CAN OBJECTIVELY SHARED EVENTS HAVE EFFECTIVELY NONSHARED EFFECTS? ASSOCIATIONS BETWEEN DIFFERENTIAL PERCEPTIONS OF MARITAL CONFLICT AND CHILD EXTERNALIZING BEHAVIOR

By

Caitlin J. Listro

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ABSTRACT

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Behavioral genetic research has argued that differential twin perceptions of an objectively shared or family-wide event can yield effectively nonshared or child-specific child outcomes, whereby only one twin engages in more pathological behavior as a consequence of this shared experience. However, prior research has yet to resolve the extent to which their findings were due to differential perceptions of a shared event or exposure to nonshared events. The current study sought to address this issue by examining whether differential perceptions of a family-wide experience (i.e., marital conflict) can have effectively nonshared outcomes (i.e. differential externalizing). Participants included 500 population-based twin families and 174 high-risk twin families from the Twin Study of Behavioral and Emotional Development in Children (TBED-C). The Children's Perceptions of Interparental Conflict inventory (CPIC; Nigg et al., 2009) was used to assess twin-specific perceptions of interparental conflict. The Child Behavior Checklist (Achenbach & Rescorla, 2001) was used to measure externalizing behaviors in each twin. Analyses were conducted using both a monozygotic twin differences design and co-twin control design, a statistically powerful counterfactual approach for identifying nonshared environmental mediation (McGue, Osler, & Christensen, 2010). Discordance in twins' perceptions of their parents' conflict did not predict discordance in their externalizing behaviors in either set of analyses. Such findings are not consistent with the notion that objectively shared events often have effectively nonshared effects on outcome.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Behavioral genetic research has concluded that the more important environmental influences on psychological and behavioral outcomes result in differences between siblings (i.e., are nonshared or child-specific). A recent meta-analysis of several forms of child and adolescent psychopathology (Burt, 2009a) confirmed this conclusion, revealing moderate-to-strong contributions of the nonshared environment to all psychopathological outcomes (typically accounting for 30-60% of the variance). Although environmental influences that create similarities between siblings (i.e., are shared or family-wide) were also important (indeed, more so than would have been predicted based on research in adults), they accounted for only 10-30% of the variance in psychopathological outcomes. This finding of smaller shared than nonshared environmental variance has been so consistent that many prominent behavior genetic researchers have argued that research into putatively environmental risk factors should focus on influences that create differences, and not similarities, between siblings (McGue & Bouchard, 1998; Plomin & Daniels, 1987; Reiss et al., 1995).

These arguments, however, have often been misinterpreted. Harris (1998), for example, argued that because parents were the most obvious source of shared environmental influences, and because shared environmental influences were small, it must therefore mean that parenting has minimal influence on twins' psychological and behavioral outcomes. Such arguments, however, have largely overlooked one critical element in the analysis and interpretation of behavioral genetic findings: namely, objective versus effective environments (Goldsmith, 1993; Turkheimer & Waldron, 2000). The objective environment is defined by the actual shared or unshared nature of the event; that is, "whether [the event] constitute[s] the environment of more than one sibling in the family, regardless of whether [its] effects serve to make siblings more

alike or more different" (Turkheimer & Waldron, 2000). An objectively shared environment would thus consist of events experienced by both siblings in a pair (e.g., parental SES, parental marital conflict, parental divorce), whereas an objectively nonshared environment would consist of events not shared by siblings (e.g., accidents in which only one twin was involved, individual peer groups). The effective environment, by contrast, is defined by its consequences: does a given experience serve to increase or decrease sibling similarity? The field of behavioral genetics is predicated exclusively on effective environments. Shared environmental influences are thus defined as those that increase sibling similarity regardless of the objective nature of those events. Nonshared environmental influences, in turn, decrease sibling similarity regardless of the objective nature of those events. Put differently, the effective nature of the event trumps its objective nature in behavior genetics. As Turkheimer and Waldron (2000) note, "if an objectively shared environmental variable results in nonshared effects, the effective contribution of the objectively shared event is included with the nonshared rather than the shared component of variance." Simply put, such an effect would map onto nonshared environment (E), not shared environment (C), in a behavior genetic model.

How might objectively shared events actually serve to create sibling differences? One common explanatory "mechanism" is that of differential perceptions: namely, siblings may differentially perceive, and thus differentially react to, the same objectively shared event (e.g., Johnson, Penke, & Spinath, 2011; Oliver, Pike, & Plomin, 2008; Plomin, Asbury, & Dunn, 2001; Turkheimer & Waldron, 2000). Given the field's general acceptance of this explanation, it is surprising to note that only a few studies have empirically examined the consequences of differential perceptions on shared events (e.g. Kowal, Kramer, Krull, & Crick, 2002; Oliver, Pike, & Plomin, 2008; Neiderhiser, Pike, Hetherington, & Reiss, 1998). Oliver, Pike, and

Plomin (2008) found that differences in MZ twins' perception of social integration (i.e. level of perceived social engagement) in the classroom significantly predicted differences in teacher report of twins' conduct problems, such that the twin who perceived more social integration in the classroom evidenced more conduct problems. Other studies have investigated how child perceptions of the parenting they received relate to their externalizing behaviors. Neiderhiser, Pike, Hetherington, & Reiss (1998) reported that adolescent perceptions partially mediated the relationship between parental negativity towards the child and child antisocial behaviors, such that more negative perceptions were related to increased pathology. Similarly, Kowal, Kramer, Krull, & Crick (2002) examined siblings' perceptions of the differential treatment they received from parents. Children who reportedly perceived a higher degree of parental control, relative to their siblings, exhibited more externalizing behaviors. In short, the above studies all concluded that experiences presumably shared by siblings (i.e., the classroom setting or parenting) appeared to induce sibling differences, and did so in part via differential perceptions of those experiences.

