely, occupations that are routinized, heavily supervised, and low in autonomy will foster conformity for the worker. Kohn's model argues that parents in these types of occupations will exercise more authoritarian discipline practices. Supporting this perspective, research has found that mothers who work in occupations with a variety of tasks and problem solving opportunities were observed to provide more warmth, support, and a greater range of stimulating material (Parcels & Menaghan, 1990). Studies have replicated the Kohn model in other cultures, showing that maternal occupational conditions associated with better home environments predict children's intellectual development (Luster & Dubow, 1992; Masud, Luster, & Youatt, 1994).

From psychology, Patterson's coercion model has identified parenting practices as key mechanisms that explain child outcomes at home and at school (Patterson, 1982; Patterson, Reid, & Dishion, 1992). For example, DeBaryshe, Patterson, and Capaldi (1993) found that parental education and verbal intelligence directly predicted eighth-grade achievement for boys. There was no direct relation between parental achievement and children's appropriate academic behaviors at home and school. Rather, parental achievement indirectly influenced youngsters' academic performance through the quality of discipline provided at home.

The coercion model posits that coercive parent-child interactions teach children a negative interpersonal style that interferes with academic performance and peer relationships (Patterson, 1982). In this model, reinforcement during social interaction at the microsocial level is more proximal to child behaviors than are environmental contexts like SES. Several studies of divorced families show that lower levels of maternal education and occupation are associated with inept discipline (Bank, Forgatch, Patterson, & Fetrow, 1993; Hetherington & Clingempeel, 1992; McLoyd & Wilson, 1990; Simons, Beaman, Conger, & Chao, 1993). Ineffective discipline is associated with a host of problem behaviors that develop as a result of poor parenting (Anderson, Lindner, & Bennion, 1992; Forgatch & DeGarmo, 1997; Patterson, 1986).

Problem behaviors that develop as a result of poor parenting can interfere with adaptive school functioning, thus providing another link from parenting to school success (Kellam, Mayer, Rebok, & Hawkins, 1998; Kellam et al., 1991). Programmatic research has shown that internalizing and disruptive behaviors predict academic deficiency, concentration problems at school, and poor peer relationships (Kellam et al., 1991; Patterson et al., 1992). Children from divorced families are at greater risk for these problems (Heth-

erington & Clingempeel, 1992; Peterson & Zill, 1986; Zill, Morrison, & Coiro, 1993). For academics, we posit that effective parenting practices shape appropriate behaviors that lead to school success, and poor parenting practices lead to problem behaviors that result in school failure.

One way parents can contribute to their children's school success is by teaching children to follow directions, play by the rules, engage in prosocial activities with peers, and complete homework assignments (Walker, Shinn, O'Neill, & Ramsey, 1987). Parents with ineffective discipline strategies fail to teach their youngsters important social skills for school success. Studies have found appropriate in-class behaviors are positively related to achievement (Derevensky, Hart, & Farrell, 1983; Gamoran & Nystrand, 1991; Patterson, 1982; Walker, Stieber, Ramsey, & O'Neill, 1991). Therefore, school behavior is a focus in the current article.

We also believe that parents who foster effective problem solving skills prepare their youngsters for academic success. Problem solving and reasoning skills may enable children to employ strategies that enhance math and reading performance. In a study of families with elementary school-aged children, Blechman and McEnroe (1985) found that effective family problem solving was a stronger predictor of children's academic and social competence than were parental education and occupational status. Recent parenting models also have shown that family problem solving reduces behavior problems at home and school for children of divorced families (Forgatch & DeGarmo, 1997; Forgatch, Patterson, & Ray, 1996). In the present study, we extend previous multimethod studies of achievement by including problem solving in the parenting model.

In sum, the literature shows a consistent positive relation between SES and achievement. The separate

contributions of education, occupation, and income, however, have not been carefully examined within divorcing families, nor have specific mechanisms been identified for single mothers that may promote school success. Socioeconomic resources may provide special advantages to single mothers as they attempt to parent following divorce. Our models test theories that identify mechanisms for the relation between SES factors and academic achievement.

We propose that in divorced families, effective parenting contributes to a better home environment that encourages skill-building activities, which in turn shapes children's functioning at school. Effective parenting at home also teaches youngsters prosocial behaviors that generalize to the school environment, such as working hard and behaving appropriately. These behaviors will be associated with better academic performance and achievement. We also argue that effective parenting during social and economic changes is a more important predictor of child adjustment than is family structure alone. In this article, however, we do not directly compare different family structures; instead, we test models of the parenting process within divorcing families shortly after separation when parenting may be critical for child adjustment.

The theoretical model is presented in Figure 1, with a dashed line representing the hypothesized mediated path. Formally, we hypothesize that within divorced families,

- H1: Maternal educational and occupational attainment and financial resources will have moderate positive associations with sons' academic achievement,  
 H2: These indicators will be linked with achievement through effective parenting such that more resources will be associated with better parenting practices,

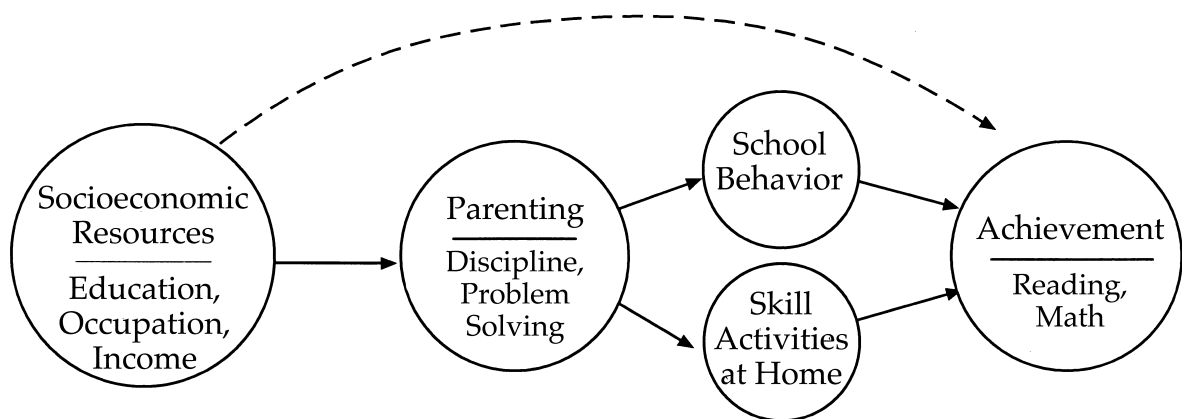


Figure 1 Theoretical model of parenting practices as a mediator of socioeconomic status.

