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Disentangling the Relative Contribution of Parental Antisociality and Family Discord to Child Disruptive Disorders

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Abstract

A number of familial risk factors for childhood disruptive disorders have been identified. However, many of these risk factors often co-occur with parental antisociality, which by itself may account for both the familial risk factors and the increased likelihood of offspring disruptive behavior disorders (DBDs). The current study aimed to examine the association of parenting behaviors, marital conflict, and divorce with child DBDs while accounting for a) co-parent parenting behaviors, and b) parental adult antisocial behavior (AAB). A series of regressions tested the association between family-level variables (namely, parent-child relationship quality, parental willingness to use physical punishment, marital adjustment, and history of divorce) and DBDs (attention-deficit hyperactivity disorder, conduct disorder, and oppositional defiant disorder) alone and after statistically adjusting for co-parent variables and parental AAB. Results indicated that parents with AAB were more likely to engage in various forms of maladaptive parenting, to divorce, and to have conflictual marriages. Maladaptive parenting, marital conflict, and divorce were associated with heightened rates of child DBDs, and these associations persisted after adjusting for co-parent parenting and parental AAB. Finally, the mother's parenting behaviors had a higher impact on child DBDs than the father's parenting behaviors. Thus, familial variables continue to have an effect on childhood DBDs even after accounting for confounding influences. These variables should be a focus of research on etiology and intervention.

Keywords

Adult antisocial behavior; child disruptive disorders; familial transmission; parenting; divorce; marital conflict

The association between poor parenting and childhood disruptive disorders (DBDs; attention-deficit hyperactivity disorder [ADHD], oppositional-defiant disorder [ODD], and conduct disorder [CD]) is well established. Several studies report a strong association between disciplinary practices that are inconsistent, harsh, or abusive with child conduct problems and delinquency, inattention, rule-breaking behaviors, and aggression (Loeber & Stouthamer-Loeber, 1986; Stanger, Dumenci, Kamon, & Burstein, 2004). Similarly, multiple studies report an association between childhood DBDs with a lack of parental involvement, lack of parental warmth, punitive parenting practices, and parent-child conflict (Burt, Krueger, McGue, & Iacono, 2003; Caspi et al., 2004; Loeber & Stouthamer-Loeber, 1986; Stanger et al., 2004; Stormshak, Bierman, McMahon, Lengua, & Conduct Problems Prevention Res, 2000). Finally, two studies (Burt et al., 2003; Burt, McGue, Krueger, &

Iacono, 2005) reported that parent-child conflict is associated with increased risk for child DBDs both cross-sectionally and longitudinally.

In addition to maladaptive parenting, both marital discord and parental divorce are associated with child DBDs (Amato & Keith, 1991; Burt, Barnes, McGue, & Iacono, 2009). Several studies document the association between marital satisfaction, consensus, and cohesion with child DBDs (Gartstein & Fagot, 2003). Similarly, Burt et al (2009) reported a strong association between parental divorce and levels of conduct problems and disruptive behavior. In a meta-analysis examining the impact of divorce on conduct problems, Amato and Keith (1991) reported a moderate effect size of .33.

On the surface these results suggest that maladaptive parenting and conflict in the home are environmental risk factors that contribute directly to childhood DBDs. This analysis would also be in line with behavioral genetic studies stressing the importance of shared environment (environmental factors that increase similarity among family members in childhood disruptive disorders) (Burt, Krueger, McGue, & Iacono, 2001). However, many of these familial risk factors and behaviors co-occur with one of the strongest predictors of child DBDs, parental antisocial behavior (Herndon & Iacono, 2005). Antisocial parents are more likely to engage in maladaptive parenting practices, to report high levels of marital discord, and to divorce (Humbad, Donnellan, Iacono, & Burt, 2010; Johnson, Cohen, Kasen, Smailes, & Brook, 2001; Rhule, McMahon, & Spieker, 2004; Thornberry, Freeman-Gallant, Lizotte, Krohn, & Smith, 2003). In addition, behavior genetic studies show that antisocial behavior is itself strongly heritable (Rhee & Waldman, 2002). Thus, it is quite possible that in children whose parents show antisocial behavior, genetic propensities shared between the parent and child may be leading to child DBDs *and* to the potential risk factors (e.g., maladaptive parenting, divorce or marital discord) – an effect known as a passive gene-environment correlation (Plomin, DeFries, & Loehlin, 1977). The result of this effect may be the overestimation of the importance of the *independent* contribution of parenting, divorce, and marital discord factors (Bergen, Gardner, & Kendler, 2007).

