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# Associations among Family Relationships, Antisocial Peers, and Adolescents' Externalizing Behaviors: Gender and Family Type Differences

*Jungmeen E. Kim, E. Mavis Hetherington, and David Reiss*

This study investigated the relations among parenting, sibling relationship, peer group, and adolescent externalizing behaviors. With data obtained from a sample of 341 male and 313 female adolescents (*M* age = 14.4 years) and their parents and siblings from nonstepfamilies and stepfather families, cross-sectional analyses supported the hypothesis that the contributions of parental negativity, parental monitoring, and sibling negativity to adolescents' externalizing behaviors would operate directly and also indirectly through deviant peer associations. The findings of multigroup comparison analyses suggested that the relationships between family and peer correlates and adolescent externalizing behaviors vary as a function of family type and adolescent gender.

## INTRODUCTION

Family systems theory proposes that the family is a dynamic system and the behavior of a particular family member can be understood only in relation to the behavior of other family members and the interactions among family subsystems (Steinglass, 1987). Examining the association between a single family system and child adjustment in isolation from the larger family context as is commonly done can be misleading. Furthermore, differences in permeability of family boundaries can affect the adjustment of children. In some cases, families will have rather rapid boundaries and the family will be the most potent influence on child adjustment, in other cases children will be more vulnerable to influences outside of the family.

It has been suggested that the association among family subsystems, vulnerability to external influences, and their effects on child adjustment may differ in different types of families and for boys and girls (Hetherington, Bridges, & Insabella, 1998; Loeber & Stouthamer-Loeber, 1998; Steinberg, 1987). The present study, therefore, simultaneously examined contributions of adolescents' social relationship factors involving parenting behaviors, sibling behaviors, and peer relationships, to their externalizing behaviors. A multiple group structural equation modeling was used to systematically evaluate group differences in the relative contributions of family and peer influences to adolescent externalizing behaviors depending on adolescent gender and family type. Three primary questions were addressed: (1) Do family factors associated with parent-child and sibling relationships have direct effects on adolescents' externalizing behaviors or indirect effects mediated through their influence on adolescents' involvement with delinquent peers? (2) Do the relations between family process

variables, association with delinquent peers, and adolescent externalizing behaviors differ for children in stepfather families and in nonstepfamilies? and (3) Do family process and peer relationship predictors of adolescent externalizing vary for boys and girls?

## Family and Peer Relations and the Development of Externalizing Behavior

Adolescent externalizing behaviors are associated with conflictual, aversive relationships in the social network including relations with parents, siblings, and peers (see Loeber & Stouthamer-Loeber, 1998, for a recent review). Although a substantial research effort has focused on the roles that parents or peers play in the development of adolescents' externalizing behaviors, few researchers have systematically investigated simultaneously the effects of parent-child, sibling, and peer relations on adolescent externalizing behaviors. A notable exception to this is the work of Patterson and his colleagues on antisocial and aggressive males, which has shown that the dynamics of family relationships during childhood and early adolescence play an important role in promoting a developmental trajectory that transforms early noncompliance into antisocial behaviors as well as increases the likelihood of associating with deviant peers (Bank, Patterson, & Reid, 1996; Patterson, Reid, & Dishion, 1992). Notwithstanding that less research is available on the processes associated with girls' externalizing behaviors, there is some evidence that family and peer correlates of adolescent externalizing behaviors may vary depending on adolescent gender (Baumrind, 1991a, 1991b; Loeber & Stouthamer-Loeber, 1998;

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Weiss & Schwarz, 1996). Furthermore, the relative importance of the contributions of different relationships within the family and of peer relationships to adolescent externalizing may differ in nonstepfamilies and stepfamilies (Dornbusch et al., 1985; Hetherington, 1988, 1991, 1993; Hetherington & Clingempeel, 1992; Steinberg, 1987).

There is considerable evidence that hostile coercive parent-child relationships, inept parental discipline and supervision, and parental yielding to child coercion (negative reinforcement) are associated with aggression and externalizing behaviors in adolescents. Coercion theory (Patterson, 1982; Patterson et al. 1992) suggests that in childhood irritable, inconsistent, coercive parenting interacts with noncompliance in children to produce escalating cycles of coercive exchanges between parents and children that lead to child aggression and antisocial behavior. The adverse effects of inept parenting, characterized by coercive exchanges and a lack of parental monitoring, are exacerbated by a tolerance by parents for sibling conflict and are associated with high levels of negative interactions among siblings. Children coming from such coercive family environments exhibit unregulated aggressive behaviors and a dearth of social and academic skills that often lead to association with antisocial peers and greater risks for the development of more serious externalizing behaviors in adolescence.

Coercive discipline consists of parental hostility, scolding and nagging about relatively trivial matters, threatening to use punishment without following through, reciprocating aggression, and yielding to the child's noncompliant, aggressive behaviors. A lack of monitoring is reflected in the parent often not knowing where the child is, whom the child is with, what the child is doing, or when the child will be home. Monitoring becomes increasingly important as children move into adolescence and spend less time under the direct supervision of parents or other adults and more time with peers (Hetherington, 1993; Patterson & Stouthamer-Loeber, 1984; Steinberg, 1986). Previous research has found that coercive parenting and lack of parent monitoring contributes not only directly to boys' antisocial behaviors, but also indirectly as seen in the contribution to their increased opportunity to associate with deviant peers which is predictive of higher levels of delinquent acts (Conger et al., 1991; Patterson & Dishion, 1985; Simons, Johnson, Beaman, Conger, & Whitbeck, 1996). Loeber and Dishion (1983), in their review of prediction studies of delinquency, reported that the most consistent and powerful predictors of later delinquency and criminal behavior were parenting variables related to harsh, inconsistent discipline and poor supervision

of the child. Evidence continues to accumulate that conflictual parent-child relationships and poor parental monitoring of children contribute to the association with deviant peers (Brown, Mounts, Lamborn, & Steinberg, 1993; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Loeber & Dishion, 1983; Loeber & Stouthamer-Loeber, 1998; Patterson & Dishion, 1985; Snyder, Dishion, & Patterson, 1986), externalizing and delinquent behaviors (Conger et al., 1992, 1993; Larzelere & Patterson, 1990; Loeber & Dishion, 1984; Patterson & Dishion, 1985; Patterson & Stouthamer-Loeber, 1984; Stouthamer-Loeber & Loeber, 1988; Tarter, Blackson, Martin, Loeber, & Moss, 1993), and substance use (Baumrind, 1991b; Brook, Whiteman, Gordon, Nomura, & Brook, 1986; Conger et al., 1991; Dishion & Loeber, 1985; Dishion, Reid, & Patterson, 1988; Hawkins, Catalano, & Miller, 1992; Melby, Conger, Conger, & Lorenz, 1993; Stice, Barrea, & Chassin, 1993).

Research on the role of siblings in the development of antisocial behavior is less extensive than that on parents; however, negative coercive exchanges between siblings not only are promoted by coercive parent-child relations (Hetherington & Clingempeel, 1992; Patterson, 1984) but also are associated with increased externalizing behaviors (Arnold, Levine, & Patterson, 1975; Bank, Patterson, & Reid, 1996; Hetherington, 1988; Loeber, Weissman, & Reid, 1983; Patterson, 1982, 1986). The relation between conflictual sibling relationships and antisocial behavior is found in both concurrent associations and longitudinal relations with sibling negativity leading to later increases in externalizing (Hetherington & Clingempeel, 1992). Information on the association between the quality of sibling and peer relations is scarce and inconsistent with some investigations finding no relation (e.g., Abramovitch, Corter, Pepler, & Stanhope, 1986) and others a low positive association (e.g., Dishion, 1987). Even less is known about the links between negative/conflictual sibling relationships and the association with delinquent peers. According to the coercion theory perspective (Patterson, 1982, 1984), it is hypothesized that the coercion process is elicited by child noncompliance and inept parenting practices, and has an impact on all members of a family system. Patterson, Dishion, and Bank (1984) showed that inept parental discipline was related to negative exchanges with siblings, which in turn correlated with boys' physical aggression and externalizing behaviors.

There is strong evidence for a significant association between involvement with antisocial peers and adolescent delinquent behavior and substance use (Conger, Rueter, & Conger, 1994; Dishion, 1990; Elliott, Huizinga, & Ageton, 1985; Huba & Bentler, 1983;

Patterson & Dishion, 1985; Quinton, Pickles, Maughan, & Rutter, 1993). It seems that when association with delinquent peers is added to models of the development of externalizing behavior in adolescents, the direct influence of family relationships is considerably reduced (e.g., Simons & Chao, 1996). Most of the relevant work has demonstrated that inept parenting increases the probability of adolescents' involvement with deviant peers, which in turn is related to adolescent externalizing behaviors. Although the direction of effects in the association between deviant peers and externalizing behaviors is open to question, most investigators have interpreted their findings to mean involvement with antisocial peers leads to increased antisocial behavior and substance use (Conger et al., 1991; Conger & Rueter, 1996; Elliott et al., 1985; Elliott & Menard, 1988; Keena, Loeber, Zhang, & Stouthamer-Loeber, 1995; Simons, Conger, & Whitbeck, 1988; Simons, Whitbeck, Conger, & Conger, 1991). It is not yet clearly understood, however, whether the contributions of peer relations to adolescent externalizing behaviors are similar for boys and girls in different types of families, particularly when considered within a context of concurrent family process effects.