- H3: Better parenting will be associated with more skill-building activities at home and more appropriate behavior in the school environment, and
- H4: Appropriate school behavior will predict math and reading achievement.

## METHOD

The Oregon Divorce Study (ODS) has been conducted in two phases with independent samples of recently separated single mothers and their sons. The first phase (ODS-I) began in 1984 and was a passive longitudinal study designed to develop and test models relevant to children's adjustment following marital separation using multiple-agent and multiple method procedures (Forgatch, Patterson, & Skinner, 1988). Phase II (ODS-II) began in 1992 and is a randomized experimental longitudinal study using similar assessment procedures (DeGarmo & Forgatch, 1999; Forgatch & DeGarmo, in press). All participants were paid approximately \$10 an hour for their assessment activities. Data presented here are from Time 1 of the ODS-II study, before intervention.

## Participants

Participants were 238 recently separated single mothers and their sons residing in a medium-sized Pacific Northwest metropolitan area. Families were recruited through divorce application records, media advertisements, and flyers distributed throughout the community. In eligible families, mothers (1) had been separated from their partner within the prior 3 to 24 months (2) resided with their son, who was 6 to 9 years old and in grade 1 to 3, and (3) did not cohabit with a new partner. The racial composition of the mother and boys was 86% European American, 1% African American, 2% Hispanic American, 2% Native American, and 9% of other minority groups. This distribution reflected the racial makeup of the community in which the study was conducted. At entry into the study, mothers had been separated for an average of 9.2 months. Families tended to be small, with 2.1 children on the average. Mothers' mean age was 34.8 years; boys' mean age was 7.8 years. Social characteristics of the ODS-II sample are displayed in Table 1.

The composition of the sample exhibits an adequate range in occupational and educational categories. Seventy-six percent of the mothers had some education beyond high school, with 18% having graduated from college or completed an advanced college degree. For income categories ranging from 1 to 9, the mothers in our sample experienced a precipitous drop in annual income after separation,  $M =$

**Table 1 Social Status Characteristics of the Oregon Divorce Study (ODS-II)**

	( <i>n</i> = 238)	<i>t</i>
Education		
Some high school	4%	
High school graduate	20%	
High school plus	58%	
College graduate and beyond	18%	
Occupation		
Unskilled	30%	
Semiskilled	22%	
Clerical/skilled	23%	
Medium business/minor professional	23%	
Major business/major professional	2%	
Income categories ( <i>range</i> = 1–9)		
Mean annual income category, predivorce	5.58	
Mean annual income category, postdivorce	3.27	
Change in annual income	–2.32	–16.24*
Mean per capita income, predivorce	1.33	
Mean per capita income, postdivorce	1.07	
Change in per capita income	–.26	–6.45*

\* $p < .001$ .

–2.32,  $p < .001$ . A similar drop was reported calculating per capita income change,  $M = -2.26$ ,  $p < .001$ . Extrapolating from the measured income categories, this represents a drop in annual family income of approximately \$25,800 prior to divorce to an average of \$11,600 after divorce. Median annual income figures dropped from \$25,000 prior to separation to \$12,500 postseparation.

## Measures

Measures for the current report were obtained from interviews and questionnaires with mothers, observations of interaction tasks between mothers and focal children in the laboratory, ratings provided by teachers, and standardized testing in the laboratory.

### Socioeconomic Status (SES)

SES was measured by educational and occupational attainment of the mother and per capita annual family income. *Education* was measured with categories from 1 to 12 for number of school years completed. *Occupation* used categories coded from 1 to 9 from the Hollingshead Four Factor Index of Social Status (Hollingshead, 1975). Per capita *income* was measured by dividing the annual income categories scored from 1 (less than \$5,000) to 9 (more than \$50,001) by the number of persons dependent on the mother's income.

## Parenting Practices

Two aspects of parenting practices were measured using direct observations of mother-child interactions in the laboratory, discipline, and family problem solving outcome. The interaction tasks consisted of a series of structured activities: four 5-min mother-son problem solving discussions, one 10-min teaching task, 10 min of unstructured activity, and 10 min for sharing refreshments. These activities were videotaped and scored with the Interpersonal Process Code (IPC; Rusby, Estes, & Dishion, 1991). For 15% of the interactions, randomly selected pairs of coders scored the same tape to assess intercoder agreement. Coders did not know which assignments were reliability checks.

*Discipline.* The indicators for discipline were based on IPC coding of the mother-child interactions observed from the full 45 min of laboratory tasks. Both a microsocial and a molar dimension were scored.

*Negative reinforcement* reflected a form of coercive discipline and was a microsocial score based on IPC coding of the mother-child interactions observed from the full 45 min of interaction. It involved a three-step sequence of behaviors. In the antecedent step of our operationalization, the mother initiated an aversive behavior. In the second step, the son responded with an aversive behavior within 12 s. In the last step, the mother discontinued her aversive behavior by not responding to the son for at least 12 s. Parents who fail to persevere with appropriate discipline due to a child's negative counter-response (e.g., tantrums or aggressive behavior) increase the probability of the child's use of coercive tactics (Patterson, 1982). Our premise is that parents can reduce the likelihood of further coercive child behavior by responding appropriately. The intraclass correlation coefficient (ICC) for coder reliability was .77,  $p < .001$ . Cohen's  $\kappa$  for IPC content codes was .78, and  $\kappa$  for affect was .69.

*Discipline rating* was based on a global measure provided by the IPC coders after coding all the tasks. Thirteen items rated coercive discipline techniques on a scale from 1 to 5 (e.g., uses nagging to get compliance, inconsistent, or erratic discipline, overly strict or oppressive,  $\alpha = .91$ ). The ICC coder reliability was .70,  $p < .001$ , for the scale score.