Studies that have attempted to disentangle the relative contribution of parental antisociality versus parenting behaviors, marital discord, and divorce have produced mixed results. Some studies report that the effects of maladaptive parenting and divorce on childhood disruptive disorders are mainly accounted for by parental antisociality (Emery, Waldron, Kitzmann, & Aaron, 1999; Lahey et al., 1988), whereas others report opposite findings (Johnson et al., 2001; Rhule et al., 2004; Thornberry et al., 2003). The possibilities for the lack of concordance across studies include variability in measures of parenting, marital discord, and child DBDs (Emery et al., 1999; Johnson et al., 2001; Lahey et al., 1988; Rhule et al., 2004). Additional sources of variability include sampling methods and emphasis on either maternal *or* paternal psychopathology/parenting behaviors without considering co-parent effects (Emery et al., 1999; Frick et al., 1992). This last point is quite important, as the effects of maternal versus paternal parenting effects may differ (Denham et al., 2000; Johnson et al., 2001). For instance, in a meta-analysis that compared the effects of mother and father quality of care giving on child DBDs, the difference between effects for mothers and fathers was modest but significant (mean effect sizes = .30 and .21 for mothers and fathers, respectively) (Rothbaum & Weisz, 1994).

Current Study

The present investigation aimed to shed light on the inconsistencies in the general literature by extending research on the relative effects of parental antisociality, maladaptive parenting, marital discord, and divorce on ADHD, ODD, and CD in a large (over 1200 families), well-characterized epidemiological sample of pre-adolescent girls and boys recruited from the

community. In particular, we aimed to examine a wide range of parenting factors, including parent-child conflict, opinions toward the use of punitive parenting practices, marital discord, and divorce to determine to what extent parental antisociality may be driving the association between the risk factor and child DBDs. As prior studies focused on limited sets of parenting behaviors in antisocial adults within a single study (Emery et al, 1999; Humbad, Donnellan, Iacono, & Burt, 2010; Smailes, & Brook, 2001; Rhule, McMahon, & Spieker, 2004; Thornberry, Freeman-Gallant, Lizotte, Krohn, & Smith, 2003), we additionally aimed to compare antisocial and non-antisocial parents across a range of parenting domains. Finally, we examined the relative contribution of the parenting behaviors of both mothers and fathers. Many of the previous studies have incorporated one or more of these methodological strengths; however, one of the contributions of the current study is the inclusion of *all* of these methodological improvements simultaneously.

Methods

Participants

The present study included 1255 families including 1230 male and 1280 female children (same-sex twin pairs, all aged 11 at the time of assessment) and their biological parents. 1240 (98.8%) mothers and 1185 (94.4%) fathers participated along with their offspring in the daylong in-person assessments. The sample is representative of the population of Minnesota (according to the 2000 US Census; Holdcraft & Iacono, 2004) and is primarily Caucasian (98.5%). Detailed description of the study methods and procedures is available elsewhere (Iacono, Carlson, Taylor, Elkins, & McGue, 1999; Keyes et al., 2009).

Measures

Parenting behaviors/attitudes—Problematic parenting was assessed by evaluating the quality of the relationship between parent and each child as well as a favorable parental opinion toward physical punishment. Each parent reported on his/her own relationship with the child through the Parental Environment Questionnaire [PEQ, (Elkins, McGue, & Iacono, 1997)], a 50-item self-report questionnaire in which parents respond to each item using a four-point scale and that yields the subscales of Conflict, Involvement, and Parent Regard (α s ranged from .78–.87). The Conflict scale assessed frequency of negative interactions between parent and child (higher scores = higher conflict). The Involvement scale assessed communication between parent and child (higher scores = higher involvement). The Parent Regard scale assessed the parent's belief that he/she has knowledge to benefit the child (higher scores = higher regard). The Parent Regard scale indexes the general quality of the parent-child relationship. Finally, the mother's and father's opinions on punishment methods were assessed from 9 items on a child rearing questionnaire (α = .75) tapping willingness to use physical punishment (parents with higher scores were more likely to endorse punishments like hard spanking, hitting, and "sound thrashing").