#### Gender Differences in the Development of Externalizing

Most early research focused on antisocial behavior in boys but, unfortunately, it remains unclear whether there are consistent differences in the developmental pathways to externalizing for boys and girls. Although antisocial behavior seems to diminish from early adolescence to late adolescence and young adulthood for both males and females, there are gender differences in levels and types of aggression, age of onset, development over time, and comorbidity of antisocial behaviors (Loeber & Stouthamer-Loeber, 1998). For example, more boys than girls display personal and physical aggression from elementary school age onward, whereas girls tend to develop antisocial behaviors mainly during adolescence rather than earlier, and use more indirect and verbal aggression (Guze, 1976; McGee, Feehan, Williams, & Anderson, 1992; Robins, 1986; Zoccolillo, 1993). In addition, the co-occurrence or comorbidity of conduct disorder in girls with other problems such as attention deficit, hyperactivity disorder, antisocial personality, or alcoholism is notably higher than in boys (Bird, Gould, & Staghezza, 1993; Cohen, 1996; Kovacs, Paulauskas, Gatsonis, & Richards, 1988; Mezzich et al., 1994; Szatmari, Boyle, & Offord, 1989). Furthermore, previous studies on the development of aggression in girls have shown that early maturation is correlated with

increases in girls' problem behaviors (Caspi, Lynam, Moffitt, & Silva, 1993; Caspi & Moffitt, 1991; Stattin & Magnusson, 1990).

It might be assumed that variations within each gender in externalizing behaviors may not be explained by the same predictors and mechanisms. Research findings, however, have not been consistent in regard to this issue. Some research has shown that correlates of delinquency or antisocial behavior were very similar for males and females (e.g., Dishion, Duncan, Eddy, Fagot, & Fetrow, 1994; Huizinga, Esbensen, & Weiher, 1991; Rowe, Vazsonyi, & Flannery, 1995). On the other hand, there is accumulating evidence of differences in family correlates of externalizing behaviors between boys and girls (e.g., Kavanagh & Hops, 1994; Lytton & Romney, 1991; Rothbaum & Weisz, 1994). Rothbaum and Weisz, in a meta-analysis, reported stronger associations between parental caregiving and externalizing for boys than for girls. It also has been suggested that disrupted family relationships may have more adverse effects on boys than on girls (Emery & O'Leary, 1982; Hetherington, 1989; Simons & Chao, 1996), and be closely associated with externalizing in boys but not girls (Harold & Conger, 1997). Furthermore, in a review of fathering effects on child development, Phares and Compas (1992) concluded that fathers' behavior and parenting played a more important role than did mothers' in the development of externalizing behavior, especially in sons. Consistent with this view, a recent study found that fathers' inept parenting had both a direct effect and an indirect effect mediated by association with delinquent peers on antisocial behavior for boys, but it had only a mediated indirect effect for girls (Simons & Chao, 1996). Prior research also provides evidence that fathers' parenting may be more salient in the development of sons and mothers' with that of daughters (Lindner-Gunnoe, 1993). It should be underscored, however, that the findings on gender effects are inconsistent.

Some gender differences also are obtained in the quality and effects of sibling relationships. Female siblings are no less negative and conflictual, but are more supportive and positive in their sibling relationships than are male siblings (Furman & Buhrmester, 1992; Hetherington, 1988, 1989; Hetherington & Clingempeel, 1992). Moreover, in times of stress, compassionate caring relationships in female but not male siblings can protect children from increasing externalizing behavior (Hetherington, 1988, 1989; Hetherington & Jodl, 1994). Males receive less support from either male or female siblings during difficult transitions such as a parental divorce or remarriage (Hetherington, 1988, 1989; Hetherington & Jodl, 1994).

There is evidence of gender differences in the formation and quality of peer relationships. Girls seek intimacy in peer relationships at an earlier age and to a more intense degree than do boys (Buhrmester & Furman, 1987), and girls report more positive peer group interactions than boys (Garvin & Furman, 1989). Like adolescent boys, however, antisocial adolescent girls tend to affiliate with other girls who are high in acting-out behaviors (Cairns, Cairns, Neckerman, Gest, & Garipey, 1988; Giordano, Cernkovich, & Pugh, 1987; Magnusson, 1987). It is not clear whether there are significant gender differences with respect to the influence of peers on externalizing. Although some researchers have demonstrated that the same predictors are associated with adolescent delinquent behaviors and substance use in boys and girls (e.g., Conger et al., 1991; Simons, Miller, & Aigner, 1980), others have not. For example, in a recent study, it was found that disrupted parenting had no direct effect but only an indirect effect through deviant peer association on girls' conduct problems, whereas disrupted parenting did exert both a direct effect and an indirect effect through deviant peers on boys' conduct problems (Simons et al., 1996).

To summarize, the existing literature shows different effects of family relationships, and to some extent of peer relations, on externalizing in boys and girls. This suggests that variations in externalizing behaviors within gender may not be explained by the same predictors and mechanisms.

#### Family and Peer Relations and the Development of Adolescent Externalizing in Stepfather Families

It might be thought that the economic resources and possible social and emotional support for both mother and child brought by a stepfather could counter some of the stresses and adverse consequences of divorce and living in a household headed by a single mother. Previous research, however, has consistently reported that externalizing behaviors are higher both in children with divorced and remarried parents than in those with nondivorced parents (Allison & Furstenberg, 1989; Amato & Keith, 1991a; Bray & Berger, 1993; Dornbusch et al., 1985; Fine, Voydanoff, & Donnelly, 1993; Hetherington, 1993; Hetherington & Clingempeel, 1992; Hetherington & Jodl, 1994; Needle, Su, & Doherty, 1990) and differences in adjustment between children from divorced and remarried families are seldom found (Amato & Keith, 1991b; Cherlin & Furstenberg, 1994). Thus, the new challenges encountered in adjusting to the complex relationships in stepfamilies seem to override the possible advantages of the addition of a stepparent.

Although children in divorced and remarried families in comparison to those in nondivorced families show a broad range of social, emotional, academic, and behavioral problems and difficulties in relationships with parents, siblings and peers, the most consistent and marked problems are in externalizing disorders characterized by oppositional, antisocial behavior and low social responsibility (see Amato & Keith 1991b for a meta-analysis). Researchers report that these differences are relatively modest and have become smaller as marital transitions have become more common (Amato & Keith, 1991b). On standardized measures such as the Child Behavior Checklist (Achenbach & Edelbrock, 1983), however, about one quarter of adolescents in divorced and remarried families score above the clinical cut-off on total behavior problems in contrast to about 10% in nondivorced families (Hetherington, 1993; Hetherington & Clingempeel, 1992; Hetherington & Jodl, 1994). Although this is more than a two-fold increase in behavior problems, it should be remembered that the vast majority of children in stepfamilies in the long run are not showing serious behavior problems and are resilient in coping with family reorganizations.

Gender effects have been found in response to living in a stepfamily. Amato and Keith (1991b), in their meta-analysis of divorce and children's adjustment, concluded that boys, but not girls, can benefit from the presence of a stepfather. In addition, there is considerable more recent evidence that a warm supportive relationship with a stepfather is associated with fewer behavior problems, greater social responsibility, and higher achievement in boys, especially in preadolescent boys (Hetherington, 1993; Hetherington & Jodl, 1994; Lindner-Gunnoe, 1993; Zill, Morrison, & Coiro, 1993; Zimiles & Lee, 1991). Girls, perhaps because they are more likely than boys to have shared a close harmonious relationship with their divorced mothers, are more resistant to the entry of stepfathers (Brand, Clingempeel, & Bower-Woodward, 1988; Hetherington, 1993; Hetherington & Clingempeel, 1992; Santrock, Warshak, Lindbergh, & Meadows, 1982; Vuchinich, Hetherington, Vuchinich, & Clingempeel, 1991). This may be reflected in less positive and more negative conflictual, contemptuous, or ignoring behavior of girls in stepfamilies. One study found that adolescent girls spoke one third less often to stepfathers than did girls with their fathers in nondivorced families (Vuchinich et al., 1991).

Following a remarriage, especially in the early years of restabilization in the family, mothers often are preoccupied as they deal with establishing their marital relationship and helping their children and husband, and cope with the new family situation. Dis-

ruptions in maternal parenting of remarried mothers often are expressed by being less supportive and controlling and more negative in their relationships with their children when compared to mothers in first marriages (Bray & Berger, 1993; Hetherington & Clingempeel, 1992; Hetherington & Jodl, 1994). In the face of lack of a shared family history and biological bonds, ambiguity in the roles and responsibilities of a stepparent, and often of resistance and behavior problems in stepchildren, stepfathers tend to remain more disengaged in their parenting and show less warmth, involvement, monitoring, and control than nondivorced biological fathers in two-parent households (Brand et al., 1988; Bray & Berger, 1993; Kurdek & Fine, 1993; Hetherington, 1993; Hetherington & Clingempeel, 1992; Hetherington & Jodl, 1994). Results regarding negativity in the parenting of stepfathers are less consistent. Some studies have found that biological fathers, perhaps because they are more involved and concerned, are more willing to criticize their children and get into conflicts about minor issues such as cleanliness, homework, and chores (Hetherington, 1993). In contrast, other studies report no differences in negativity and punitiveness between stepfathers and nondivorced biological fathers (Amato, 1987; Ganong & Coleman, 1984). Most studies, however, have reported higher rates of negativity in stepfathers, especially in interactions with adolescent daughters (Brand et al., 1988; Bray & Berger, 1993; Kurdek & Fine 1993; Hetherington & Jodl, 1994).

Children seem to be particularly resistant to discipline attempts by stepparents, especially early in the remarriage. The most effective stepparents initially establish a warm, congenial relationship with the stepchild and support the biological parents' discipline. It has been suggested that stepparents' control attempts should be made gradually and may not be achieved at all (Bray & Berger, 1993; Fine et al., 1993; Hetherington, 1993; Hetherington & Jodl, 1994; Kelly, 1992). Although authoritative control involving high warmth, responsiveness, control, and monitoring is associated with fewer behavior problems in children in nondivorced families and eventually in stepfamilies, this may be difficult to attain (Hetherington & Clingempeel, 1992).