Although such results do offer some empirical support for the hypothesis that differential sibling perception of objectively shared events is a key piece of the nonshared environment, far more work is needed before any firm conclusions can be drawn. In particular, the extent to which the events in the above studies were in fact *objectively shared* is unclear. The siblings examined in Oliver, Pike, and Plomin (2008), for example, were not necessarily in the same classroom. In some cases then, their experiences were in fact objectively nonshared. Parenting is also problematic in terms of its objective similarity; even though children objectively share their parents, the individual relationships they have with a given parent may not be objectively shared (Kowal, Kramer, Krull, & Crick, 2002; Neiderhiser, Pike, Hetherington, & Reiss, 1988).

As such, it is not clear whether their findings stem from differential perceptions or objectively different experiences.

It is also notable that in the case of Oliver, Pike, & Plomin (2008), and perhaps in the case of Kowal, Kramer, Krull, & Crick (2002), the observed effects were in the opposite direction than would be expected. For example, perceived social integration is related to higher externalizing, but social integration is generally construed as a positive experience. As such, one would typically expect higher levels to predict *lower* externalizing (Oliver, Pike, & Plomin, 2008). In addition, Kowal, Kramer, Krull, & Crick (2002) found that perceptions of *greater* parental control were associated with more externalizing, whereas previous literature has found an (admittedly inconsistent) association between non-coercive parental control and *less* externalizing (e.g., Rothbaum & Weisz, 1994). It thus remains unclear whether the above studies do in fact support the widely accepted hypothesis that differential sibling perception of objectively shared events is a key piece of the nonshared environment.

The present study seeks to address these limitations, and thus to more definitively support or refute the notion that objectively shared events can lead to effectively nonshared outcomes via differential sibling perceptions. We specifically examined whether differential perceptions of a between-family experience (i.e., parental marital conflict) have effectively nonshared outcomes. Between-family experiences constitute the environment of both twins in the pair, which is a key criterion for an objectively shared event (Turkheimer & Waldron, 2000). The current study will thus examine parental marital conflict as an index of an objectively shared event. Marital conflict has a number of clear advantages for such work: marital conflict is present (or not) in the environment of both twins in the family, and moreover, substantively differs between families. Marital conflict thus serves as a reasonable proxy for an objectively shared event. Nevertheless,

marital conflict is amenable to differential perceptions across the twins, such that one twin might, for example, blame himself more for parental conflict than the other twin. By examining differential perceptions of the between-family experience of parental marital conflict (an index of an objectively shared event), we sought to clarify whether differential perceptions allow objectively shared events to eventuate in effectively nonshared outcomes.

The importance of our focus on differential perceptions of marital conflict is further augmented by prior literature indicating that child perception of martial conflict is just as important, if not more important, than the specific properties of the conflict itself. For example, children who perceive the conflict as threatening to the family structure or who blame themselves for the conflict are at particularly high risk for psychopathological outcomes (Crockenberg & Langrock, 2001; Cummings & Davies, 2002; Gerard, Buehler, Franck, & Anderson, 2005; Grych & Fincham, 1990; Grych, Fincham, Jouriles, and McDonald, 2000; Nikolas, Klump, & Burt, 2012). Grych and colleagues (2000), for example, examined child appraisals of interparental conflict and child outcomes in two independent samples (one drawn from the community and the other from a battered women's shelter). They found that child appraisals of threat and self-blame mediated the relationship between marital conflict properties and child outcome in both samples. In short, we would a priori expect differential appraisals of marital conflict between siblings to predict differential (or nonshared environmental) outcomes.

To examine whether differential perceptions of marital conflict do indeed account for nonshared environmental influences on child outcomes, as expected, we made use of two analytic approaches. Our initial set of analyses focused on the monozygotic (MZ; identical) twin difference design (Deater-Deckard et al., 2001; O'Connor, Hetherington, Reiss, & Plomin, 1995). The MZ difference design capitalizes on the unique features of MZ twins, specifically

that they share both 100% of their genes and 100% of their familial environment. As differences between MZ twins accordingly cannot be confounded by these factors, this design allows researchers to explicitly evaluate whether differences in twin perceptions of a shared event are linked to effectively nonshared outcomes. We specifically examined whether different perceptions and appraisals of parental conflict within MZ twin pairs are linked to differential levels of child externalizing. For our second set of analyses, we made use of the co-twin control analysis (Burt, Donnellan, Humbad, Hicks, McGue, Iacono, 2010; McGue, Osler, & Christensen, 2010), a statistically powerful counterfactual approach for identifying nonshared environmental mediation. In this case, the co-twin making less negative appraisals about the parental conflict is used to estimate what the more negative twin would look like had he or she made less negative appraisals.

Based on the aforementioned empirical and theoretical work, we expected that discordance in twins' perceptions of their parents' conflict would predict discordance in their externalizing behaviors, such that the twin appraising the conflict more negatively would engage in more externalizing behaviors than his or her co-twin. Such findings would provide much needed empirical support for the oft-discussed (but rarely tested) notion that differential child perceptions and attributions of family-wide experience may contribute to nonshared environmental influences (Turkheimer & Waldron, 2000).

Method

Participants

The Michigan State University Twin Registry (MSUTR) includes several independent twin projects (Burt & Klump, 2012). The families included in the current study were assessed as part of the ongoing Twin Study of Behavioral and Emotional Development in Children (TBED-

C) within the MSUTR. To be eligible for participation, neither twin could have a cognitive or physical condition (e.g., significant developmental delays) that would preclude completion of the roughly 4-hour assessment (as assessed via parental report). Parents provided informed consent for themselves and their children and children provided informed assent.