*Problem Solving Outcome (PSO).* Mother-son dyads spent 5 min on each of four topics chosen from the Issues Checklist (adapted from Prinz, Foster, Kent & O'Leary, 1979) that list common conflicts (e.g., chores, house rules, and allowances). Dyads were asked to address and attempt to resolve issues occurring in the prior month that they had rated as "hottest." Because the parent issue has proven more predictive of future

child outcomes than the child issue (Forgatch et al., 1996), three issues were selected by the mother and one issue by the child. The indicator was based on coder ratings made by the IPC coders after scoring each issue. Five items (e.g., quality of solutions, likelihood of follow through, and participants' apparent satisfaction) were rated on a 4-point scale. *Mother problem solving outcome* was the mean of the three mother-selected topics ( $mean \alpha = .85$ ). *Child problem solving outcome* was based on the child topic ( $\alpha = .86$ ). The intraclass correlation for intercoder agreement for the scale scores from the four topics was .72,  $p < .001$ .

## Home Activity

Skill development at home was measured by time spent reading and engaged in other skill-building activities and time not spent watching television. All items came from a maternal report in a laboratory interview or from the Chekeokee-McMaster questionnaire on child wellbeing (Boyle, Offord, Racine, & Fleming, 1993).

*Skill activity* was measured by three items. The first questionnaire item, "Does he ever read books or magazines for fun, not just for school?" was answered yes or no. The second item, "On average, how often does he read for fun?" was measured on a scale from 1 to 6 ("never" to "daily"). The third item from the interview, "How often does your child spend time doing a skill-building activity at home not homework (e.g., reading, art work, playing music)?" was measured on a scale from 1 to 6 ("never or seldom" to "daily"). These items were standardized and averaged to form the skill activity indicator ( $\alpha = .73$ ).

Two items assessing TV watching were from the interview and the questionnaire. The interview item asked, "On a school day, how many hours does he usually spend watching TV?" The questionnaire item "On the average how many hours a day does he watch TV?" was measured on a scale from 1 to 5 ("never" to "more than 6 hours"). The items were standardized and averaged to form the *watching TV* indicator; items were correlated .75,  $p < .001$ .

## School Behavior

Three teacher-reported indicators were used for this construct. Two indicators were *t*-score scales from the teacher rating form (Achenbach, 1991). *Adaptive functioning* had four items with a 7-point scale ("much less" to "much more",  $\alpha = .88$ ) in which teachers compared children to typical pupils of the same age on the following: How hard is he working?

How much is he learning? How appropriately is he behaving? How happy is he? *Externalizing behavior* included 34 items rated on a 3-point scale ("not true" to "very true",  $\alpha = .96$ ) reflecting negative behaviors (e.g., argues, talks back, gets in fights). *Prosocial behavior* was a 20-item scale from the Chedoke-McMaster Teacher Questionnaire (Boyle et al., 1993). The scale included a range of prosocial and peer-related behaviors (e.g., fair in games, shares, helps others, is considerate,  $\alpha = .93$ ).

### Achievement

This construct was based on two indicators obtained from academic testing conducted in the laboratory using the Woodcock-Johnson Psychoeducational Battery-Revised (Woodcock & Johnson, 1989; Woodcock & Mather, 1990). *Reading skill* was a composite standard *t* score based on two tests: Letter-Word Identification and Passage Comprehension; *range* = 43–165,  $M = 101.1$ . *Math skill* also was a standard *t* score based on two tests: Calculation and Applied Problems; *range* = 55–173,  $M = 107.9$ . The national normed test reliabilities for the reading and math test scores are .95 and .95, respectively, with standard errors of 4.1 and 3.6.

## RESULTS

We tested the linkages between indicators of maternal SES and achievement with a series of structural equation path models (SEM) employing the AMOS program (Arbuckle, 1997). Means, standard deviations, and bivariate correlations for the construct indicators are provided in the Appendix, organized in blocks for each measurement factor. The first step of the analysis tested H1 by specifying a direct path between indicators of maternal SES and a latent factor of the reading and math achievement scores. The standardized  $\beta$  coefficients for the specific effects of SES are presented in Table 2.

As expected, both educational and occupational

attainment of the divorced mothers predicted their children's academic achievement,  $\beta = .28, p < .01$ , and  $\beta = .29, p < .01$ , respectively. Interestingly, predivorce income, postdivorce income, and change in per capita income did not predict boys' academic achievement. We tested the effects of predivorce income because it seemed more likely that potentially stable income early in the child's development would be more predictive of achievement than income levels experienced in the several months following divorce. Although predivorce income was correlated at the bivariate level with the achievement indicators, neither of the income measures had direct associations with the achievement factor in the presence of the other SES indicators. The results in Table 2 indicate that personal skills of divorced mothers measured by their own educational and occupational attainment were more directly linked to their sons' academic skills than were financial resources.

In the next step, we tested H2 examining the links between SES and achievement through the home and school environment. We conducted multivariate analysis using SEM path models. Before modeling, diagnostics on the distributional nature of the indicators were conducted. The Mardia's coefficient for multivariate kurtosis for the variables in the covariance matrix was 3.01 with a critical ratio of .95, indicating multivariate normality.

The listwise deletion sample of families with no missing data produced an *n* of 190 for the analysis. There were no significant differences between those families with complete data and the families with partial missing data on any of the construct indicators. An analysis of missing values showed the largest portion of missing data was due to teacher-reported measures, with 10.2% of the data missing. The remaining observational and self-report measures ranged from .4% to 1.3% missing.

H2 stated that SES indicators would be associated with better parenting, H3 stated that quality parenting would be associated with more skill-building activities at home and better school behavior, and H4 stated that skill activities and school behavior would predict better achievement. These hypotheses were tested in several path models examining the unique contribution of SES indicators in the parenting process. The results of the path models are shown in Figures 1 through 4. For clarity, parameters are displayed for significant paths only. Maternal education effects are presented in Figure 2 in the form of standardized path coefficients.