Studies of sibling relationships in stepfamilies rarely distinguish between full biologically related siblings, half siblings, and stepsiblings within and outside of the primary residence. Full siblings from a biological mother's previous marriage living in stepfamilies have been found to be more rivalrous or disengaged and less positive than those in nondivorced families (Hetherington, 1988, 1989, 1993; Hetherington & Clingempeel, 1992; Hetherington & Jodl,

1994). Supportive, protective relationships in siblings in stepfamilies are more likely to be found in female pairs than in any sibling relationships involving a male (Hetherington, 1989, 1993). In the early stages of a remarriage, sibling negativity is associated with a later increase in externalizing in adolescents and sibling positivity with increase in subsequent social competence and responsibilities (Hetherington & Clingempeel, 1992). The characteristics and disengagement of siblings found in late adolescence and early adulthood is more marked in siblings in stepfamilies (Hetherington & Jodl, 1994; White & Reidmann, 1992) and is greatest for nonbiologically related siblings (Hetherington, 1999).

There is little research on half siblings and stepsiblings; however, it is reported that half siblings who live together most of the time view each other simply as siblings (Bernstein, 1989; Ganong & Coleman, 1989). Conflict between stepsiblings is not abnormally high (Beer, 1992; Duberman, 1975; Ganong & Coleman, 1989; White & Reidmann, 1992) and some residential stepsiblings form relationships that provide both support and companionship (Ihinger-Tallman, 1987). Although there is evidence that negativity in relations of the full biologically related siblings from a mother's previous marriage leads to an increase in externalizing of adolescents in stepfamilies (Hetherington & Clingempeel, 1992), the contributions of half siblings and stepsiblings to antisocial behavior are unknown.

As children grow older the influence of peers relative to parents increases and this is most notable for adolescents in divorced and remarried families. More adolescents in remarried than in nondivorced families disengage from their families spending little time at home or in family activities (Hetherington, 1991, 1993). Girls in stepfamilies leave home earlier and report that this is due to family conflict (Cherlin & Furstenberg, 1994; Hetherington, 1999). It is therefore not surprising that stepchildren in comparison to children in nondivorced families are more susceptible to the influence of deviant peers (Steinberg, 1987).

In summary, the review of past research suggests that family and peer relations may contribute differentially to adolescent externalizing behaviors depending on adolescent gender and family type.

### The Present Study

The primary goal of the present study was to investigate the joint influences of parent-child, sibling, and peer relations on adolescent externalizing behaviors with boys and girls from nonstepfamilies and stepfather families. The mediational model in Figure 1 was tested for gender and family type differences in the

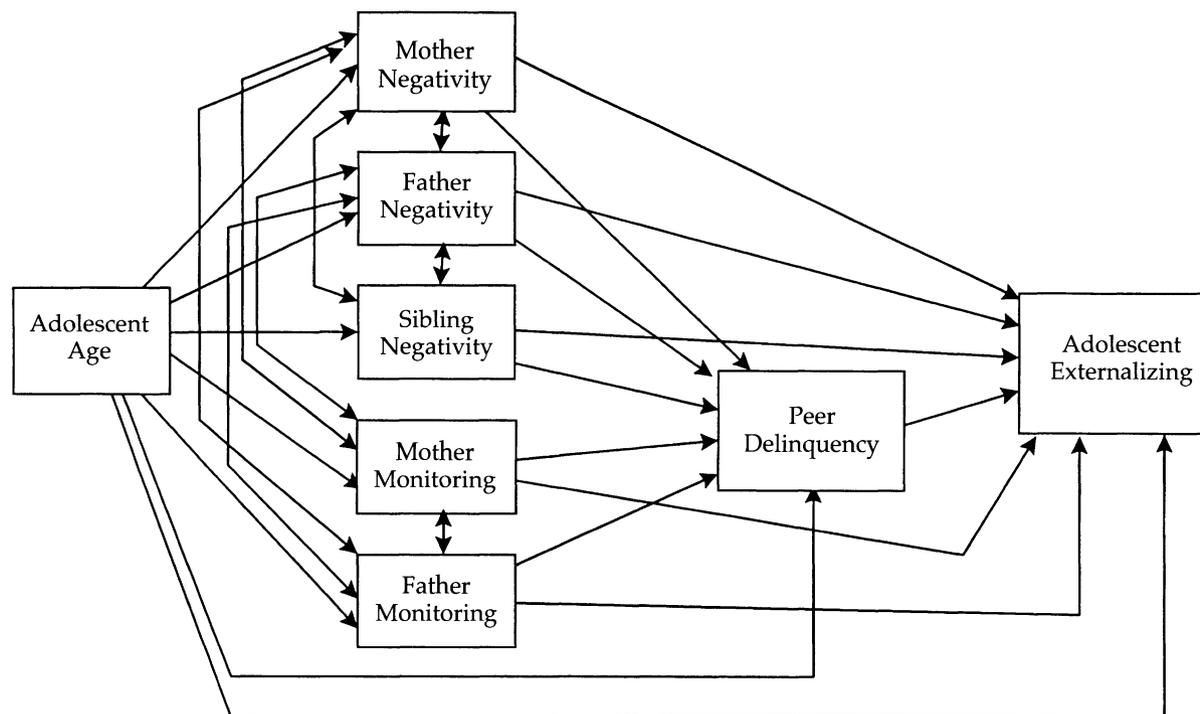


Figure 1 The proposed model for family and peer influences on adolescent externalizing behaviors.

processes by which family and peer relations exert their influences on adolescent externalizing behaviors. It was hypothesized that negative, conflictual family relations and ineffective parental monitoring would contribute to adolescents' externalizing behaviors directly as well as indirectly through deviant peer associations, but that the relative importance of the contributions would differ for boys and girls in stepfather families and nonstepfamilies.

The specific hypotheses tested were:

1. Negativity in family relations and low parental monitoring will be associated both with deviant peer involvement and directly with adolescent externalizing behavior for boys and girls in nonstepfamilies and stepfather families.
2. The strongest association of parental negativity and monitoring with adolescent externalizing will be indirect and mediated through association with delinquent peers.
3. Fathers' parenting will play a more important role than mothers' in the development of externalizing for boys and mothers' parenting for girls. In stepfamilies, however, negative parenting by stepfathers will be more salient for girls than boys.
4. Greater family negativity and less parental monitoring, especially by stepfathers, will occur in

stepfamilies than in nonstepfamilies. In addition, conflict with stepfathers will be especially salient in the formation of associations with delinquent peers and in the development of externalizing.

5. Sibling relationships in stepfamilies will be more negative than those in nonstepfamilies and the influence of sibling relationships on adolescent externalizing will differ between nonstepfamilies and stepfather families.
6. Association with delinquent peers and externalizing will be higher in adolescents in stepfamilies than in nonstepfamilies and the influence of peers on externalizing will be greater in stepfamilies.

## METHOD

### Participants

The data used in this study are a subset of the first wave of data from the Nonshared Environment in Adolescent Development (NEAD) Project (Reiss et al., 1994), which includes 720 two-parent families, each with a pair of adolescent siblings of the same gender no more than 4 years apart in age. Participants were parents and adolescents between 10 and 18 years of age ( $M = 14.5$ ,  $SD = 2.2$ ), and their siblings ( $M = 12.9$ ,  $SD = 2.2$ ). The older adolescents in the sib-

ling pairs were target subjects for the present study. There were approximately equal numbers of boys ( $N = 373$ ) and girls ( $N = 347$ ) in the NEAD sample. The target sample for this study included 298 nonstepfamilies (153 boys and 145 girls) and 356 stepfather families (188 boys and 168 girls). From the 421 stepfamilies in the original sample, only 356 stepfamilies in which the father was a stepfather and the mother was the biological parent of the target adolescent were included, because of the differences found among various types of stepfamilies (e.g., Brand et al., 1988). The rather awkward term *nonstepfamilies* is used rather than nondivorced families since in 14% (42 families out of 298 nonstepfamilies) of the families that are not stepfather or stepmother families, one of the spouses (33 families) or both spouses (9 families) had been previously married, although only children from the current union were present in the family.

In nonstepfamilies, the mean age of the target adolescents was 13.9 years and the mean age of the younger siblings was 13.1 years. The mean age for fathers and mothers was 42.3 years and 39.6 years, respectively. In stepfather families, mean ages were 14.8 years for the target adolescents, 12.6 years for the younger siblings, 39.8 years for fathers, and 37.0 years for mothers. The average number of years of education were 14.0 years for mothers (*range* = 7–20) and 14.4 years for fathers (*range* = 6–20) in nonstepfamilies and 13.2 years for mothers (*range* = 8–20) and 13.6 years for fathers (*range* = 5–20) in stepfather families. The mean yearly family income fell between \$25,000 and \$35,000 both for nonstepfamilies and stepfather families (ranked from 1 = \$0–4,999 to 8 = \$50,000+). The socioeconomic status of both types of families ranged from lower working class to upper middle class. In nonstepfamilies, 94% of the women and 93% of men were European American with the remainder consisting of other ethnic groups. Similarly, 94% of the women and 92% of the men were European American in stepfather families. In the present sample, across the family types, 15% of the families were from urban areas, 29% from suburban areas, 28% from small towns, and 28% from rural areas.

The NEAD project was designed to identify genetic, shared, and nonshared environmental factors responsible for differences in adjustment between siblings. Because genetic factors can also cause sibling differences, the NEAD incorporated a combined twin and stepfamily design and the sample included three types of nonstepfamilies and three types of stepfamilies. In the present subsample, nonstepfamilies consisted of 93 families with identical twins, 98 families with fraternal twins, and 95 families with full siblings who were not twins. In stepfamilies all target

adolescents were the biological offspring of mothers and stepchildren of fathers. Sibling relationships in stepfather families showed varying degrees of biological relatedness involving 181 families in which both siblings were nontwin full biologically related siblings from the mother's previous marriage or relationship, 108 half siblings in which the older child was born to the mother's previous relationship and the younger to the new marital relationship, and 67 nonbiologically related stepsiblings in blended families, in which the target adolescent came from the mother's previous relationship and the sibling from an earlier relationship or marriage of the father.