At the time of analyses, the TBED-C included a population-based sample of 500 twin pairs (50.2% monozygotic) and an at-risk sample of 174 twin pairs (35.1% monozygotic) living in disadvantaged neighborhoods. Because results were found to be identical with and without the at-risk subsample, we included the at-risk subsample in our analyses. All participants ranged in age from 6-10 years (although a small number of twins, N=14 pairs, had turned 11 by the time they participated). 52.1% of the sample was male.

Families for the TBED-C were recruited in collaboration with the Michigan Department of Community Health (MDCH). The MDCH identified twins living within 120 miles of our MSU laboratory either directly from birth records or via the Michigan Twins Project, a large-scale population-based registry of twins in lower Michigan that were themselves recruited via birth records. MDCH then utilized the Michigan Bureau of Integration, Information, and Planning Services database to locate current addresses through parent driver's license information. Using these addresses, MDCH mailed pre-made recruitment packets to parents of twins. A reply postcard addressed to the MSUTR researchers was included for parents to indicate their interest in participating. Interested families were then contacted directly by project staff. Parents who did not respond to the first mailing were sent additional mailings approximately one month apart until either a reply was received or up to four letters had been mailed. Our final response rate for the population-based study was 62%; the response rate for the at-risk sample is not yet final, but is currently estimated to be 57%. These rates are similar to

those of other twin registries that use anonymous recruitment mailings (Baker, Barton, & Raine, 2002; Hay, McStephen, Levy, & Pearsall-Jones, 2002).

Importantly, participating twins in our population-based cohort did not differ from non-participating twins in their average levels of conduct problems, emotional symptoms, or hyperactivity (Cohen's d = -.05, .01, and -.08, respectively; Burt & Klump, in press). Moreover, participating families endorsed ethnic group memberships at rates comparable to area inhabitants (e.g., Caucasian: 86.4% and 85.5%, African-American: 5.4% and 6.3% for the participating families and the local census, respectively). Similarly, 14.0% of families in our population-based sample lived below federal poverty guidelines, a similar proportion seen for the state of Michigan. Our recruitment strategy thus appears to yield a sample that is broadly representative of the area population and of recruited families more specifically.

Zygosity Determination

Zygosity was established using physical similarity questionnaires administered to the twins' primary caregiver (Peeters, Van Gestel, Vlietinck, Derom, & Derom, 1998). On average, the physical similarity questionnaires used by the MSUTR have accuracy rates of 95% or better.

Measures

Children's Perceptions of Interparental Conflict. To assess each twin's perceptions of his or her parents' conflict, we administered the Children's Perceptions of Interparental Conflict inventory (CPIC; Grych, Seid, & Fincham, 1992; see Appendix), a 48-item self-report questionnaire. The CPIC targets several dimensions of interparental conflict: Threat to Self, Conflict Properties, Triangulation/Stability, and Self-Blame. The Threat to Self scale measures the degree to which the child feels that his or her parents' conflict represents a threat to the child's physical or emotional well-being, or to the stability of the family structure (6 items;

"When my parents argue I worry about what will happen to me"; α = .75). The Conflict Properties scale assesses objective, observable features of the conflict, such as frequency and resolution (11 items; "When my parents have an argument they yell a lot"; α = .78). The Triangulation/Stability scale measures the degree to which the conflict has become entrenched and the degree to which the child is involved (13 items; "The reasons my parents argue never change"; α = .73). The Self-Blame scale measures the extent to which the child feels responsible for the conflict (9 items; "It's usually my fault when my parents argue"; α = .67). Items were scored using a three-choice response format: false, sometimes, true. Up to one missing item was allowed for the Conflict Properties, Triangulation/Stability, and Self-Blame scales (although not for the Threat to Self scale, given the small number of items in that scale). Item scores were summed to achieve final scales. Threat to Self data were available for 86.9% of twins, Conflict Properties data for 93.2% of twins, Triangulation/Stability data for 90.7% of twins, and Self-Blame data for 93.0% of twins.

Child Externalizing Behaviors (EXT). Mothers and fathers completed the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) separately for each twin. Parents rated the extent to which a series of statements described each twin's behavior over the past six months using a three point scale: never, somewhat/sometimes true, often/mostly true. We utilized the Oppositionality, Conduct Problems, and Inattention/Hyperactivity scales. The Oppositionality scale (5 items; "defiant", "argues"; father report α = .63; mother report α = .65) measures oppositional and defiant behaviors consistent with DSM-IV Oppositional Defiant Disorder. The Conduct Problems (17 items; "cruel to animals", "gets in many fights"; father report α = .78; mother report α = .82) scale includes the aggressive and non-aggressive behaviors thought to best represent DSM-IV Conduct Disorder criteria. The Inattention/Hyperactivity

scale (13 items; “fidgets”, “impulsive”; father report α = .77; mother report α = .79) scale and includes both inattentive and hyperactive behaviors consistent with DSM-IV ADHD criteria. Consistent with manual recommendations (Achenbach & Rescorla, 2001), analyses were conducted on the raw scale scores. When only one informant report was available, that report was used. When both informant reports were available, data were averaged across parental informant reports, creating a composite variable for each EXT variable. The use of this combined informant approach is thought to allow for a more complete assessment of twin symptomatology than would the use of either informant alone (Achenbach, McConaughy, & Howell, 1987).