Separation/Marital Discord—Divorce/separation was reported by mothers. Families where the child's biological parents were never married to each other or were widowed were not included in these analyses. In our sample, mothers in 968 families (78.8%) were currently married and 192 (15.6%) were divorced/separated from the biological father; the remaining couples (5.6%) were either never married or widowed. We also measured marital quality in couples currently married to the child's biological co-parent using the Marital Relationship Scale (MRS) (South, Krueger, & Iacono, 2009; Spanier, 1976). The questionnaire included 34 items comprising 4 subscales (Consensus, Satisfaction, Affective Expression, and Cohesion) (α s = .73–.89) and yielding an overall total score. Each parent completed this self-report questionnaire appraising his/her marital satisfaction over the preceding 12 months. The Consensus subscale indexed the degree to which parents agree or

disagree on a number of issues. Satisfaction measured aspects related to perceived stability of the marriage. Affective Expression measured the degree to which the parent perceives agreement on how affection is expressed. Finally, Cohesion measured the frequency of positive interactions between the couple. Because marital quality is the function of the joint consensus and interaction of the parents, mother and father's scores were averaged together to provide a single index for each scale for each couple. Correlations between the two parents ranged from .37–.62.

Parental AAB—Adult Antisocial Behavior (AAB; the Criterion C “adult” component of DSM-III-R Antisocial Personality Disorder) was assessed in both mothers and fathers. Each parent underwent a structured in-person interview with a trained interviewer using a slightly modified version of the Structured Clinical Interview for DSM-III-R (Spitzer, Williams, Gibbons, & First, 1987). Separate interviewers conducted the co-parent's assessments and were blind to the co-parent's diagnosis. Parents were considered to have AAB if they had three or more symptoms. Additionally, for the fathers who were unwilling/unable to visit, we used the mother's report of the father's antisociality. In particular, mothers reported on the presence of 10 different adult antisocial behaviors in which the fathers may have engaged using the Family History–Research Diagnostic Criteria (Andreasen, Endicott, Spitzer, & Winokur, 1977) and the Family Informant Schedule and Criteria (Mannuzza, Flyer, Endicott, & Klein, 1985). There were 165 fathers who did not have interviewer-assessed antisociality data, and 95 of these (8.0% of the final sample) were diagnosed with AAB. The remaining 70 were excluded from the study. In our final sample 76 (6.1%) mothers satisfied criteria for AAB, as did 338 (28.5%) fathers.

Child Measures—Children were assessed for the presence of DBDs using the Diagnostic Interview for Children and Adolescents-Revised (Reich, 1988). A best-estimate procedure was used wherein a symptom was considered present if it was endorsed by either the mother or the child. Symptom count variables were created for ADHD, ODD, and CD. Symptom counts were used in all the analyses. In our sample, there was a mean of 0.59 (SD=1.05) CD symptoms, 1.52 (SD=1.75) ODD symptoms, and 2.33 (SD=2.85) ADHD symptoms. Because the three DBDs have been reported to reflect an underlying externalizing (EXT) dimension (Burt, et al., 2001), an EXT variable was created by taking the first principal component of the symptoms of the three DBDs. The principal component analysis supported this decision. Only one principal component was identified, explaining 61% of the variance in EXT. The component loadings were: .71 for ADHD; .81 for CD; and .81 for ODD.

Results

Differences between Parents with and without AAB

Symptom counts for childhood disruptive disorders were transformed into T scores [$M(SD) = 50(10)$] as were the parenting and marital variables. Table 1 presents the T-scored values for children of AAB and non-AAB parents. Children of AAB parents scored significantly higher on all childhood disruptive disorder symptom counts and EXT. Parents with AAB scored in the more deviant direction on the parenting measures and marital variables, significantly so for about half of them.

Antisocial adults were more likely to divorce than were non-antisocial adults [$\chi^2(1, 1120) = 101.25, p < .001$]. In families where at least one parent had AAB, 218 (59.7%) of the couples were currently married while 104 (28.5%) were divorced/separated from the biological co-parent (the rest were never married or widowed). In the families where both parents were non-antisocial, 727 (90.4%) of the couples were currently married while only 69 (8.6%) were divorced/separated from the co-parent. In the currently married sample,

antisocial parents had significantly lower levels of cohesion and satisfaction, lower consensus on important issues, and a lower overall marital quality (all t s > 2.00, all p s < .01).