In the NEAD sample, stabilized stepfamilies in which the parents had been married at least 5 years were used to make stepfamilies ( $M = 9.1$  years) and nonstepfamilies ( $M = 18.4$  years) more comparable and to ensure that the families had been together long enough to influence adolescent development. Because parents in stepfamilies divorce faster and more frequently than those in first marriages (Cherlin & Furstenberg, 1994; Tzeng & Mare, 1995), it was assumed that these couples would be a sample of better functioning marital survivors as would those in the longer married nonstepfamilies. Most studies do not control for length of marriage in stepfamilies and nonstepfamilies, and when matching on children's age this becomes an impossible task. It was expected that fewer differences between stepfamilies and nonstepfamilies would be obtained in this study where families were past the stress and disequilibrium in early stepfamily formation than in those studies where a wide range of marital durations or only stepfamilies involving recently remarried couples were examined (e.g., Hetherington & Clingempeel, 1992).

## Procedure

Families were recruited from a wide range of geographic regions including 47 of the 48 contiguous states, excluding South Dakota. Families were selected through a combination of random digit dialing and national market surveys of 675,000 households. More details for the NEAD sampling procedures are provided in Reiss et al. (1994).

Families were interviewed in their homes in two sessions averaging 3 hours in length, 1 week apart. Between sessions, mothers, fathers, and two target adolescent siblings each independently completed a battery of questionnaires and a take-home booklet dealing with family relations and parent and child characteristics and behavior. In addition, families were videotaped as they interacted in family problem

solving sessions in dyadic, triadic, and tetradic combinations with other family members. Participants were asked to discuss two areas of conflict (e.g., curfew, keeping room tidy) previously identified by family members as problematic areas within the relationship and to come to some solution to the problem. Each interaction was 10 min in length. In the present study, behavior observation measures were included in composites of parent-to-child negativity, sibling negativity, parental monitoring, and adolescent externalizing. Only data from the dyadic interactions involving the target adolescent's interactions with other family members were used (i.e., mother–target adolescent, father–the target adolescent, sibling–the target adolescent). Trained observers independently rated the videotaped interactions using a global coding system (Hetherington, Hagan, & Eisenberg, 1992) with a 5-point Likert scale. Approximately 22% of the data of dyads interactions were coded by a criterion coder so that interobserver reliability coefficients could be estimated. Exact agreement between the criterion coder and all other coders averaged 77% across the behavior codes used in this study, with a range of 69% to 83%. The reliabilities for these codes ranged from  $kappas = .59-.86$ , with a mean  $kappa$  of  $.74$ .

### Measures

The present study used multiple measures from multiple informants and included standardized observation measures in addition to questionnaires. Multirespondent, multimeasure composite indices were derived for the variables of parental negativity, parental monitoring, sibling negativity, and adolescent externalizing behavior. The composite variables were constructed from parents', adolescents', and observer's reports on various measures, and the composite measures were computed by converting all scales to standardized ( $Z$ ) scores and averaging across respondents and measures. More detailed descriptions of the construction of the composites can be found in previous studies from NEAD (e.g., Plomin, Reiss, Hetherington, & Howe, 1994; Reiss et al., 1995). The use of aggregated scores across raters has been found to improve reliability and to explain more of the variance in child psychopathology than individual scores (Mathijssen, Koot, Verhulst, De Bruyn, & Oud, 1997).

*Measures of parental negativity.* The degree of parents' negative, coercive, and conflictual behaviors toward adolescents was assessed using parents' and adolescents' reports on questionnaires, and observed parental behavior. Three questionnaires were used to assess mother's and father's negative behavior to each child:

1. The *conflict* subscale of the Parent-Child Relationship Scale (PCR; Hetherington & Clingempeel, 1992) was used to measure conflicts in parent-child relationships. Parents and adolescents answered four questionnaire items that included questions such as "how often does this person get into disagreements or fights with you?" or "how much does this person criticize you?" Responses were rated on a 5-point Likert scale from "not at all" to "extremely."
2. The *symbolic aggression* subscale of the Conflict Tactics Scale (CTS; Straus, 1979) was used to measure how family members act during conflicts. Each statement about parental behavior was rated on a 5-point Likert scale from "not at all common" to "very common." The "symbolic aggression" subscale consisted of seven items that asked about typical means the parent uses for resolving conflict, and contained items such as "insulted or swore at the other one," "stomped out of the room," or "threatened to hit or throw something at the other."
3. The *parent-child disagreement* and the *parent punitive discipline* subscales of the Child-Rearing Issues Scale (Hetherington & Clingempeel, 1992) were used to measure parental negativity. A 6-point Likert response scale was used, from "not at all" to "more than once a day." The disagreement subscale was a 42-item questionnaire that contained statements of areas of potential disagreement and conflict between parents and children. It assessed the frequency of parent-child disagreements concerning adolescent issues such as "chores," "dating behavior," or "use of alcohol." The punitive discipline subscale consisted of 17 items that measured the frequency of the parent's punitive disciplinary practices (e.g., negative sanctions) during the past month. This subscale included items such as "yelled at you about something you did wrong," "punished you more severely than usual for misbehavior," or "ridiculed or put you down when the two of you argued."

There were three observational measures of parents' negativity to each adolescent.

1. *Anger/hostility* measures the most extreme negative, angry, or contemptuous remark made by the target person. Nonverbal behaviors such as tone of voice, poor eye contact, and ignoring the other also were considered.
2. *Coercion* measures the degree to which the target person expressed his or her needs or opinions in a negative, controlling, or stubborn manner.

3. *Transactional conflict* measures the frequency and intensity of reciprocated anger/hostility in the dyad so that one score could be given for the dyad.

Internal consistencies were .81 for the mother's negativity composite and .79 for the father's negativity composite.

*Measures of parental monitoring.* Parental Monitoring was assessed using parents' and adolescents' reports on the *knowledge* subscale of the Child Monitoring Scale (CM; Hetherington & Clingempeel, 1992). The knowledge subscale consisted of 13 items that measured the extent of parents' ongoing knowledge of their children's whereabouts and such activities as "choice of friends," "health habits," "sexual behavior," and "use of drugs." The responses were rated on a 5-point Likert scale from "always" to "never." An observational measure of parents' monitoring also was included. The observational scale of parental monitoring rates how aware the parent appears to be of what, where, and with whom the adolescent engages in different behaviors. Alphas for the mother monitoring and father monitoring measures were .89 and .90, respectively.

*Measures of sibling negativity.* The sibling negativity measure included parents' reports, the target adolescents' reports, and the younger siblings' reports on the Sibling Inventory of Behavior (SIB; Schaefer & Edgerton, 1981). Items of the SIB described how brothers and sisters behave toward one another. Each item assessed the frequency of the stated behavior with a 5-point Likert scale from "never" to "always." Three subscales were used to measure negative sibling behaviors: seven items of *rivalry* (e.g., "is competitive with you," "is jealous of you"), five items of *aggressiveness* (e.g., "teases or annoys you," "has physical fights with you"), and five items of *avoidance* (e.g., "stay away from you," "tries to avoid being seen with you"). Parents rated the questionnaire twice, once for each child, and each child completed the questionnaire describing relations with the sibling. Observational data involving anger/hostility, coercion, and transactional conflict codes in sibling interactions also were included in the composite negativity scale. Composite measures of negativity in the sibling relationship were formulated separately for the target adolescents and their siblings. In the present study, *sibling negativity* involved the siblings' negative attitudes and behaviors toward the target adolescents. The  $\alpha$  coefficient for the sibling negativity composite was .84.

*Measures of peer delinquency.* The *peer delinquency and substance abuse* subscale of the Parent Perceptions

of Child's Peers scale (Reiss et al., 1994) was used to measure peer delinquency. This subscale consisted of 10 items that were completed by both parents in order to obtain information about the parents' perceptions of what their child's peer group was like in terms of delinquency (e.g., child's peers are likely to be "lazy," "rebellious," or "skip class") and substance abuse (e.g., numbers of the child's friends who use marijuana or drink alcohol regularly). The responses were on a 4-point Likert scale that ranged from "very much like" to "very much unlike." The Cronbach's  $\alpha$  reliability coefficients were .84 and .88 for mother and father reports, respectively.

*Measures of adolescent externalizing behavior.* The adolescent's level of externalizing behaviors was assessed by using mother, father, and adolescent reports on the six-item *antisocial* subscale of the Zill's Behavior Problem Index (BPI; Zill, 1985). Items of the BPI were taken from the widely used Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) and have been used in a national sample of over 15,000 children aged 4 to 17 years (Zill, 1985). The antisocial subscale used in the present study tapped cruelty, aggression, noncompliant behaviors, school trouble, and poor peer relations (e.g., "bullying or being cruel and mean to others" or "being disobedient at school"). The items asked how frequently specific behaviors occurred in the past 3 months, and responses were rated on a 3-point Likert scale from "often true" to "not true." In addition, an observational measure derived from observer ratings of the adolescent's antisocial behavior when interacting with mother, father, and sibling was included in the composite. The observational rating of *antisocial behavior* measures the degree to which the adolescent behaves in disruptive, oppositional, rude, or noncompliant manner. Cronbach  $\alpha$  of the externalizing behavior composite was .68.

#### Data Analysis Strategy

The present investigation used a multivariate analysis of covariance (MANCOVA) and univariate analyses of covariance (ANCOVAs) covarying out adolescent age to examine gender and family differences in mother, father, and sibling negativity, parental monitoring, associations with antisocial peers, and adolescent externalizing. The main focus of the study, however, concerned the development and testing of a structural equation model of disrupted family processes, delinquent peers, and adolescent externalizing behaviors. Path analyses were conducted to demonstrate the statistically separate effects of the predictors as well as to test the hypothesized media-

tion effects of deviant peer associations between family process factors and adolescent externalizing. The proposed model in Figure 1 was studied with four different samples: boys and girls in nonstepfamilies (i.e., both parents were the biological parents of the target child), and boys and girls in stepfather families (i.e., father was stepparent and mother the biological parent for the target adolescent).