Marital Adjustment. Mothers and fathers completed the Dyadic Adjustment Scale (DAS; Spanier, 1976). Parents reported on a series of questions describing their level of marital satisfaction and discord. The Dyadic Adjustment Scale is a 32-item scale assessing four aspects of marital adjustment: marital satisfaction, consensus, cohesion, and affective expression. We utilized the overall adjustment scale, as it has been shown to be more strongly associated with various outcome variables than the individual subscales (Graham, Liu, & Jeziorski, 2006). The scale showed acceptable internal consistency reliability (α = .87 for mothers and fathers). We also examined the Consensus scale, which specifically samples items indexing the extent to which the couple agrees or disagrees on various common topics (α = .90 for mothers and fathers). Additionally, we created a Conflict Composite scale that combines items measuring spousal disagreement with items specifically related to features of that conflict (α = .81 for mothers and fathers).

Analyses

Objectively Shared Nature of Marital Conflict. To assess the degree to which twins share the experience of their parents' conflict (that is, the degree to which they received equivalent exposure to this between-family experience), we obtained twin intraclass correlations for what are typically considered the most objective of the CPIC scales (i.e. Conflict Properties and Triangulation/Stability; see Nikolas, Klump, & Burt, 2012). Additionally, these scales have been shown to have the greatest degree of shared environmental influence (Nikolas, Klump, & Burt, 2012), in comparison to Threat to Self and Self-Blame. We also computed intraclass correlations between parents' reports of marital conflict using a reverse-scored measure of the overall DAS, their Consensus scale scores, and their Conflict Composite scores. We then calculated whether these estimates were significantly different using Fisher's z. Finally, we disambiguated the twin ICCs by zygosity to preliminarily evaluate the relative degree of shared environmental influence, reasoning that more objective measures should be similar across twins regardless of zygosity.

MZ Differences Correlations. Our analyses capitalize on the unique patterns of similarities and differences between reared-together twins. All twins share 100% of their familial or rearing environment. Monozygotic (MZ) twins also share 100% of their segregating genetic material, whereas dizygotic (DZ) twins share an average of 50% of their genetic material. Differences between MZ twins are thus solely person-specific or nonshared environmental in origin (measurement error is also included here). Differences in DZ twins, however, can be accounted for by nonshared environmental influences and/or by the 50% of segregating genes they do not share. More information on twin studies can be obtained elsewhere (Plomin, DeFries, McClearn, & McGuffin, 2008).

As a preliminary examination of the association between twins' perceptions of interparental conflict and their behavioral outcomes, we first computed zero-order correlations between differences in MZ twins' CPIC scale scores and differences in their externalizing outcome scores. To create the MZ difference scores, we subtracted the score of the second-born twin from the corresponding score of the first-born co-twin. The sample size for these analyses was thus the number of twin pairs, rather than the number of twins. Moreover, we only included data for these analyses if they were present for both members of an MZ twin pair. Because these analyses rely on MZ twin differences, any correlation greater than zero was interpreted as explicitly indicative of nonshared environmental mediation of that association. A significant positive correlation between Self-Blame and EXT, for example, would thus indicate that the twin with higher levels of Self-Blame also evidenced higher levels of EXT, and that this association is at least partially a function of nonshared environmental influences.

Co-twin Control Analyses. For our primary analyses, we further evaluated these associations using the co-twin control design (Burt et al., 2010; McGue, Osler, & Christensen, 2010), an analog of the idealized counterfactual model of causation. This approach is more powerful than the MZ differences approach, since it does not rely on difference scores and includes DZ twins as well. It is also more informative, as it yields information on genetic and familial (i.e., shared environmental) mediation in addition to information on nonshared environmental mediation. In the co-twin control model, the externalizing behavior of the twin perceiving less parental conflict is used to estimate what the externalizing behavior of the twin perceiving more parental conflict would look like, if he or she were perceiving less conflict (McGue, Osler, & Christensen, 2010). In this way, we can investigate both within-pair and

between-pair effects of conflict perception on behavioral outcomes. Mathematically, we can represent the individual-level, between-pair effects with the regression model

$$y_{ij} = \beta_0 + \beta_1 x_{ij} + \varepsilon_{ij} \quad (1)$$

where y_{ij} is the observed outcome for the jth twin in the ith twin pair, x_{ij} is the perception index for this twin, β_1 is the individual-level effect of perception on externalizing outcomes, β_0 is the intercept term, and ε_{ij} is the residual correlated across the members of the twin pair. The overall regression effect can be further represented in terms of a within-pair (β_W) and a between-pair (β_B) effect using the regression model

$$y_{ij} = \beta_0 + \beta_w (x_{ij} - \bar{x}_{i.}) + \beta_B \bar{x}_{i.} + \varepsilon_{ij} \quad (2)$$

where $\bar{x}_i$ is the mean perception index for the ith twin pair. The between-pair regression coefficient provides an approximation of the individual-level effect. The within-pair regression coefficient provides a direct estimate of the effect of perception on the outcome (in this case, the effect of conflict perception on externalizing behaviors) within discordant twin pairs.

At a conceptual level, the equations represent the differential genetic and environmental effects contributing to the associations (see Figure 1). Individual, between-pair associations can be accounted for by any combination of genetic effects, shared environmental effects, and nonshared environmental effects. To disentangle these effects, we must examine the within-pair associations. Associations within discordant DZ twin pairs control fully for shared environmental effects and partially for genetic effects. Associations within discordant MZ pairs control fully for both shared environmental effects and genetic effects. Any remaining associations existing in the MZ twin pairs are thus attributable to nonshared environmental

influences. Accordingly, should differential perceptions of interparental conflict be environmentally linked to child externalizing behaviors, we would expect to observe this association at the individual level (between pairs), within DZ twin pairs discordant for perception, and within MZ twin pairs discordant for perception (see Figure 1; scenario A). By contrast, the failure to observe an association within discordant MZ twin pairs would imply that the process is mediated by genetic and/or shared environmental effects. In particular, if perceptions of conflict were associated with outcome only at the individual-level and in discordant DZ twins (scenario B), we would infer that the process underlying their association was genetic in origin. If perceptions of conflict were associated with outcome only at the individual-level (scenario C), we would infer that the process underlying their association was genetic and shared environmental in origin.