The specified model had an adequate fit to the data and significant factor loadings and factor variance for each of the theoretical constructs,  $\chi^2(45, N = 190) =$

**Table 2** Standardized  $\beta$  Coefficient for Direct Effects of SES Variables on Boys' Achievement

Mother's Social Status Variables	$\beta$	SE	<i>t</i>
Education	.28	.07	3.07*
Occupation	.29	.07	3.69**
Predivorce per capita income	.17	.07	1.52
Postdivorce per capita income	.01	.07	1.22

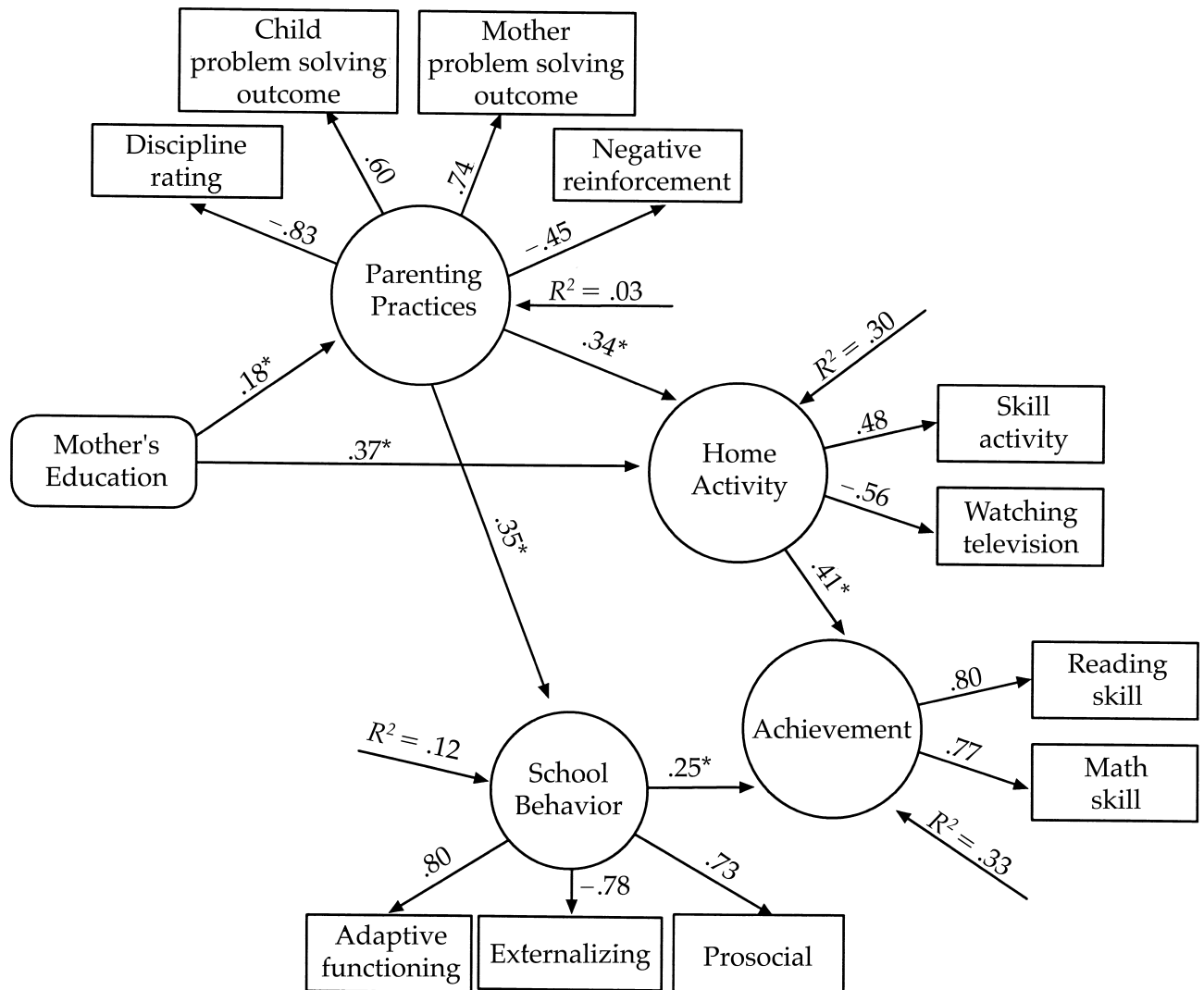


Figure 2 Path model for the effect of mother's education on parenting practices, home activity, school behavior, and achievement. Coefficients are standardized path weights.  $\chi^2(45, N = 190) = 70.36, p = .01, CFI = .95, \chi^2/df = 1.56, * p < .05$ .

70.36,  $p = .01$ . The  $\chi^2$  discrepancy  $p$  value for the overall fit was less than .05, however, the comparative fit index was close to 1 ( $CFI = .95$ ) and the relative  $\chi^2$  ratio was less than 2, indicating an acceptable fit for the specified model,  $\chi^2(1.56, N = 190; Arbuckle, 1997)$ . A perfect fit produces a ratio of 1.0, and several authors have suggested a conservative cutoff for acceptable fit is less than 2.0 (Byrne, 1989; Carmines & McIver, 1981; Marsh & Hocevar, 1985).

The effects of maternal education supported the hypotheses. First, education was associated with higher levels of quality parenting,  $\beta = .18$ . Second, the parenting construct was associated with more skill-building activities at home,  $\beta = .34$ , and appropriate school behavior,  $\beta = .35$ . Finally, both home ac-

tivity and school behavior predicted achievement,  $\beta = .41$  and  $.25$ , respectively. Education also had a significant association with home activity in the model,  $\beta = .37$ . The parenting factor had two indirect pathway associations with achievement, one through home activity and one through school performance.

The path from education to achievement shown in Table 2 was no longer significant upon entering the intervening factors for parenting, home activity, and school behavior. This meant that one or all of these factors mediated the direct association between maternal education and child achievement. We ran a series of models (not shown) to determine which factor mediated the direct effect. Following tests of mediation (Baron & Kenny, 1986; Holmbeck, 1997), we found

that home activity alone was responsible for mediating the effect of education on achievement. When parenting practices and school behavior were tested as potential mediators, the direct effect of maternal education on boy achievement remained significant. Without a measure of home activities, DeBaryshe et al. (1993) also found a direct effect for maternal education on achievement for older boys. Taken as a whole, these results suggest that engaging in structured skill-building activities at home is an important link between the mother's education and her child's achievement.