A multiple group comparison approach was used to analyze data from the four samples simultaneously for direct comparisons of the structural relations among the variables. Composites rather than latent variables were used because of limited sample sizes relative to the increased number of variables when using structural equation models with latent variables. As shown in Figure 1, the model included adolescents' age as a continuous variable in order to determine the unique contribution of family process and peer relationship variables to adolescent externalizing outcomes after the variances that may be attributable to age differences were taken into account statistically. In the path model, mother's, father's, and sibling's negativity behaviors were correlated with one another, and parental monitoring behaviors were correlated to parental negative/aversive behaviors within an individual as well as between spouses. As hypothesized, family processes were expected to have direct effects on adolescent externalizing behaviors and indirect effects via their impact on adolescents' associations with deviant peers, which, in turn, were related to adolescent externalizing behaviors.

## RESULTS

In order to provide protection against an inflated Type I error rate due to multiple statistical tests, a MANCOVA was performed. Then a series of univariate *t* tests was conducted to examine statistically significant discrepancies between the two family types for boys and girls separately. An  $\alpha$  level of .05 was used for all statistical tests.

### Analysis of Covariances

The main effects of gender and family type and the interaction effect between gender and family type were investigated by a MANCOVA that was conducted on the seven study variables using age as a covariate. Table 1 presents results of the MANCOVA and *F* tests for each ANCOVA. Overall, the main effect of family type was significant for all of the seven variables, although the effect for mother monitoring was

**Table 1** Multivariate Analyses of Multimethod/Multirespondent Composite Indices of Variables

Predictor Variable	Source		
	Family Type	Adolescent Gender	Interaction
Multivariate	9.74***	6.14***	.86
Multivariate <i>df</i>	(7,643)	(7,643)	(7,643)
1. Mother negativity	13.25***	.17	.28
2. Father negativity	11.86**	.04	.06
3. Sibling negativity	14.05***	.27	.21
4. Mother monitoring	3.73 <sup>†</sup>	13.78***	.39
5. Father monitoring	34.92***	.85	.01
6. Peer delinquency	23.42***	5.16*	.71
7. Adolescent externalizing	42.34***	23.14***	3.48
Univariate <i>df</i>	(1,649)	(1,649)	(1,649)

Note: Multivariate test is Wilks'  $\lambda$ .

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; <sup>†</sup> $p = .054$ .

significant with  $p = .054$ ; multivariate  $F(7, 643) = 9.74$ ,  $p < .001$ . The main effect of adolescent gender was significant for mother monitoring, peer delinquency, and adolescent externalizing; multivariate  $F(7, 643) = 6.14$ ,  $p < .001$ . There was no significant interaction effect between family type and adolescent gender.

Adolescents in stepfather families were more likely to encounter negative behavior from both parents and siblings than those in nonstepfamilies. In addition, both mothers and stepfathers in stepfather families monitored their children's activities less than mothers and fathers in nonstepfamilies. As predicted, adolescents in stepfamilies also associated more with antisocial peers and scored higher on externalizing. Significant differences between boys and girls were found on mother monitoring, peer delinquency, and adolescent externalizing, indicating that boys showed higher levels of peer delinquency and externalizing behaviors than girls, and girls received more maternal monitoring than boys.

### Mean Differences

In Table 2 means and standard deviations of the variables are presented separately for boys and girls according to family type. A series of the significant *t* tests was conducted to examine differences between nonstepfamilies and stepfather families for boys and girls, respectively (see Table 2). The results revealed that, although in both types of families the boys were the biological sons of the mothers, mothers in nonstepfamilies compared to mothers in stepfather families showed significantly lower negativity,  $t(339) = -2.50$ ,  $p < .05$ , and higher monitoring,  $t(339) = 2.18$ ,

**Table 2 Summary Statistics for Boys and Girls from Nonstepfamilies and Stepfather Families**

Variables	Boys				Univariate <i>t</i> (339)	Girls				Univariate <i>t</i> (311)
	Nonstepfamily ( <i>N</i> = 153)		Stepfather ( <i>N</i> = 188)			Nonstepfamily ( <i>N</i> = 145)		Stepfather ( <i>N</i> = 168)		
	Mean	<i>SD</i>	Mean	<i>SD</i>		Mean	<i>SD</i>	Mean	<i>SD</i>	
Mother negativity	.08	.61	.25	.63	-2.50*	.09	.52	.21	.59	-1.91
Father negativity	-.14	.53	-.03	.60	-1.86	-.17	.51	-.03	.59	-2.24*
Mother monitoring	.17	.65	.01	.63	2.18*	.31	.64	.23	.58	1.27
Father monitoring	-.02	.60	-.37	.72	4.84**	.02	.71	-.34	.69	4.55**
Sibling negativity	.03	.55	.18	.62	-2.34*	.03	.57	.14	.54	-1.81
Peer delinquency	-.13	.80	.39	1.11	-4.86**	-.21	.70	.19	.91	-4.27**
Adolescent externalizing	-.09	.60	.31	.73	-5.54**	-.24	.51	-.02	.64	-3.39**

\* $p < .05$ ; \*\* $p < .01$ .

$p < .05$ , toward the boys. Biological fathers displayed higher monitoring of their boys,  $t(339) = 4.84$ ,  $p < .001$ , and girls,  $t(311) = 4.55$ ,  $p < .001$ , than did stepfathers. Boys in stepfather families received more negativity from their siblings,  $t(339) = -2.34$ ,  $p < .05$ , and they were higher in externalizing behaviors,  $t(339) = -5.54$ ,  $p < .001$ , as well as in associations with delinquent peers,  $t(339) = -4.86$ ,  $p < .001$ , than boys in nonstepfamilies. Girls in stepfather families received more paternal negativity,  $t(311) = -2.24$ ,  $p < .05$ , and showed greater associations with delinquent peers,  $t(311) = -4.27$ ,  $p < .001$ , and higher levels of externalizing behaviors,  $t(311) = -3.39$ ,  $p < .01$ , compared to girls in nonstepfamilies.

### Intercorrelations among Variables

In Table 3, the bivariate correlations among the variables are presented separately for boys and girls in nonstepfamilies and stepfather families. In general, many of the expected correlations between variables were statistically significant (e.g., correlations between parents' negativity and adolescent externalizing behaviors and between peer delinquency and adolescent externalizing behaviors). Mother, father, and sibling negativity variables were significantly intercorrelated with one another, suggesting linked negative, conflictual behaviors among family members, average  $r = .46$ . In addition, mothers' monitoring was mod-

**Table 3 Bivariate Correlations for Boys and Girls from Nonstepfamilies and Stepfather Families**

Variables	1	2	3	4	5	6	7	8
Boys								
1. Age		-.17*	-.17*	-.01	-.13	-.25**	.30**	-.08
2. Mother negativity	-.20**		.76**	-.28**	-.23**	.38**	.19*	.58**
3. Father negativity	-.26**	.71**		-.20*	-.25**	.34**	.24**	.49**
4. Mother monitoring	-.14**	-.19**	-.17*		.38**	-.07	-.17*	-.23**
5. Father monitoring	-.27**	-.18*	-.04	.39**		-.15	-.22**	-.27**
6. Sibling negativity	-.19**	.31**	.35**	.02	-.03		.03	.37**
7. Peer delinquency	.34**	.28**	.31**	-.17*	-.19**	.02		.35**
8. Externalizing	-.12	.61**	.59**	-.24**	-.14	.33**	.47**	
Girls								
1. Age		.12	.10	-.15	-.04	-.08	.44**	.05
2. Mother negativity	-.14		.63**	-.20*	-.22**	.32**	.27**	.47**
3. Father negativity	-.08	.65**		-.27**	-.28**	.32**	.24**	.44**
4. Mother monitoring	-.06	-.19**	-.16*		.27**	-.16	-.12	-.32**
5. Father monitoring	-.07	-.16*	-.15*	.23**		-.08	-.17*	-.21**
6. Sibling negativity	-.12	.39**	.31**	-.19*	-.18*		.21*	.43**
7. Peer delinquency	.31**	.21**	.26**	-.24**	-.32**	.21**		.44**
8. Externalizing	-.05	.54**	.54**	-.10	-.26**	.31**	.50**	

Note: Correlations of nonstepfamilies are above the diagonal and correlations of stepfather families are below diagonal.

\* $p < .05$ ; \*\* $p < .01$ .

estly correlated with fathers' monitoring, average  $r = .32$ . Overall, about 75% of the correlations (84 out of 112 pairs) were significant, indicating considerable bivariate associations between variables.

### Path Analyses

The model in Figure 1 was examined by structural equation modeling (SEM) based on maximum likelihood estimation using the LISREL 8 statistical program (Jöreskog & Sörbom, 1993). In order to know if the interrelations among family processes, peer delinquency, and adolescent externalizing behavior differ across four gender-by-family type groups (i.e., boys and girls in nonstepfamilies and stepfather families), multiple group comparison analyses were conducted. The covariance matrices for each group were fitted to the four group path models based on Figure 1. The covariance matrix was necessarily employed in our multisample analyses, because standardizing covariance matrices (i.e., correlation matrices) separately for each sample discards important information about the variability of each group (Raykov, Tomer, & Nesselroade, 1991). Parameters were simultaneously estimated for four separate covariance matrices and in the series of hierarchically related (nested) models cross-group equality constraints were imposed to ask the following questions: (1) Are the groups equivalent in the general patterns of structural relationships among the variables? [Model 1: Configural Invariance] (2) Are the groups equivalent in the relationships among family processes? [Model 2: Equal Covariances of Family Processes] (3) Are the groups equivalent in terms of age effects? [Model 3: Equal Age Effects], and (4) Are the groups equivalent with respect to the effects of family process and peer group

variables on adolescents' externalizing behaviors? [Model 4: Equal Family and Peer Effects].