The current study conducted the co-twin control analyses on the full, unselected sample, and then repeated these analyses separately for those twins most discordant for perceived parental conflict (roughly top 25%). In choosing our cut-point, we attempted to balance both the need for a discordant sample large enough to permit statistical testing and the need for a sufficiently discordant sample. We thus used a difference of roughly one standard deviation as the cut-point (i.e., twins discordant by more than 4 points for Conflict Properties, 4 points for Triangulation/Stability, and 3 points for Self-Blame) to yield groups (n = 364 pairs for Conflict Properties, n = 270 pairs for Triangulation/Stability, n = 211 pairs for Self-Blame). All co-twin control analyses were conducted using multilevel modeling (MLM) in SPSS 20.0 (SPSS Inc.). As MLM coefficients are unstandardized, we standardized our externalizing outcome variables for the MLM analyses to have a mean of zero and a standard deviation of 1.0 to facilitate interpretation of the magnitude of the fixed effect estimates.

Power Analyses

Our sample of 312 MZ twin families gives us 88% power to detect correlations as small as .175 as significantly greater than zero at $p < .05$, two-tailed. The co-twin control analyses, which included both MZ and DZ twin families and thus were more powerful, therefore had more than adequate statistical power.

Results

Descriptives

Raw means and standard deviations for each perception of marital conflict variable and each EXT variable are presented separately by sex (see Table 1). As seen there, boys engaged in significantly more externalizing behaviors and reported significantly more negative perceptions of their parents' marital conflict than did girls (except in the case of Threat to Self scores, which were not significantly different between sexes). Standardized effect sizes for these sex differences were generally small to moderate in magnitude. Means, standard deviations, and skew for twin difference scores are presented in Table 2. As seen there, discordance between twins for both perceptions of conflict and EXT was generally low, with most twins differing by no more than 2 points for perception variables and no more than 0.50 points for EXT variables. Associations with age and ethnicity are presented in Table 3. As seen there, age was negatively correlated with Triangulation/Stability, Self-Blame, and Inattention/Hyperactivity (all $p < .01$). Ethnicity was positively associated with Conflict Properties and Self-Blame. Given these associations, age, sex, and ethnicity were included as fixed effects in the co-twin control analyses.

Can Interparental Marital Conflict be Considered an Objectively Shared Experience?

In previous studies assessing effectively nonshared consequences of objectively shared events, it has been unclear to what degree the shared event was *objectively* shared (e.g., twins in different classrooms, siblings with potentially different parental relationships). To evaluate the degree to which the experience of marital conflict can be considered objectively shared between the twins (that is, whether the twins received equal amounts of exposure to the between-family experience of marital conflict), we first obtained twin intraclass correlations for what are typically characterized as the most objective of the CPIC scales (i.e. Conflict Properties and Triangulation; see Nikolas, Klump, & Burt, 2012; see Table 4). We also computed intraclass correlations between parents' self-reports of their marital conflict (as assessed via the overall DAS scale, the DAS Consensus scale, and the DAS conflict composite; Humbad, Donnellan, Iacono, & Burt, 2010; Spanier, 1976). We then compared the twin ICC's to those between the parents to evaluate whether twins were as similar in their reports of parental marital conflict as were their parents (a relatively strong test, given that the parents are the ones actually in conflict). The correlations between twins for the Conflict Properties and Triangulation/Stability scales in the full sample ranged between .42 and .43, and were statistically equivalent to the correlations for the parents' DAS scales (range = .46 - .55). Moreover, it is worth noting that these correlations are considered relatively high for multiple informants reporting on the same construct (Achenbach, Krukowski, Dimenci, & Ivanova, 2005). In short, twins were as similar in their perceptions of the objective features of marital conflict as were the parents themselves, and both pairs of raters showed relatively high rates of interrater agreement, results that argue in favor of marital conflict as a more or less objectively shared between-family experience.

As a final step, we also disambiguated the twin ICC's by zygosity (see Table 4). Although MZ twins appeared to be somewhat more similar (at $p < .05$) in their perceptions of

Conflict Properties than DZ twins perceiving either conflict variable, similarity in their perceptions of Triangulation did not differ across zygosity. These relatively high levels of shared environmental influence (as indicated by DZ correlations that are more than half the MZ correlation) further argue that twins are likely to be experiencing similar levels of marital conflict in the family home.

Phenotypic Correlations

Phenotypic correlations between the CPIC and EXT variables are presented in Table 5. Conflict Properties, Triangulation/Stability, and Self-Blame were positively, if modestly, associated with Conduct Problems, Oppositionality, and Inattention-Hyperactivity. By contrast, Threat to Self was not significantly associated with any form of child behavior problems. As a phenotypic association must exist in order for the origins of that association to be examined, Threat to Self was omitted from all further analyses.

MZ Differences Correlations

We next examined associations between MZ difference scores on the CPIC scales and MZ difference scores on the EXT variables. As a reminder, non-significant MZ difference correlations are indicative only of a lack of nonshared environmental mediation, rather than a lack of association between those phenotypes in general. The results of these MZ difference analyses are presented in Table 6. As shown there, there are no significant associations between any of the CPIC difference scores and EXT difference scores, arguing against significant nonshared environmental mediation of those relationships.

Co-Twin Control Analyses: Full Sample

Our primary co-twin control results are presented in Table 7. As seen there, none of the within-pair estimates was significantly larger than zero, for either MZ or DZ pairs. Moreover,

the within-pair estimates did not interact with zygosity (all $p \geq .05$). We thus conclude that differential perceptions of marital conflict by twins in the same family did not predict differences in their externalizing outcomes.