Relationship between Parenting Variables and Child sychopathology Before and After Adjusting For Co-Parent Effects and Familial ASPD

We conducted a series of log-linear Poisson mixed-level regression models estimated by generalized estimating equations in order to determine a) the degree to which parenting variables were associated with child DBDs, and b) whether this relationship held after adjusting for co-parent parenting and familial AAB. Poisson regressions were used because of the non-normal (Poisson) distribution of the child symptom counts. For each parenting variable, we fit three regression models. These models also accounted for the clustered nature of the data – that is, the multiple observations for individuals clustered within a family or twin pair (Hanley, Negassa, Edwardes, & Forrester, 2003).

In Model 1, we examined the effects of the mother (or father) parenting variable on child disorders while adjusting only for the child's gender. Model 2 examined the effects of the mother (or father) parenting variable on child disorders while adjusting for gender and the effect of the co-parent's parenting variable. Model 2 thus allowed us to examine the effects for each parent independently of the contribution of the other parent. Model 3 examined the effects of the mother or father parenting variables on child disorders while adjusting for child gender, the co-parent parenting variable and parental AAB, providing the most stringent test of whether the mother's or the father's parenting variable affected their child's having a DBD. Our approach thus made it possible to examine the effect for each parent separately after adjusting for critical confounders.

Each of the mother and father relationship-with-child variables was significantly associated with all child DBDs, and EXT (Model 1, Table 2). Additionally, the mother's willingness to use punishment was significantly associated with all three DBDs and EXT while father's willingness to use punishment was only associated with CD, ODD, and EXT.

In Model 2, out of the 12 regression models examining the effects of the mother-child relationship, 10 remained significant after adjusting for the father-child relationship (Model 2, Table 2). Similarly, out of the 12 models testing the effects of the father-child relationship on child DBDs, 10 (albeit, not the same 10) remained significant after adjusting for the mother-child relationship. The effects of the mother's willingness to use punishment on all childhood disorders remained significant when adjusting for father's willingness to use punishment. However, the effects of the father's willingness to use punishment on CD, ODD, and EXT fell to non-significance after adjusting for the mother's beliefs.

The significant effects of mother-child (and father-child) relationship in Model 2 remained significant in Model 3 (Model 3, Table 2). Similarly, the effects of mother's willingness to use punishment on childhood disruptive disorders remained significant, with one exception: namely, the effect on ADHD fell to non-significance. There were no effects of the father's willingness to use punishment on child DBDs.

Relationship between Separation/Marital Quality and Child Psychopathology

Although the effects for ADHD were weak, the analyses of the effects of marital quality and divorce on child DBDs paralleled those described above. Because each couple had a single index of marital strife and divorce, there was no need to control for co-parent effects. Results (Model 1, Table 3) indicated that out of the 24 regressions examining the effects of marital discord and divorce on child DBDs, 18 indicated significant effects. The marital relationship variables and divorce status had a significant relationship with all childhood disorders except, for the most part, ADHD. The addition of AAB into the regression models

(Model 3) failed to make a significant impact on the results, such that 16 out of 18 models that were significant in Model 1 continued to be significant in Model 3.

Gender-of-parent—As seen in Table 2, the mother effects tend to be stronger than father effects. The significance of the difference between the partial regression coefficients for mothers and fathers was tested based on the approach described elsewhere (Clogg, Petkova, & Haritou, 1995). Mother-child Conflict was more strongly related to child CD, ODD, and EXT than father-child Conflict. Mother's Regard was more strongly related to child CD than the father's. Additionally, the mother's willingness to use punishment had a significantly higher effect on CD and EXT compared to the father's.