The results of a nested modeling comparison are summarized in Table 4. The overall goodness of fit of each model is presented with the following measures: (1)  $\chi^2$  value (2) degrees of freedom (3) corresponding  $p$  value, and (4) goodness-of-fit index (GFI). The  $\chi^2$  goodness-of-fit test is not independent of sample size (Bollen, 1990; Marsh, Balla, & McDonald, 1988) and the usual test of the null hypotheses of exact fit will be rejected if the sample is sufficiently large as is the present sample, and if the power of the statistical test underlying the SEM is very high. Therefore, the Root Mean Square Error of Approximation (RMSEA) also was used to assess the adequacy of the models' fit. The RMSEA index assesses the degree of lack of fit for a model by providing a measure of the discrepancy per degree of freedom for the model. The value of the RMSEA of about .05 or less is considered to indicate *close fit* of the model in relation to the degrees of freedom (Browne & Cudeck, 1993) and the null hypothesis of *close fit* is rejected if the probability is less than .05 level (i.e.,  $p < .05$ ).

In Table 4, Model 1 is a configural invariance model in which all the parameters estimated were allowed to vary across four groups. The configural invariance model requires an invariance of the simple structure patterning of parameters rather than the actual numerical values (McArdle & Cattell, 1994; McArdle & Nesselroade, 1994), thus testing if the patterns of structural relations are invariant over groups. This configural invariance model was the least restricted model among the models tested. In the subsequent models, numeric invariance on certain parameters was imposed to answer the questions addressed. Model 1 produced  $\chi^2(8, N = 654) = 21.96$ ; the GFI above .90

**Table 4** Comparative Goodness-of-Fit of Structural Regression Models

Model Label	Absolute Goodness-of-Fit				Test of Close-Fit		Step-Down Goodness-of-Fit		
	<i>df</i>	$\chi^2$	GFI	$p(\text{exact})$	RMSEA	$p(\text{close})$	$\Delta df$	$\Delta\chi^2$	$p(d)$
Model 1: Configural Invariance	8	21.96	.98	.005	.05	.41			
Model 2: Equal Covariances of Family Processes Model 1 versus Model 2	32	47.03	.98	.042	.03	.99	24	25.07	<i>ns</i>
Model 3: Equal Age Effects Model 2 versus Model 3	53	85.12	.98	.003	.03	1.00	21	38.09	<.05
Model 4: Equal Family and Peer Effects Model 2 versus Model 4	65	100.49	.96	.003	.03	1.00	33	53.46	<.05

*Note:* GFI = goodness-of-fit index;  $p(\text{exact})$  = probability of an exact fit to the data; RMSEA = root mean square error of approximation;  $p(\text{close})$  = probability of a close fit to the data;  $\Delta df$  = difference in *df*;  $\Delta\chi^2$  = difference in likelihood ratio tests;  $p(d)$  = probability of the difference tests.

and RMSEA of .05 with  $p = .41$  for close fit indicate a reasonably good fit of the model (Bollen, 1989; Browne & Cudeck, 1993; Marsh et al., 1988).

Our first test for invariance (numeric invariance) involved the test of differences between samples in the relations among the family processes. In Model 2, equality constraints were imposed on parameters for the covariances among the family process variables. Model 2 fitted the data well with a  $\chi^2(32, N = 654) = 47.03$ , RMSEA = .03. Model 1 and Model 2 are nested and the difference in fit is simply indexed by subtraction. The differences in  $\chi^2$  between Model 1 and Model 2 is not significant,  $\Delta\chi^2 = 25.07$  and  $\Delta df = 24$ ,  $p = .40$ , suggesting that it is reasonable to accept the hypothesis of a general set of relations among the family process variables. Model 3 is nested within Model 2 with equality constraints added on regression coefficients for age effects over the four groups. A comparison of the fits between Model 2 and Model 3 indicates that Model 2 provides a significantly better fit than Model 3, suggesting that age effects are not equivalent across the four gender-by-family type groups. Similarly, in Model 4, equality constraints were added to Model 2 for testing differences in regression coefficients for the effects of family process and peer group predictors on adolescents' externalizing behaviors. Model 4 yielded a significantly worse fit compared to Model 2, indicating that the relative contributions of family processes and peer group to adolescents' externalizing behaviors are significantly different across the four groups.

To summarize, although the multisample comparison analyses demonstrate that covariances of family process variables are similar across groups, the groups are significantly different with respect to the magnitude of the path weights for the contributions of family processes and peer delinquency to adolescents' externalizing behaviors. In addition, there are significant group differences in the age effects on family processes, peer delinquency, and adolescents' externalizing. Figure 2 presents the summarized results of the best fitting model (Model 2 in Table 4) separately for boys and girls. For simplicity of the presentation, only  $\beta$  coefficients are shown in the figure for nonstepfamilies and stepfather families, respectively. The variance accounted for in adolescent externalizing behaviors by this model ranged from 44% to 54%.

Closer inspection of significance tests for individual path coefficients revealed that, for boys in stepfather families and girls in both nonstepfamilies and stepfather families, the most salient predictor of adolescents' externalizing behaviors was peer delinquency,

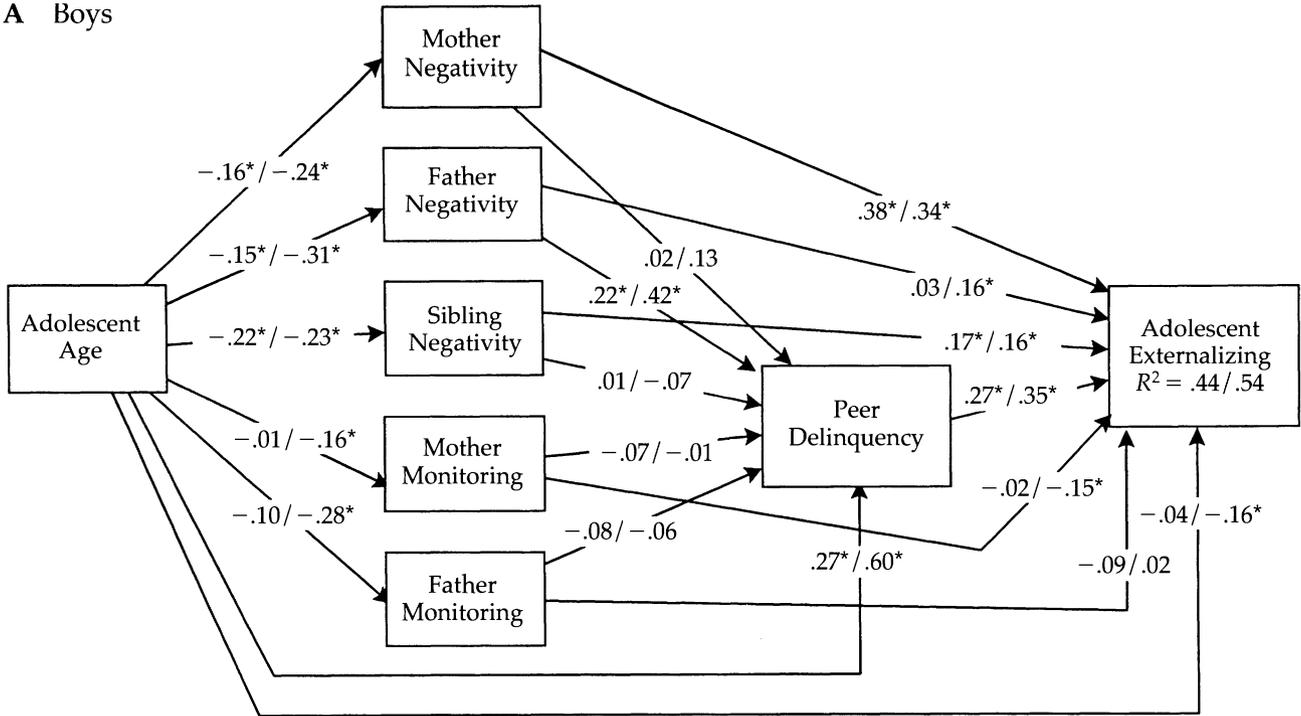
with higher peer delinquency relating to greater externalizing behaviors. For boys in nonstepfamilies, mother negativity was the most significant predictor. Regardless of gender of the child or family type, mothers' greater negativity was significantly linked to higher externalizing of their children. Stepfathers' negativity had a significant influence on adolescent externalizing behaviors directly as well as indirectly via its influence on adolescents' association with delinquent peers, regardless of adolescent gender,  $\beta_{73} = .42$ ,  $t = 4.05$ , and  $\beta_{83} = .16$ ,  $t = 1.96$  for boys;  $\beta_{73} = .18$ ,  $t = 2.14$ , and  $\beta_{83} = .22$ ,  $t = 3.12$  for girls. In contrast, biological father's negativity had a significant effect only on male adolescents' delinquent peer group affiliation,  $\beta_{73} = .22$ ,  $t = 2.11$ .

Lower maternal monitoring was related to greater externalizing behaviors for boys in stepfather families,  $\beta_{85} = -.15$ ,  $t = -2.27$ , and for girls in nonstepfamilies,  $\beta_{85} = -.15$ ,  $t = -2.92$ . Stepfather's lower monitoring was significantly related to higher peer group delinquency for girls,  $\beta_{76} = -.20$ ,  $t = -2.87$ , but not for boys. Boys who received greater sibling negativity, regardless of family type, showed higher externalizing behaviors,  $\beta_{84} = .17$ ,  $t = 2.60$ , for boys in nonstepfamilies;  $\beta_{84} = .16$ ,  $t = 2.82$ , for boys in stepfather families. Girls in nonstepfamilies with more negative sibling relations showed higher levels of involvement with deviant peer groups,  $\beta_{74} = .15$ ,  $t = 2.54$ , as well as externalizing behaviors,  $\beta_{84} = .17$ ,  $t = 3.11$ . All of the estimated covariances among predictors were significant and they could be assumed to be equivalent across different gender-by-family type groups suggesting that there are no significant differences across the four groups with respect to the relations among family process variables.