The results of the mother's occupation are shown in Figure 3. The occupation model had an acceptable fit,  $\chi^2(45, N = 190) = 70.36, p = .01, CFI = .96$ . H2 was supported by the path from occupation to the parenting factor,  $\beta = .24$ . Similar to the education model in

Figure 2, indirect links were established through parenting to achievement via home activity and school behavior, supporting H3 and H4. One key difference between Figures 2 and 3, however, was the direct association that remained between occupation and achievement. Therefore, the model supported direct and indirect associations between maternal occupation and achievement. In an additional model we also determined that a marginal relation between occupation and school behavior,  $\beta = .15, p = .06$ , was mediated by the parenting factor.

The final two models showed the pathways from income to achievement. We examined predivorce income, postdivorce income, and income change in separate models. None of the income variables supported a direct association with achievement prior to entering the parenting variables as shown in Table 2.

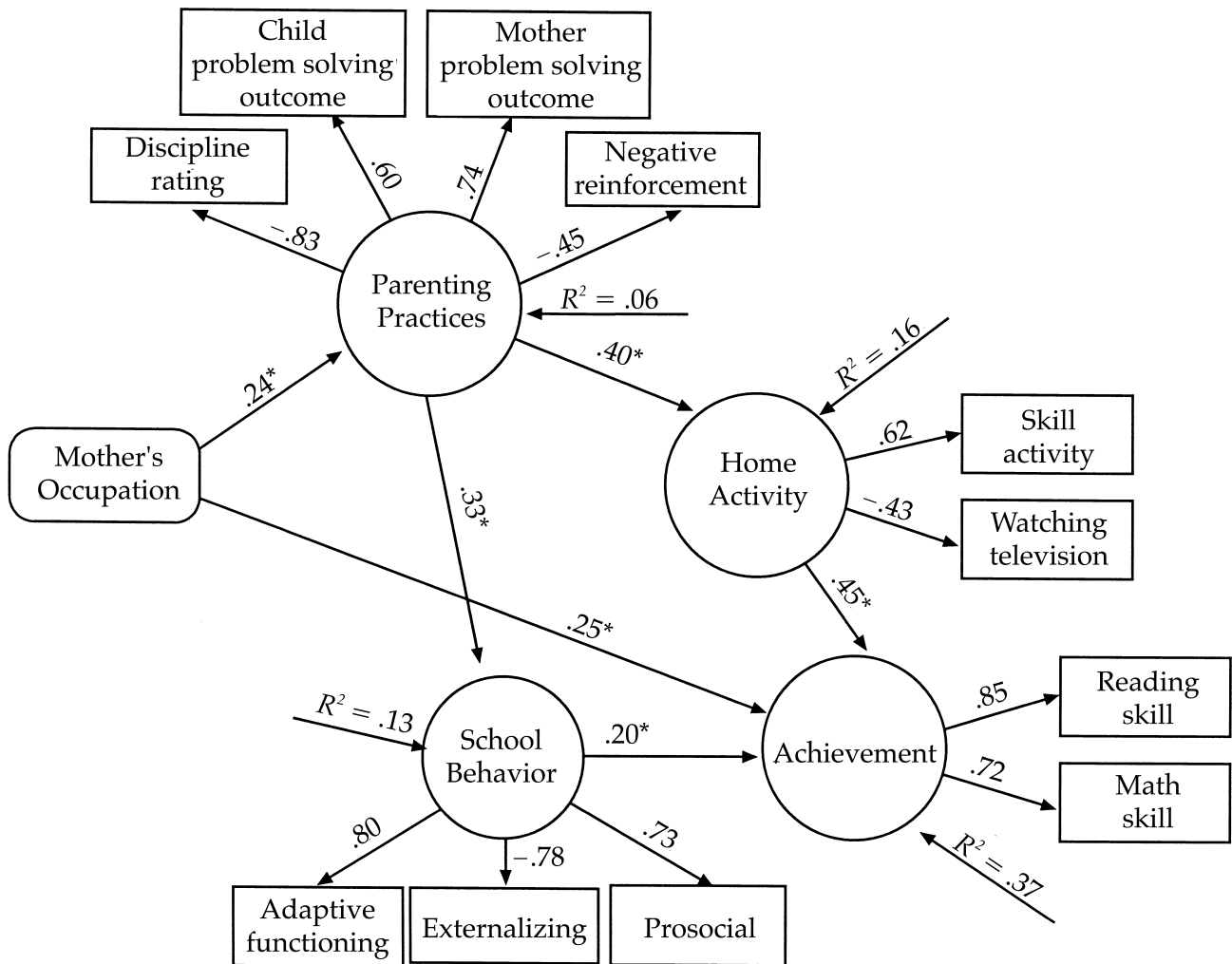


Figure 3 Path model for the effect of mother's occupation on parenting practices, home activity, school behavior, and achievement. Coefficients are standardized path weights.  $\chi^2(45, N = 190) = 66.63, p = .02, CFI = .96, \chi^2/df = 1.48, * p < .05$ .



Therefore, H1 was not supported. Indirect associations were found for predivorce income and postdivorce income as shown in Figures 4 and 5. Change in per capita income was not associated with any links to achievement through parenting or school behavior; therefore this model is not presented.

Both models obtained acceptable fit with comparative fit indices of .95 and a  $\chi^2$  ratio of less than 2. The results in Figure 4 show that predivorce income had a marginal association with parenting practices,  $\beta = .15$ ,  $p = .07$ , and a significant association with both home activity,  $\beta = .25$ , and school behavior,  $\beta = .16$ . The path model in Figure 5 shows a direct association between postdivorce income and parenting practices,

$\beta = .19$ , with no other indirect associations in the model. Further tests revealed that the indirect association of predivorce income on achievement was statistically significant,  $t(188) = 2.44$ , but postdivorce income was not. The fact that predivorce income levels had more indirect associations with achievement than other income measures provides evidence that prior income levels were more predictive of children's academic development than were more recent income changes.