By contrast, the ***between-pair*** effect estimates were uniformly significant for both MZ and DZ twin pairs. These effects appeared to be especially large in magnitude for Conduct Problems. Of note, the MZ-DZ differences for the between-pair estimates can be interpreted somewhat similarly (if less precisely) to those of intraclass correlations (since both the between-pair estimates and twin ICC's index twin similarity): MZ effects that are larger than their corresponding DZ effects would imply some genetic mediation of that association. Equivalent MZ and DZ effects would imply shared environmental mediation. To preliminarily evaluate these different possibilities, we allowed the between-pair effects to interact with zygosity. None of these interactions approached significance (all $p = .37$ or greater), indicating that the between-DZ effects were equivalent to the between-MZ effects. Such findings may be consistent with some shared environmental mediation of these associations.

Co-Twin Control Analyses: Highly Discordant Sample

Co-twin control analyses were repeated for the most discordant twin pairs for each perception variable. To achieve samples in which the twins reported different perceptions of conflict, but were also sufficiently large for analysis, we used a difference score of one standard deviation (roughly the top 25%) as the cut-point (i.e., twins discordant by 4 or more points for Conflict Properties, 4 or more points for Triangulation/Stability, and 3 or more points for Self-Blame). The resulting sample sizes were uniformly larger than 200 pairs ($n = 364$ pairs for Conflict Properties, $n = 270$ pairs for Triangulation/Stability, $n = 211$ pairs for Self-Blame). We then re-ran the co-twin control analyses for each of these smaller samples. Results for the

discordant samples generally did not differ from those for the unselected sample (Table 8), with the exception that some between-family effects were no longer detected as significant. There is thus little evidence that nonshared environmental interpretations of the family-wide experience of interparental marital conflict are influencing externalizing behaviors.

Discussion

The aim of the present study was to evaluate the notion that objectively shared events can have effectively nonshared effects on children's externalizing behaviors. We thus examined whether the association between twins' perceptions of marital conflict (a shared, family-wide experience) and their externalizing behavior was nonshared environmental in origin. Co-twin control analyses did not support the presence of nonshared environmental mediation. Within-pair estimates were not significant for any combination of perception and EXT variables. These results remained the same for the twins most discordant on each perception variable. Collectively then, our results are inconsistent with nonshared environmental mediation of the association between child perceptions of conflict and child EXT.

Even so, our findings are consistent with prior literature in the domain of child perceptions of marital conflict. Previous studies within this field have pointed to an association between child perceptions of marital conflict and child externalizing, such that children who perceive conflict more negatively show increased rates of externalizing outcomes (Crockenberg & Langrock, 2001; Cummings & Davies, 2002; Gerard, Buehler, Franck, & Anderson, 2005; Grych & Fincham, 1990; Grych, Fincham, Jouriles, and McDonald, 2000; Nikolas, Klump, & Burt, 2012). Specifically, this work has indicated that children who perceive the conflict as threatening to the family or themselves, or who blame themselves for the conflict, are at particularly high risk for negative outcomes. Our own phenotypic results are consistent with

these findings, in that children with high perceptions of conflict severity, triangulation, or self-blame also evidenced higher levels of all EXT variables as compared with children who perceived the conflict less negatively. However, our results expand on the above work by further suggesting that these phenotypic associations are unlikely to be causal (i.e., nonshared environmental in origin). Instead, they appear to be a function of genetic and shared environmental influences. This combination of genetic and shared environmental mediation is consistent with previous genetically informed research on marital conflict in general. A study of adopted and biological children found that the effect of marital conflict on child behavior is comparable across the two, which would suggest an environmental, rather than primarily genetic, pathway (Amato & Cheadle, 2008). Another study of biological children and adoptees found that children of divorced parent(s) only evidenced higher rates of delinquency if they were exposed to that divorce in their lifetime. If the divorce preceded their birth (was from a prior marriage), however, their rates of delinquency were equivalent to those of children from intact/never divorced families (Burt, Barnes, McGue, & Iacono, 2008). These data confirm the presence an environmental effect on the association between interparental discord and child externalizing problems and control for the possibility of passive rGE.

Despite these consistencies, our study nevertheless provides important clarification to the issue of differential perceptions yielding differential outcomes. Though our results indicated a significant phenotypic association between perceptions of conflict and EXT, they were not consistent with the notion that differential perceptions of the same event can predict discordance in behavioral outcomes (i.e., nonshared environmental mediation). These results stand in contrast to previous studies that have found that different perceptions of a shared event yielded effectively nonshared outcomes (e.g., Kowal, Kramer, Krull, & Crick, 2002; Neiderhiser, Pike,

Hetherington, & Reiss, 1998; Oliver, Pike, & Plomin, 2008). Critically, however, the ostensibly shared event in most of these studies was sometimes nonshared (e.g., different child-parent relationships, different classrooms). As a result, it is not clear whether prior findings were in fact consistent with the notion that objectively shared experiences can have effectively nonshared outcomes.

Limitations.

There are several limitations to bear in mind when interpreting the results of this study. First, our results are applicable only to the developmental period of middle childhood. It thus remains unclear whether adolescents, for example, would display differences in their externalizing behaviors based on differences in their perceptions of marital conflict. Consistent with this speculation, there is at least one paper indicating that the effects of marital conflict on externalizing behaviors in adolescence differ from those in childhood, such that the effect in adolescence is indirect and mediated primarily through the parent-child relationship (Fauber, Forehand, Thomas, & Wierson, 1990). In addition, it is well established that the magnitude of genetic and environmental influences on externalizing behaviors changes during the transition from childhood to adolescence (Burt, 2012). Future work is thus needed to explore potential developmental differences in the etiology of the association between marital conflict and child externalizing.