Controlling for Common Source Bias—Three sets of analyses were conducted to rule out reporter bias. First, the mother and father provided PEQ ratings as well as ratings of their own antisociality symptoms and child DBDs. As such, there was a possibility of rater confounding. To evaluate this possibility, we repeated these analyses using the child-rated PEQ scores (available in the MTF dataset). The overall pattern was quite similar to the results reported above, with the direction of effect the same in every one of the 72 analyses¹, and with 91% of the original significant results remaining significant. Second, the best-estimate procedure may have accounted for the stronger associations between mothers' parenting and child DBDs; thus, we re-ran the analyses using the child's self-report symptoms. Additionally, teacher ratings of CD, ADHD, and ODD were available for approximately 85% of the sample. Thus, we also reran the analyses after adding in teacher ratings of childhood disruptive disorders. In both cases, direction of effect the same as those obtained using the best-estimate procedure. Of the original significant results, 48% remained significant in the former and 68% in the latter analysis. As such, we were able to rule out the possibility that our findings were due to rater contamination.

Discussion

The current study examined the effects of a maladaptive family environment on child DBDs while adjusting for parental AAB and co-parent effects. We extend previous work by: a) including both parents in our analyses and comparing their relative contributions to DBDs; b) using multi-reporter indices of child DBDs (and as such, ruling out the potential confounding of reporter type); c) including multiple indices of maladaptive environment and parenting; and d) utilizing a large, representative sample with children of uniform age. These methodological strengths allow us to clarify some of the discrepancies in the literature that concern the relative importance of parental antisociality and familial environment.

AAB parents differed from non-AAB parents in a number of ways. The antisocial mothers had more conflict in relationships with their children than non-antisocial mothers, whereas the fathers were less involved in their children's lives. Consistent with previous work (Thompson & Bland, 1995), couples in which at least one partner was antisocial were significantly more likely to divorce than non-antisocial couples. Antisocial couples that remained married had more problematic marriages, reporting less satisfaction, agreement, and cohesion. Second, all parent-child relationship variables as well as *maternal* willingness to use physical punishment in particular were associated with higher levels of child DBDs. Additionally, children whose parents divorced or separated had higher levels of DBDs than children whose parents remained married. Even within currently married families, indices of marital discord were related to most of the child DBDs.

¹The number of analyses involving PEQ variables only.

Third, consistent with previous work (Rhule et al., 2004; Thornberry et al., 2003), our results indicated that most parenting and marital effects remained significant even after statistically adjusting for parental AAB. Thus, it appears unlikely that the associations between parenting and child DBDs are due solely to a genetic predisposition to AAB that is shared between parent and child, although shared genes likely contribute somewhat to the relationship. While it is tempting to interpret these results in support of more “environmentally-driven” models of child DBDs, the current results cannot unequivocally support this type of an interpretation. One possibility is that passive, evocative, or active gene-environment (GE) correlations might also account for these relationships. An example of a passive GE correlation is that of a parent passing down a genetic liability for externalizing disorders, and this same parent contributing to marital discord. An example of active and evocative GE correlations would consist of a child’s (heritable) propensity to externalizing either evoking particular parenting responses in the parents, or this heritable propensity leading the child to directly engage in conflictual interactions with the parents. The contribution of possible GE effects must be better understood to fully evaluate the relative role of parental AAB and familial discord on child DBDs. Finally, we examined the relative contribution of maternal and paternal parenting beliefs and behaviors via adjusting for co-parent effects. Similar to previous work (Johnson et al., 2001), each parent appears to exert an independent parenting effect on child DBDs.

We found mother and father effects to be largely similar; but there were some important differences as well. Mother effects tended to be larger than father effects across the board, although mother effects were significantly stronger in only a subset of analyses. This finding could not be attributed to the fact that the mothers also contributed to ratings of child DBDs. The parental sex differences findings are similar to the effects obtained in a meta-analysis (Rothbaum & Weisz, 1994) indicating stronger associations with maladaptive parenting for mothers than for fathers. This may reflect the fact that generally, mothers tend to have more contact with their children than fathers (Stanger et al., 2004). On the other hand, our results contrast with those reported by Loeber and Stouthamer-Loeber (1986) who reported paternal effects to be stronger than maternal effects. The likely reason for this discrepancy is methodological; that is, the authors used a clinic-referred sample, whereas our study used a community sample. Likely, the influence of fathers may be substantial in atypical populations by virtue of extreme cases.