After reviewing the respective models discussed above, we tested for mediating effects of the association between parenting practices and achievement. Controlling for each of the respective indicators of

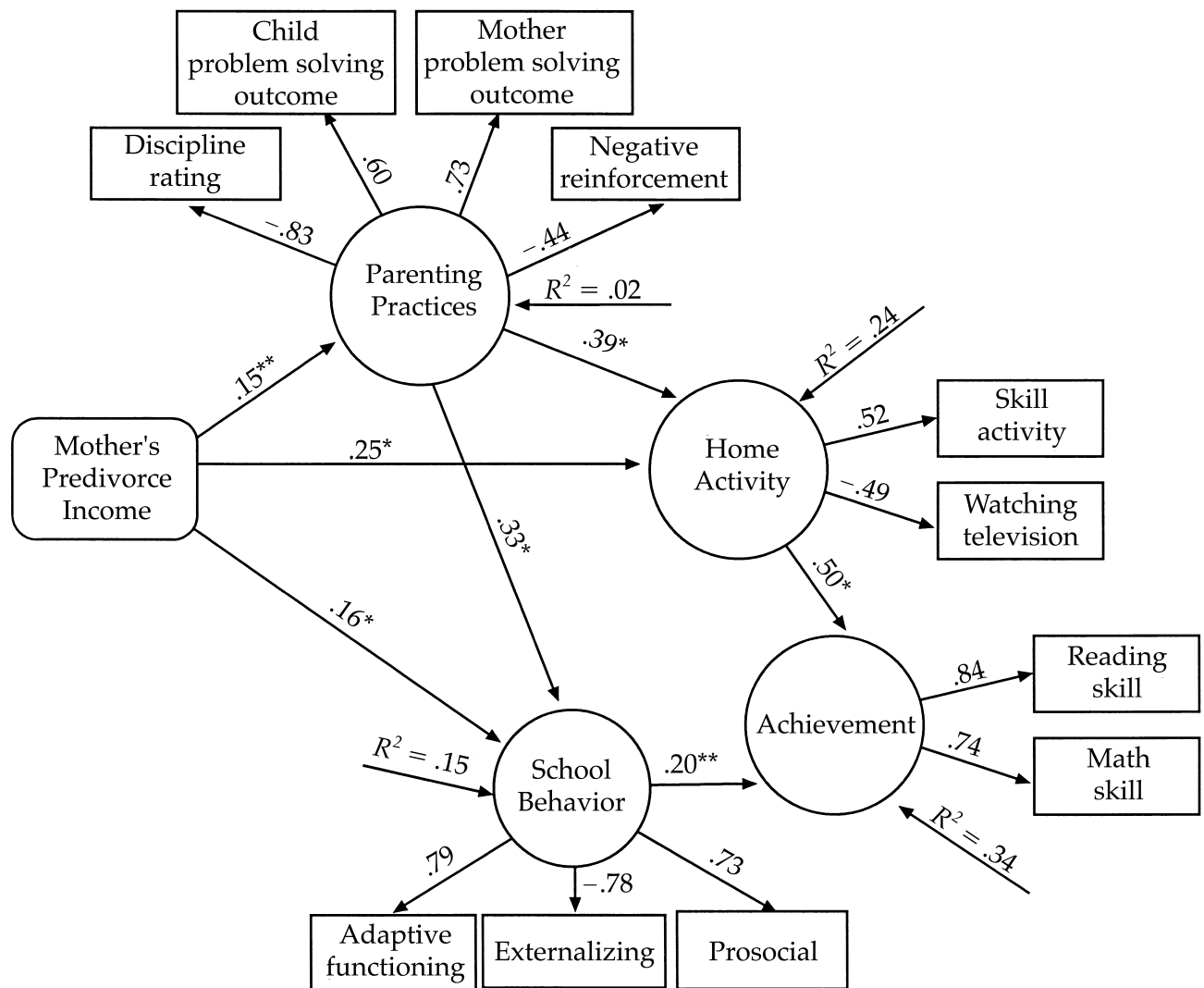


Figure 4 Path model for the effect of mother's predivorce per capita income on parenting practices, home activity, school behavior, and achievement. Coefficients are standardized path weights.  $\chi^2(45, N = 190) = 70.06, p = .01, CFI = .95, \chi^2/df = 1.56, * p < .05, ** p < .10.$