Second, because perceptions of conflict and externalizing behaviors were measured at the same time point, the present study does not address the directionality of the conflict-externalizing relationship. Specifically, it is unclear whether twins' perception of conflict causes their externalizing behaviors or whether their externalizing behaviors contribute to greater frequency

and severity of marital conflict. However, the present study does allow us to determine the *presence*, though not the direction, of the association.

Finally, the co-twin control method is not able to estimate the magnitude of genetic versus shared environmental variance contributing to the association between perceptions of conflict and child EXT. While the similarity in between-pair effect estimates across zygosity suggests that shared environmental mediation at least partially underlies this relationship, the precise degree of genetic and shared environmental mediation remains unclear.

Conclusions.

Despite these limitations, our study has several key advantages. First and foremost, we used a between-family experience, marital conflict, as an index of an objectively shared experience. This constitutes the most stringent test of an objectively shared experience in the literature thus far. Not only does this event constitute the environment of both twins in the pair, which is a necessary criterion for an objectively shared event, but we also showed statistically that, across the full sample and separately by zygosity, the twins agree as much as the parents themselves on the observable features of the conflict. It thus seems reasonable to infer that marital conflict constitutes a shared, family-wide experience for the twins. Moreover, it is worth noting that our focus on parental marital conflict has the advantage of largely controlling for selection effects, since the twins could not have selected into a family with high levels of marital conflict (although it remains possible that they are directly contributing to the level of conflict in the home).

As alluded to above, our study also has important theoretical implications for our understanding of the association between marital conflict and children's externalizing behaviors. Prior work suggests that children who make negative attributions about their parents' conflict

have more negative outcomes than children who react less negatively, even when the amount of conflict experienced is the same (e.g., Cummings & Davis, 2002; Grych & Fincham, 1990; Shelton & Harold, 2008). Given this, it is rather surprising that this association did not hold within twin pairs – that is, that the twin who perceived conflict more negatively than his or her co-twin *did not* have significantly more negative outcomes. This is particularly the case for Self-Blame, a scale that has shown a very high degree of child-specific (i.e., nonshared environmental) variance in prior work (Nikolas et al., 2012).

Moreover, our results suggest that the attributional model may be particularly applicable to EXT outcomes between families. Consistent with this possibility, most of the work in the area of marital conflict perceptions and EXT has investigated between-family effects rather than within-family effects, which may account for the lack of evidence we found for perceptions as explanatory variables for EXT differences between twins. In our study, perceptions do seem to be important between families, such that twin pairs with higher levels of negative perceptions also evidenced higher EXT. However, this effect was confined to between-family variance, and did not extend to differential perceptions *within* pairs.

Given these findings, there are several possible theoretical implications. For children in the same family, with other characteristics held constant, the stimulus characteristics of the conflict (e.g., objective features such as intensity, duration, frequency) may pull for very similar perceptions within twin pairs. As a result, objective features (i.e. the shared environment) may become the most important influences on twin outcomes and outcomes may, on average, not differ greatly. It is also possible that a very high threshold exists for nonshared effects, such that twins must differ in their perceptions to a much greater degree than was seen in our sample before nonshared effects can be detected. Our highly discordant sample attempted to account for

this possibility, but twins discordant by more than one standard deviation on any perception variable represented such a small sample size that it was not feasible to conduct the analyses. We have also not ruled out genetic contributions to the association, as the co-twin control analyses are not as sensitive to these differences as a full decomposition. Taken as a whole, the current results provide support to recent suggestions that, prior to adulthood, the shared environment plays an important role in the development of psychological and behavioral outcomes (Burt, 2009a). Future research will be required to investigate these possibilities for both twins and non-twin siblings.

The current findings also have important implications for interventions targeting child externalizing problems. Marital conflict in the family environment is robustly associated with child externalizing problems (e.g., Cummings & Davies, 2002; Gerard, Buehler, Franck, & Anderson, 2005; Grych & Fincham, 1990; Schermerhorn, D'Onofrio, Turkheimer, Ganiban, & Spotts, 2011). Our results suggest that the association between marital conflict and child externalizing is at least partially shared environmental in origin, raising the possibility that reducing marital conflict may also reduce levels of child externalizing. Consistent with this possibility, intervention research has indicated that reducing marital conflict has ameliorating effects on child externalizing, such that when the severity of negative marital conflict is reduced, child adjustment improves (Cummings, Faircloth, Mitchell, Cummings, & Schermerhorn, 2008). In this light, our results are thought to further underscore the importance of targeting marital conflict features as part of treatment for child externalizing problems.

APPENDIX A: TABLES

Table 1.

Means and Standard Deviations for CPIC and CBCL Variables.

		Possible range	Girls		Boys		Cohen's *d* effect size for sex
			M (SD)	Observed range	*M (SD)*	Observed range	
CPIC	Threat	6 – 18	10.21 (3.38)	6 – 18	10.27 (3.31)	6 – 18	-0.01
	Conf	11 – 33	19.49 (4.77)	11 – 33	20.32 (4.95)	11 – 33	-0.17*
	Trian	13 – 39	16.69 (4.47)	13 – 37	17.54 (4.62)	13 – 35	-0.18*
	Self	9 – 27	11.08 (2.53)	9 – 21	11.81 (2.89)	9 – 24	-0.27*
CBCL	Oppo	0 – 20	2.01 (1.76)	0 – 10	2.52 (1.94)	0 – 9	-0.28*
	Cond	0 – 34	1.40 (2.06)	0 – 19	2.30 (2.78)	0 – 18	-0.37*
	Hyp	0 –24	2.59 (2.44)	0 – 14	2.63 (2.81)	0 – 14	-0.39*

Note. Threat = Threat to Self, Conf = Conflict Properties, Trian = Triangulation / Stability, Self = Self-blame, Oppo = Oppositionality, Cond = Conduct Problems, Hyp = Inattention-Hyperactivity. Means that differ significantly (at $p < .01$) between sexes are indicated with an *. n = 646 (females), n = 702 (males)

Table 2.
Descriptives for Twin Difference Scores for CPIC variables.