The often reported realignment in family relations over the course of adolescence (Hetherington, 1993; Hetherington & Clingempeel, 1992; Steinberg, 1990) is found in this study only for boys, with negativity in family relationships diminishing with age in both step- and nonstepfamilies and parental monitoring decreasing in stepfamilies. In addition, although association with delinquent peers is greater in older adolescents in all groups, this effect is most notable for boys in stepfamilies. Direct effects of age on externalizing are found only with a small association indicating that older girls in nonstepfamilies and older boys in stepfamilies are somewhat less likely than younger adolescents to exhibit externalizing behaviors.

In order to investigate if the effects of the sibling relationship on adolescent externalizing vary depending on degrees of biological relatedness between siblings, an additional multisample LISREL analysis was

A Boys



B Girls

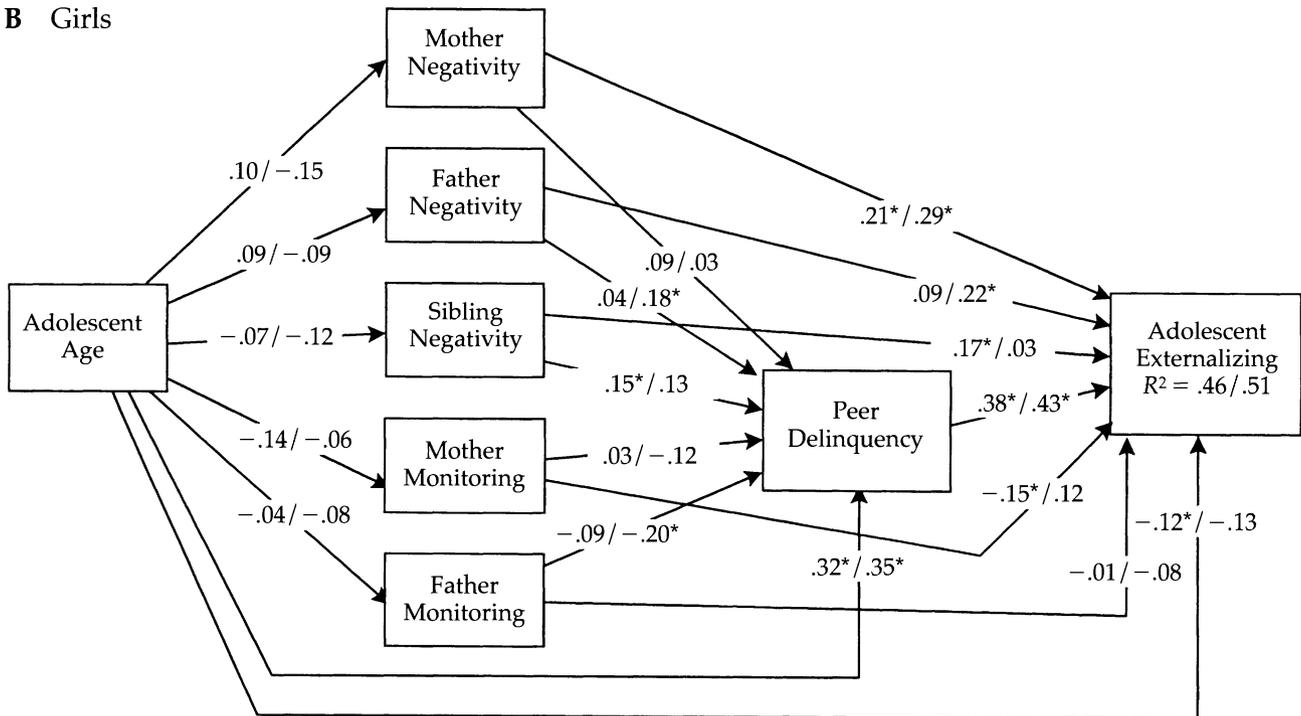


Figure 2 Summarized model fitting results of family processes, peer delinquency, and externalizing behaviors in adolescent boys (A) and girls (B). Nonstepfamilies are on left, stepfather families are on right. Only  $\beta$  coefficients are displayed (common metric completely standardized coefficients). Goodness-of-fit index = .98;  $\chi^2(32, N = 654) = 47.03; p = .042; * p < .05$ . For clarity of presentation, the following significant covariances among predictors are not shown: M\_NEG  $\leftrightarrow$  F\_NEG = .65; M\_NEG  $\leftrightarrow$  S\_NEG = .29; M\_NEG  $\leftrightarrow$  M\_MON = -.19; M\_NEG  $\leftrightarrow$  F\_MON = -.17; F\_NEG  $\leftrightarrow$  S\_NEG = .27; F\_NEG  $\leftrightarrow$  M\_MON = -.17; F\_NEG  $\leftrightarrow$  F\_MON = -.16; and M\_MON  $\leftrightarrow$  F\_MON = .31. M\_NEG = Mother Negativity, F\_NEG = Father Negativity, M\_MON = Mother Monitoring, F\_MON = Father Monitoring, S\_NEG = Sibling Negativity, P\_DEL = Peer Delinquency, and A\_EXT = Adolescent Externalizing Behavior.

conducted by fitting the established model structure in Figure 1 to data from six different sibling type groups (i.e., identical twins, fraternal twins, full siblings in nonstepfamilies, full siblings in stepfather families, half siblings in stepfather families, nonrelated siblings in stepfather families). For this purpose, a configural invariance model across different groups was tested (i.e., no parameter was constrained to be equal over groups). It was expected that biologically related siblings would have a greater influence on externalizing behavior than would nonbiologically related siblings. Ideally, it would be preferable to conduct separate path model analyses for boys and girls. The relatively small sample size per group, however, prevented our doing so. Thus, it should be noted that this model fitting is not directly comparable to the model fittings that tested family type and adolescent gender differences (see Figure 2). Our postulated model fitted the data reasonably well,  $\chi^2(12, N = 642) = 22.25$ ,  $GFI = .98$ ,  $RMSEA = .04$ . As predicted and somewhat consistent with the findings in Figure 2, hostile/negative sibling behaviors were significantly related to higher adolescent externalizing in nonstepfamilies regardless of sibling type,  $\beta = .19$ ,  $t = 2.26$  for identical twins, and  $\beta = .22$ ,  $t = 2.52$  for fraternal twins;  $\beta = .22$ ,  $t = 2.65$  for full siblings in nonstepfamilies, but not in stepfather families. In stepfather families, only a significant indirect effect of sibling negativity on adolescent externalizing was found for full biologically related siblings,  $\beta = .36$ ,  $t = 2.60$ . Thus, sibling biological relatedness rather than family type seems to be the critical factor in the influence of siblings on adolescent externalizing.

## DISCUSSION

The findings generally support the hypothesized model in that family process variables were related to adolescent externalizing behaviors not only directly but also indirectly, mediated by their influences on adolescents' associations with delinquent peers. Our multisample comparison analyses revealed that although the relations among parental and sibling behaviors for the four groups (i.e., boys in nonstepfamilies, girls in nonstepfamilies, boys in stepfather families, and girls in stepfather families) were similar, the salience and pattern of pathways linking family process variables to adolescent externalizing behavior varied across the groups.

Consistent with our model and previous studies (e.g., Conger et al., 1992, 1993; Patterson, 1982; Patterson & Bank, 1989; Patterson et al., 1992), parental hostile/coercive behaviors and lower parental moni-

toring were significantly related to adolescent externalizing behaviors. In all samples, regardless of adolescent gender or family type, maternal negativity was a consistent and significant predictor of adolescents' externalizing behaviors. In contrast, children seem to be especially sensitive to stepfathers' negative behaviors. Stepfathers' hostile/aversive behaviors were significantly associated with externalizing behaviors of stepsons and stepdaughters directly and indirectly through children's associations with delinquent peers, whereas biological fathers' negative behaviors were related to more delinquent peer group affiliation for their sons. The findings indicate that stepfathers' hostile behaviors seem to be more salient predictors than those of biological fathers, suggesting that stepfathers play an important role in their stepchildren's behavioral adjustment.

The impact of parental monitoring also differed by the gender of children and the type of the family in which they reside. Inadequate monitoring exerted by mothers was related to greater externalizing behaviors for boys in stepfather families and girls in nonstepfamilies. Only increased stepfathers' monitoring was related to stepdaughters' decreased associations with delinquent peers. Biological fathers' monitoring was predictive of neither externalizing behaviors nor deviant peer associations for children of both sexes. This finding appears inconsistent with the findings of past research that stepchildren are resistant to stepfathers' attempts to control or discipline in early remarriage (Hetherington & Clingempeel, 1992). On the one hand, it is possible that the discrepancy stems from the selection effects in sampling: Our sample was limited to longer established stepfamilies. On the other hand, our results extend the earlier work to more stabilized stepfamilies, suggesting that despite the difficulties inherent in stepfather-stepchild relationships, effective stepfather parenting was able to buffer stepchildren from associating with delinquent peers and eventually acting out. In general, our findings suggest that paternal monitoring of children's behavior seems to be of less value in predicting externalizing problems of the children than maternal monitoring. Mothers spend more time interacting with the children than fathers (Lamb, Ketterlinus, & Fracasso, 1992), and, as could be seen in Table 2, mothers are more active in monitoring of their adolescents' behaviors; hence, it is not surprising that her monitoring has a greater influence on the adolescent's externalizing than father's monitoring.