Two limitations of the study should be acknowledged. First, the methodology of the current study does not allow us to disentangle potential gene-environment correlations that might contribute to child DBDs. The ethnic homogeneity also may affect generalizability to other ethnic groups. On the other hand, as we have documented elsewhere (Holdcraft & Iacono, 2002, 2004; Legrand, Keyes, McGue, Iacono, & Krueger, 2008), the sample was quite diverse in terms of SES, urban/rural residence, and income, with 13% of families having a household income of under \$30,000, 40% from rural areas, and 54% from families with fathers with 12 years of schooling or less. In addition, although the *strength* of effects may vary with racial background, we know of no evidence to suggest that the *direction* of effects differs by race. Nevertheless, a replication with a sample that includes considerably more minority adolescents is in order.

In sum, the current study adds to the literature on risk factors for child DBDs and shows that even after accounting for co-parent effects and parental antisociality, maladaptive parenting and marital maladjustment appear to influence the likelihood of DBDs in 11-year-old children. Future work should begin to disentangle “pure” effects of familial discord from GE correlations through adoption study methods. For instance, if the effects of parent-child conflict and parental discord on child DBDs are not due to active or passive GE correlations, then optimism is warranted that an intervention that reduces the use of physical punishment

or increases marital consensus might have a direct effect on the rates of childhood disruptive disorders in at-risk families. Alternatively, if follow-up studies show that passive or active GE correlations are important, then such intervention programs may be more challenging to implement successfully.

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Table 1

Comparison of antisocial parents to non-antisocial parents on offspring disorder symptom counts, parenting qualities, and marital adjustment

	Child Psychopathology				
	Mother		Father		t-statistic
	Non-AAB	AAB	t-statistic	Non-AAB	
ADHD	49.62	55.07	-4.93 ***	49.18	51.68 4.35 ***
ODD	49.67	55.17	5.14 ***	49.05	52.05 4.94 ***
CD	49.63	54.24	-3.17 **	48.84	52.72 5.71 ***
EXT	49.54	56.12	5.16 ***	48.76	52.74 6.17 ***
Parenting Variables					
Conflict	49.2	53.05	-2.69 **	49.50	50.72 -1.37
Involvement	50.54	47.78	1.84	50.68	48.40 2.42 *
Parent Regard	50.35	49.97	0.24	50.53	48.82 1.76
Punishment	49.35	51.22	-1.13	49.42	51.47 -1.87
Marital Relationship [‡]					
	Non-AAB	AAB	t-statistic		
Cohesion	50.61	48.36	-2.68 **		
Satisfaction	50.91	47.23	-4.29 ***		
Consensus	51.02	47.59	-4.06 ***		
Affective Expression	50.42	48.88	-1.80		
Overall	50.90	47.59	-3.95 ***		

Note: Tabled means are based on a T-Score metric (mean=50, SD=10). Parental AAB was scored present if either parent was affected. Abbreviations: ADHD, attention-deficit hyperactivity disorder; ODD, oppositional-defiant disorder; CD, conduct disorder; EXT, externalizing factor.

* p<.05,

** p<.01,

*** p<.001.

‡ The marital relationship variables used a composite of mother and father reports.

Table 2
The relationship between parent-child relationship and child externalizing disorder symptoms after adjusting for the effects of the co-parent and parental antisociality