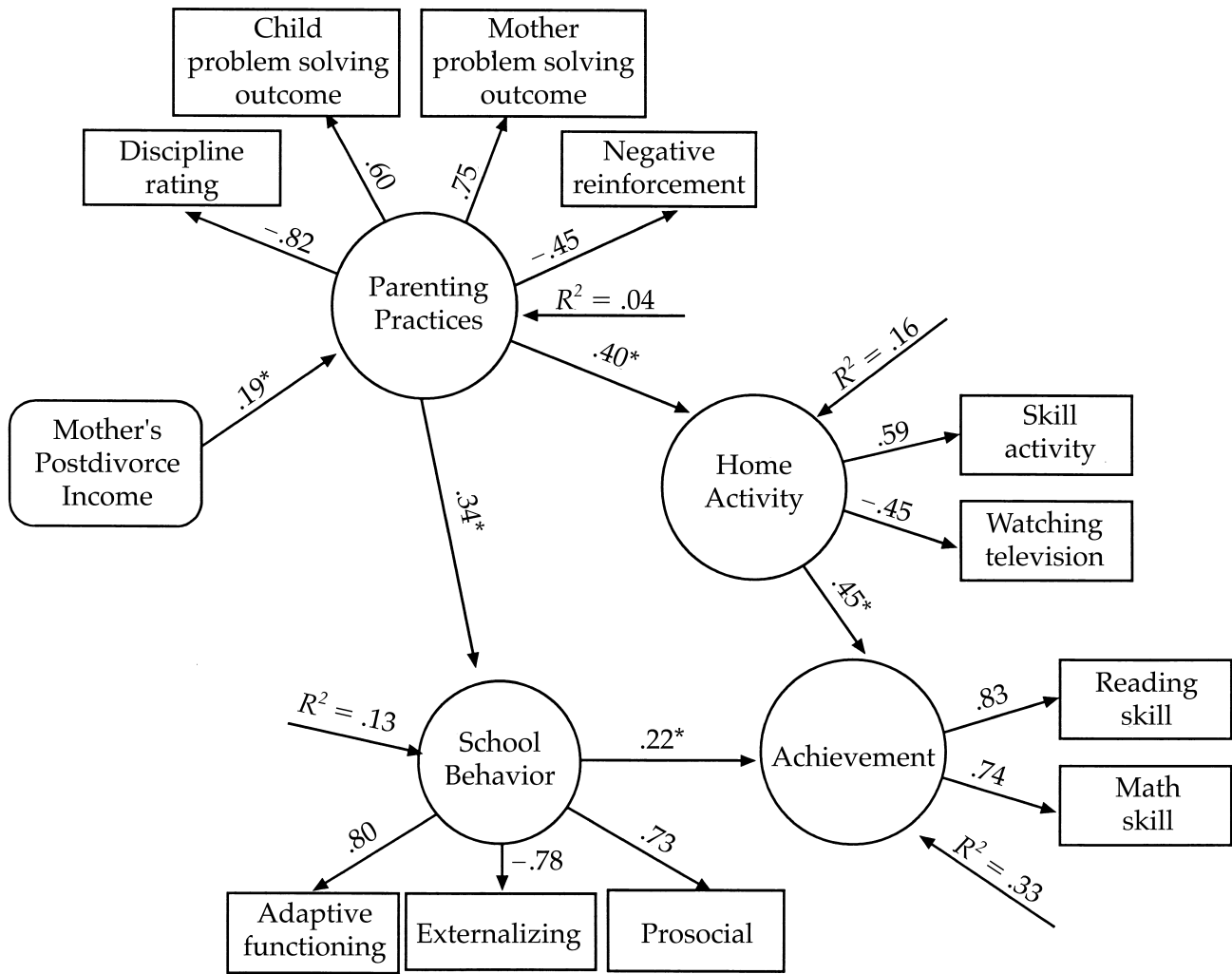


Figure 5 Path model for the effect of mother's postdivorce per capita income on parenting practices, home activity, school behavior, and achievement. Coefficients are standardized path weights.  $\chi^2(45, N = 190) = 69.97, p = .01, CFI = .95, \chi^2/df = 1.55, * p < .05$ .

SES, parenting practices had a direct association with the achievement factor,  $\beta = .26, .25, .25, \text{ and } .27, p < .05$ , respectively for Figures 2 through 5. For each model, the association between parenting and achievement was partially mediated by school behavior and fully mediated by home activity. These findings suggest that both the home and school are important links from parenting to achievement. Further tests revealed that the parenting factor had a significant indirect association with achievement in each of the models above.

Finally, in the last step of the analysis we examined the pattern of results produced by combining the component indicators as a latent factor of SES. One model specified SES as the communality between education and occupation as specified by the Hollings-

head Index of Social Status (cf. Guidubaldi & Perry, 1984). Another model specified SES as the communality of education, occupation, and various income measures. For any SES factor that shared communality with income, there was no direct association with achievement. For SES factors without income, however, the communality of both educational and occupational attainment directly correlated with achievement. Therefore, these models showed that combining indicators produced differing effects of social status and masked the unique contributions of education, occupation, and income. The respective factor loadings for the education and occupation factor of SES were .61 and .57, producing a direct effect of  $\beta = .30$  on achievement,  $\chi^2(55, N = 190) = 85.34, p = .01, CFI = .96, \chi^2/df = 1.55$ . The respective factor

loadings for education, occupation, and predivorce income were .72, .52, and .58, respectively,  $\chi^2(67, N = 190) = 94.06, p = .02, CFI = .95, \chi^2/df = 1.40$ . The respective factor loadings for the education, occupation, and postdivorce income were .61, .68, and .74, respectively,  $\chi^2(67, N = 190) = 107.00, p = .00, CFI = .94, \chi^2/df = 1.60$ . Overall, the models explained 33 to 37% of the variance in achievement.

In a previous draft of this article, we included the boys' age as a control variable in the path models. Although the achievement variable indicators were nationally normed, we found that older boys scored higher on reading and math scores. One reviewer suggested that we examine the explained variance minus that path; therefore, age was omitted from the final models presented here. No substantive differences were found, however, in the results for the SES and parenting processes controlling for age in any of the models shown.

## DISCUSSION

Decades of research have established an association between SES and academic outcomes, but relatively fewer models have identified mechanisms that account for that association. This study tested a model of socialization that specified parenting practices, skill-building activities in the home environment, and adaptive behaviors in the school environment as mechanisms linking parental SES to achievement for young boys in recently divorced families. Traditional indicators of SES demonstrated unique pathways of influence via parenting to child achievement. Maternal education and occupation were more influential in this process than were income measures.

Our main findings supported Kohn's and Patterson's respective socialization theories. Higher levels of educational and occupational attainment and financial resources predicted more quality parenting. In turn, effective parenting had direct effects on boys' achievement that were mediated by skill-building activities in the home and by adaptive behaviors at school, implicating both home and school environments as predictors of achievement when indicators of parental attainment are controlled. The path models suggested that effective parenting practices of single mothers were associated with boys' academic success through shaping home activities and school behavior.

Maternal education and occupational attainment both showed direct associations with achievement, with skill-building activities at home mediating the relation between education and achievement. Maternal occupation was not mediated by the intervening factors. This finding supports Kohn's model on

occupational conditions for divorced mothers as a source of quality parenting, irrespective of the occupational conditions of the former partner and father of the child.

Separately, education and occupation produced direct and indirect associations with achievement. Income measures were less directly related in the models, with predivorce levels of per capita income demonstrating more predictive pathways than did postdivorce income or change in income. It may be that the personal resources of the mother provided through skill-building occupations and educational opportunities are more relevant to employing effective parenting strategies related to achievement than are effects of financial resources. In other words, these data suggest that income, per se, is not as important for children's achievement in divorced families as the utilization of financial resources by single mothers in providing a quality home environment.