Lack of awareness and supervision of adolescents' activities diminishes the opportunity of parents to intervene in unfortunate peer choices or antisocial behavior before they escalate to a more serious level

such as delinquent activities. In some studies, parental monitoring and peer relations have been found to become increasingly important as children grow older and spend relatively more unsupervised time with peers outside the home (Patterson, 1982; Patterson & Stouthamer-Loeber, 1984). Given the consistent findings in the literature that the peer group constitutes a key variable in the initiation or prolongation of externalizing behavior in middle childhood and adolescence, and the difficulty of imposing coercive discipline practices on adolescents, it might have been hypothesized that parental supervision and monitoring may be more important at this stage than direct coercive discipline or family conflicts (Dishion, 1990; Dishion et al., 1991; Patterson & Bank, 1989; Rutter, 1994). Our analyses indicated, however, that parental negativity made more substantial contributions to adolescents' externalizing behaviors than did parental monitoring. These findings do not replicate the findings of the work by Patterson et al. (1992), who studied an at-risk sample of early adolescent boys and concluded that the contributions of parental monitoring and harsh discipline to the child antisocial behaviors were of roughly equal magnitude. The discrepancy of the findings seems to emphasize the differential influences of particular dimensions of mothers' and fathers' parenting on children's adjustment depending on gender of the child, family type, and possibly age of the child. That is, the relative importance of parents' monitoring and harsh discipline in the development of adolescent externalizing behaviors is expected not to be invariant across different samples.

The findings of this study yield no clear evidence supporting the proposition that fathers' behaviors are more influential than mothers' in contributing to the development of externalizing (Phares & Compas, 1992). Rather, the associations of mothers' and fathers' parenting with adolescent externalizing seem to be more complicated. In nonstepfamilies, some evidence was found that the same-gender parent may have a greater influence on child adjustment (e.g., Lindner-Gunnoe, 1993). Specifically, aside from mother negativity that was a "common" significant predictor across all groups, father negativity was indirectly related to boys' externalizing behaviors, whereas mother monitoring was directly related to girls' externalizing. A different picture emerged, however, from stepfather family data. In addition to the predictors of mother negativity and stepfather negativity that were significantly predictive both for boys and girls, mother monitoring was directly related to boys' externalizing behaviors, whereas stepfather monitoring was indirectly related to girls' externalizing behaviors.

As hypothesized, sibling relationships made significant contributions to adolescent externalizing. This finding is consistent with the literature that emphasizes the role of sibling relationships in adolescents' peer relations and adolescent externalizing behaviors (e.g., Bank et al., 1996; Hetherington & Clingempeel, 1992; Patterson, 1984). Negative/hostile sibling relationships significantly predicted the externalizing behaviors of boys both in nonstepfamilies and in stepfather families. For girls living in nonstepfamilies, hostile sibling relations have not only a direct effect on adolescent externalizing, but also an indirect effect through its influence on the probability of involvement with deviant peers. Perhaps girls are more reactive to conflicts with their siblings than are boys, especially for girls who have grown up together in nonstepfamilies. The contribution of negativity in the sibling relationship seemed to be greater in nonstepfamilies than stepfather families. In fact, the findings from an additional multiple group model fitting based on different sibling types suggest that biological relatedness in sibling relations does matter. Greater negativity and conflict in sibling relationships were significantly related to adolescent externalizing directly or indirectly mediated through deviant peer association only for the full biologically related siblings. The current data analyses also showed that adolescents in stepfather families compared to adolescents in nonstepfamilies received significantly more negative behaviors from their younger siblings. This finding of increased disrupted and negative sibling relationships in stepfather families is consistent with the longitudinal investigation by Hetherington and Clingempeel (1992), who looked at family relationships over the 26 months following remarriage. It also is notable that in nonstepfamilies, the direct contribution of fathers' negative, coercive behavior to externalizing is less than that of the sibling. It has been proposed that aggressive behavior in children may be initiated by inept parenting, but sustained or exacerbated by relations with siblings and peers (Patterson, 1986).

Although some adolescents' antisocial activities are solitary and appear uninfluenced by peers, for many the gateway to externalizing and delinquent behavior is through the association with delinquent peers (Elliott et al., 1985; Loeber & Stouthamer-Loeber, 1998; Patterson, DeBaryshe, & Ramsey, 1989; Simons, Wu, Conger, & Lorenz, 1994). In this study, the contribution of the delinquent peer group to adolescent externalizing was substantial. The finding of the strong effect of deviant peer associations on adolescents' externalizing behaviors is consistent with a number of previous studies that have demonstrated the impor-

tant contribution of delinquent peers to adolescents' antisocial behaviors (e.g., Conger et al., 1991; Dishion et al., 1991; Patterson & Dishion, 1985; Patterson et al., 1989; Reid & Patterson, 1989; Simons, Whitbeck, Conger, & Conger, 1991; Simons, Whitbeck, Conger, & Melby, 1991; Snyder et al., 1986). More importantly, as hypothesized, the effects of delinquent peer association seem to be greater in stepfather families than nonstepfamilies, both for boys and girls. This finding is consistent with findings of Steinberg (1987) that children living with both biological parents are less susceptible to antisocial peer pressure than children in single or stepparent families.

As expected, children in stepfamilies showed greater association with delinquent peers and externalizing than was found for children in nonstepfamilies (Amato & Keith, 1991b; Hetherington & Jodl, 1994). The data also revealed that parenting behaviors differed between nonstepfamilies and stepfather families. Mothers and stepfathers in stepfather families showed more negative behaviors toward the target adolescents than mothers and biological fathers in nonstepfamilies. Interestingly, negative, conflictual relationships with stepfathers were more strongly associated with adolescents' involvement with delinquent peers than were negative relationships with mothers or siblings. Although it was not directly measured in this study, this is likely to be related to the greater disengagement from the family by adolescent children in stepfamilies (Hetherington, 1993; Hetherington & Jodl, 1994), which has been found to be promoted by family conflict (Cherlin & Furstenberg, 1994). Our findings indicate that it is especially hostile, acrimonious relationships with the stepfather rather than negativity in other family relationships that is associated with the adolescents' involvement with delinquent peers. In addition, stepfathers were less active in monitoring their stepchildren than were biological fathers in nonstepfamilies. This was true for both boys and girls. The finding is parallel to the previous findings suggesting that, although stepfamilies change over time, stepfathers tend to remain more disengaged than biological fathers (Bray, Berger, Silverblatt, & Hollier, 1987; Hetherington, 1987, 1993; Hetherington & Clingempeel, 1992).

Therefore, the results indicate that even in these enduring remarriages, stepfather families were at risk for having adolescent boys and girls who show greater delinquent peer group affiliation and higher levels of externalizing behaviors compared to adolescents in nonstepfamilies. The findings further support the family process perspective, suggesting that the effects of parents' marital transitions on adolescents' adjustment seem to be less the results of divorce

or remarriage per se, but rather, the results of disrupted family processes (Amato & Booth, 1996; Amato & Keith, 1991b; Block, Block, & Gjerde, 1986). These processes include parents' increased hostile behaviors and decreased monitoring, and increased sibling negativity, which often are associated with vulnerability to the influence of delinquent peers. From a developmental standpoint, the differences in family processes associated with parental divorce and remarriage are critical for the child's social and emotional development.

There are several limitations in the study and alternative explanations for the results that need to be considered. First, it may be the case that much of the observed association between parenting behavior of biological parents and adolescent externalizing behavior can be attributed to genetic factors (e.g., Bergman, Plomin, Pedersen, & McClearn, 1991; Lichtenstein, Harris, Pedersen, & McClearn, 1992; Lichtenstein & Pedersen, 1995). For instance, Pike, McGuire, Hetherington, Reiss, and Plomin (1996) found that the genetic contribution to the covariance between familial negativity and adolescent antisocial behavior is substantial. The significant association between parenting of stepfathers and adolescent externalizing behavior cannot be explained by passive genotype-environment correlation (e.g., adolescents may inherit environments along with genes from their parents). It may, however, reflect an evocative genotype-environment correlation such that an adolescent's heritable aspects that lead to externalizing behavior also would lead to displays of negativity from the stepfather. In contrast, sibling behavior and externalizing have been found to be related primarily by shared environment, indicating that negative sibling relationships are equally likely to have adverse effects on each sibling (Pike et al., 1996).

As with any correlational analysis, the directions of influences may be opposite those proposed. In the present study, for example, the strong association between stepfather's negativity and adolescent externalizing behavior may reflect the effect of the adolescent on the father. This is consistent with the idea that socialization is bidirectional (Bell, 1968) and with previous findings that show the salience of the child's contribution to negative parenting and antisocial behavior within a reciprocal parent-child interactive system (Lytton, 1990; Patterson, 1982). Cross-lagged models done on the data used in this study, however, found no child-driven effects for externalizing (Jodl, Bridges, Kim, Mitchell, & Chan, in press; Reiss, Neiderhiser, Hetherington, & Plomin, in press). Furthermore, caution should be exercised when interpreting the evidence obtained for direct and indirect effects of

family processes on adolescent externalizing, as our data were cross-sectional, and causality in relationships cannot be verified in the models. This awaits further testing with longitudinal models, however, some studies of samples with high risk boys have indicated that concurrent and longitudinal correlates of adolescent externalizing may differ (Vuchinich, Bank, & Patterson, 1992). Finally, it must be recognized that the present investigation is based on a sample of mostly European American working- and middle-class families. Generalizability of the findings to the families of different ethnic and socioeconomic status awaits further study.

Despite the limitations, using multigroup models this study showed differential associations of family processes and peer relations with adolescent externalizing behaviors for boys and girls in nonstepfamilies and stepfather families. The findings further emphasize the need for increasingly sophisticated approaches that include child gender and family type in studying the development of externalizing behaviors.

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