Risk Factors		CD			ODD			ADHD			EXT		
Model	1	2	3	1	2	3	1	2	3	1	2	3	
	Mother Report												
Conflict	.45*** (.05)	.47*** (.06)	.47*** (.06)	.40*** (.06)	.38*** (.04)	.38*** (.04)	.25*** (.03)	.22*** (.03)	.22*** (.04)	.45*** (.04)	.39*** (.04)	.39*** (.04)	
Involvement	-.23*** (.05)	-.21*** (.05)	-.21*** (.05)	-.19*** (.06)	-.22*** (.03)	-.21*** (.03)	-.09*** (.04)	-.08 (.04)	-.07 (.04)	-.23*** (.05)	-.19*** (.04)	-.19*** (.04)	
Parental Regard	-.24*** (.06)	-.25*** (.07)	-.25*** (.07)	-.17*** (.07)	-.19*** (.04)	-.19*** (.04)	-.07* (.04)	-.06 (.04)	-.06 (.04)	-.20*** (.05)	-.17*** (.04)	-.17*** (.04)	
Punishment	.26*** (.06)	.24*** (.08)	.24*** (.08)	.17*** (.08)	.13** (.05)	.12** (.05)	.12** (.04)	.10* (.05)	.08 (.05)	.17*** (.03)	.13*** (.04)	.12** (.04)	
	Father Report												
Conflict	.05 (.04)	.01 (.05)	.01 (.05)	.28*** (.05)	.16*** (.04)	.15*** (.04)	.23*** (.04)	.14*** (.04)	.22*** (.04)	.27*** (.04)	.13*** (.04)	.13*** (.04)	
Involvement	-.23*** (.05)	-.22*** (.06)	-.18*** (.06)	-.17*** (.06)	-.15*** (.04)	-.14*** (.04)	-.15*** (.03)	-.14*** (.04)	-.12*** (.04)	-.20*** (.04)	-.17*** (.04)	-.16*** (.04)	
Parental Regard	-.12* (.06)	-.05 (.06)	-.04 (.05)	-.15*** (.05)	-.11*** (.04)	-.10** (.04)	-.11** (.04)	-.08* (.04)	-.08* (.04)	-.14*** (.04)	-.09* (.04)	-.17* (.04)	
Punishment	.20** (.07)	.04 (.08)	.01 (.08)	.11* (.05)	.04 (.05)	.04 (.05)	.04 (.04)	-.02 (.05)	-.03 (.05)	.09*** (.04)	.02 (.04)	.01 (.04)	

Note: Coefficients and standard errors for all variables show change in the log of the symptom count as a function of 1 standard deviation change in the score on the parenting variable. Model 1 controlled for offspring gender; Model 2 controlled for gender and co-parent variables; Model 3 controlled for gender, co-parent variables, and parental AAB (scored present if either parent was affected). ADHD, attention-deficit hyperactivity disorder; ODD, oppositional-defiant disorder; CD, conduct disorder; EXT, externalizing factor.

*
p<.05,
**
p<.01,

p< .001

The relationship of marital and divorce on child externalizing disorder symptoms after adjusting for the effects of the co-parent and parental antisociality

Table 3

Risk Factors	CD			ODD			ADHD			EXT		
	1	3		1	3		1	3		1	3	
Marital Relationship												
Cohesion	-.14 (.06) *	-.10 (.06)		-.12 (.04) **	-.10 (.04) **		-.04 (.04)	-.04 (.05)		-.07 (.03) **	-.06 (.03) *	
Satisfaction	-.17 (.05) ***	-.13 (.05) *		-.14 (.03) ***	-.11 (.03) **		-.03 (.04)	-.003 (.05)		-.09 (.03) ***	-.06 (.03) *	
Consensus	-.21 (.05) ***	-.17 (.06) **		-.15 (.03) ***	-.13 (.03) ***		-.11 (.04) **	-.11 (.05) *		-.12 (.03) ***	-.10 (.03) ***	
Affective Expression	-10.85 (1.12) ***	-.11 (.05) *		-.05 (.03)	-.04 (.03)		.00 (.04)	.00 (.05)		-.04 (.02)	-.03 (.02)	
Overall	-.20 (.05) ***	-.17 (.05) **		-.14 (.03) ***	-.12 (.03) ***		-.06 (.04)	-.05 (.05)		-.10 (.03) ***	-.08 (.03) **	
Divorce	.62 (.12) ***	.35 (.13) **		.35 (.09) ***	.18 (.09) **		.27 (.08) ***	.11 (.09)		.34 (.08) ***	.20 (.08) *	

Note: Coefficients and standard errors for all but the divorce variable show change in the log of the symptom count as a function of 1 standard deviation change in the score on the parenting variable. The divorce coefficients indicate the difference in the log of the outcome (for ADHD, CD, and ODD) and in the mean level (for EXT) between divorced and non-divorced families. Model 1 controlled for offspring gender; Model 3 controlled for gender, co-parent variables, and parental AAB (scored present if either parent was affected). To keep the parallel structure with the other tables, we refer to the second model in this series of analyses as Model 3 (in all other analyses, Model 2 controlled for co-parent report; this analysis is not applicable here). ADHD, attention-deficit hyperactivity disorder; ODD, oppositional-defiant disorder; CD, conduct disorder; EXT, externalizing factor.

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