Previous studies have noted methodological concerns of restricted SES, a lack of standardized and psychometrically sound indices of early school-aged achievement, and self-reported parenting measures (Furstenberg & Seltzer, 1986; Grissmer et al., 1994; Guidubaldi & Perry, 1984; Hetherington & Clingempeel, 1992). Typically, studies with adequate range in SES tend not to have observational measures of parenting or standardized achievement measures and, conversely, observational studies have often been limited to middle class samples. We addressed some of these concerns in the current study that had variability in SES, although most families were living in poverty. The measures included standardized scores of achievement for early school-aged children and observed parenting.

It is our perspective that parenting practices are more reliably measured with observations of parent-child interactions. Using one reporter to measure study variables can produce strong correlation among constructs that are, at least in part, a function of the reporter's dispositional characteristics (Bank, Dishion, Skinner, & Patterson, 1990; Fergusson, Lynskey, & Horwood, 1993; Lorenz, Conger, Simons, Whitbeck, & Elder, 1991). Method bias can be reduced by mismatching methods for indicators of constructs (Bank & Patterson, 1992). This strategy is important for research on divorce and parenting because recently separated mothers are more susceptible to report bias due to depressed mood (DeGarmo & Forgatch, 1997; Patterson & Forgatch, 1990). In the current findings, substantial variance was explained in academic outcomes measuring contextual constructs with mismatched indicators.

The current models were cross-sectional and correlational in nature, and we therefore underscore that

the path models do not demonstrate causation. The temporal ordering of the constructs were specified according to the theoretical models tested. The models suggest mechanisms that can be tested through experimental manipulation. The findings were consistent with an independent sample of older boys from mixed family structures and suggest replicability. Replication is a necessary prelude to establishing theoretical relations in a developmental science (Conger, Patterson, & Ge, 1995). In particular, longitudinal replication is needed to inform causal relations for current developmental theories. More robust evidence of the influence of parenting will come from experimental tests of causal connections between parenting and academic success. Future analyses with the ODS-II data set will test the impact of a parenting intervention on academic outcomes, as data become available.

We also note that other aspects of socialization that are beyond the scope of this article may account for the relation between parental attainment and child achievement. Such omitted mechanisms are related to both genetics and more specific aspects of socialization. A genetic predisposition for intelligence may contribute substantial explained variance. Evidence from adoption studies, however, has shown strong independent environmental effects for verbal stimulation and parental interactions with infants, suggesting that heritability of IQ may be overestimated in behavior genetic studies (Hart & Risley, 1995; Schiff & Lewontin, 1986). Perhaps other parenting dimensions need to be measured in earlier stages of development; for example, constructs measuring early verbal stimulation.

Several other contextual variables may provide explained variance as well. Factors such as school and neighborhood characteristics may be important (Ensminger, Lamkin, & Jacobson, 1996; Pong, 1997; Willms & Raudenbush, 1989). For example, children of divorced families from higher SES levels may attend schools in higher SES neighborhoods that have more community and financial resources for education. Though many studies show significant prediction for aggregate school SES on achievement, Gamoran (1992) argues that there is no systematic evidence that school resources—including per-pupil expenditures, teacher salaries, and size of libraries—actually impact variation in student achievement once individual variables are controlled. With advances in methodological tools like hierarchical modeling procedures, the contribution of unique and various school or neighborhood effects can be evaluated in family models.

The current findings are consistent with models of boys' development in which antisocial or disruptive behaviors predict poor academic performance. The model needs to be expanded to examine developmental trajectories of achievement for girls. Further-

more, the scope of an observed parenting model should be tested for generalizability in different cultural family contexts as well (Steinberg, Dornbusch, & Brown, 1992). In spite of the limitations of the current study, several advantages were demonstrated by unpacking the effects of SES in a sample of recently divorced families. Specific aspects of parenting were associated with the home and school environment that may serve as academic protective factors for children in divorced families.

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## ADDRESSES AND AFFILIATIONS

Corresponding author: David S. DeGarmo, Oregon Social Learning Center, 160 East 4th Avenue, Eugene, OR 97401; e-mail: davidd@oslc.org. Marion S. Forgatch and Charles R. Martinez, Jr. are also at the Oregon Social Learning Center.

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## APPENDIX Bivariate Correlations, Means, and Standard Deviations for Construct Indicators

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Education															
2. Occupation	.29***														
3. Predivorce income	.38***	.33***													
4. Postdivorce income	.45***	.58***	.53***												
5. Child PSO	.15*	.10	.16*	.12 <sup>+</sup>											
6. Mother PSO	.15*	.20**	.12	.22***	.52***										
7. Discipline rating	-.17*	-.16**	-.16*	-.17**	-.47***	-.58***									
8. Negative reinforcement	-.14*	-.11 <sup>+</sup>	-.06	-.12 <sup>+</sup>	-.20**	-.24***	.39***								
9. Skill-building	.09	-.03	-.00	-.05	-.01	.03	-.22***	.02							
10. Watching TV	-.30***	-.05	-.20**	-.12	-.04	-.07	.23***	.17**	-.22***						
11. Adaptive functioning	-.01	.07	.15*	.06	.07	.07	-.11	-.07	.20**	-.07					
12. Externalizing	-.10	-.12 <sup>+</sup>	-.24***	-.18**	-.15*	-.18**	.26***	.27***	-.18*	.08	-.61***				
13. Prosocial	.06	.14*	.28***	.20**	.15*	.22***	-.20**	-.16*	.01	-.01	.51***	-.57***			
14. Reading skill	.16**	.23***	.13*	.09	.11 <sup>+</sup>	.13*	-.16*	-.06	.28***	-.15**	.33***	-.16**	.14*		
15. Math skill	.24***	.18**	.19*	.08	.15*	.15*	-.14*	-.04	.19**	-.17**	.31***	-.15*	.16*	.58***	
<i>M</i>	7.24	3.79	5.58	3.27	2.75	2.61	1.94	1.79	.00	2.86	45.55	54.55	1.95	101.1	107.8
<i>SD</i>	2.36	2.26	2.33	1.79	.76	.56	.66	1.80	.76	.69	8.56	10.96	.47	21.64	18.01

Note: PSO = problem solving outcome.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; <sup>+</sup>  $p < .1$ .

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