		Possible range	Observed range	Mean	Std Dev	Skew
CPIC	Threat	0 – 12	0 – 12	3.18	2.50	.103
	Conf	0 – 22	0 – 20	4.02	3.36	.098
	Trian	0 – 26	0 – 21	3.32	3.53	.100
	Self	0 – 18	0 - 12	2.39	2.36	.099
CBCL	Oppo	0 – 20	0 – 9	1.49	1.49	.094
	Cond	0 – 34	0 – 15	1.46	2.02	.094
	Hyp	0 – 24	0 – 13	2.18	2.19	.094

Note. Difference scores were obtained by subtracting Twin 2's score from Twin 1's score and then taking the absolute value. Threat = Threat to Self, Conf = Conflict Properties, Trian = Triangulation / Stability, Self = Self-blame.

Table 3.

Correlations of the CPIC and CBCL Variables with Age and Ethnicity.

	CPIC				CBCL		
	Threat (N=1172)	Conf (N=1257)	Trian (N=1223)	Self (N=1253)	Oppo (N=1344)	Cond (N=1344)	Hyp (N=1344)
Age	.004	-.04	-.21**	-.14**	-.05	-.07	-.08**
Ethnicity	.03	.07**	.06	.10**	-.02	.03	.03

Note. Threat = Threat to Self, Conf = Conflict Properties, Trian = Triangulation / Stability, Self = Self-Blame, Oppo = Oppositionality, Cond = Conduct Problems, Hyp = Inattention-Hyperactivity. For these analyses, ethnicity was coded as Caucasian = 1 and all other = 0. Given the sample size, only those correlations significant at $p < .01$ were considered significant here. ** indicates that correlation is significantly greater than zero at $p < .01$.

Table 4.

Correlations across Child-report CPIC Scores and Parent-report DAS Scores.

	Conf	Trian	DAS Overall	DAS Consensus	DAS Composite
Twin 1 & Twin 2, full sample (N = 1194-1238)	.42**	.43**	-	-	-
Mother & Father (N=488)	-	-	.55**	.46**	.46**
Twin 1 & Twin 2, MZ twins (N = 566-584)	.51**	.39**	-	-	-
Twin 1 & Twin 2, DZ twins (N = 628-654)	.34**	.46**	-	-	-

Note. Conf = Conflict Properties, Trian = Triangulation / Stability, DAS Overall = Dyadic Adjustment Scale Overall score, reverse-scored, DAS Consensus = Dyadic Adjustment Scale Consensus score, reverse-scored, DAS Composite = composite of Dyadic Adjustment Scale conflict items, reverse scored. Twins reported on their experiences of interparental marital conflict via the CPIC. Parents reported on their experiences of marital conflict via the DAS. Intraclass correlations between twin experiences were compared (via Fisher's *z*) with intraclass correlations between parents (i.e., the ones actually in conflict). ** indicates that correlation is significantly greater than zero at $p < .01$.

Table 5.

Phenotypic Correlations across Child-report CPIC and Parent-report CBCL Variables.

	Threat	Conf	Trian	Self
Oppositionality	.02	.12**	.09**	.13**
Conduct Problems	.04	.12**	.10**	.16**
Inattention-Hyperactivity	.07	17**	.15**	.19**

Note. Threat = Threat to Self, Conf = Conflict Properties, Trian = Triangulation / Stability, Self = Self-Blame. Only one twin per pair was used since twin difference scores are identical in magnitude. Given the sample size (N's for the correlations ranged from 1167 - 1255), only those correlations significant at $p < .01$ were considered significant here (these are indicated by **).

Table 6.

Correlations across Child-report CPIC and Parent-report CBCL Difference Scores for Monozygotic Twin Pairs.

	CPIC		
	Conf (N = 293)	Trian (N = 283)	Self (N = 290)
Oppositionality	.05	-.06	.04
Conduct Problems	.01	-.09	-.05
Inattention-Hyperactivity	-.05	-.02	.03

Note. Conf = Conflict Properties, Trian = Triangulation / Stability, Self = Self-Blame. A significant difference would suggest the possibility of nonshared environmental mediation on the association. * indicates that correlation is significantly greater than zero at $p < .05$. N indicates number of MZ pairs.

Table 7.

Co-twin Control Analyses Evaluating the Association between Child-report CPIC Scores and Parent-report CBCL Externalizing Scores.

		Fixed-Effect Estimate (SE)			
		Between-Pair		*Within-Pair*	
CPIC Variable	*CBCL Variable*	MZ Twins	DZ Twins	MZ Twins	DZ Twins
Conflict Properties	Oppositionality	.40 (.14)**	.49 (.14)**	.05 (.15)	-.12 (.13)
	Conduct Problems	.70 (.16)**	.56 (.16)**	.01 (.16)	-.03 (.13)
	ADHD	.38 (.15)**	.58 (.16)**	-.12 (.18)	-.08 (.16)
Triangulation / Stability	Oppositionality	.18 (.16)**	.43 (.14)**	.13 (.15)	.0003 (.15)
	Conduct Problems	.64 (.19)**	.52 (.16)**	-.26 (.16)	.02 (.15)
	ADHD	.26 (.18)**	.49 (.16)**	-.21 (.19)	-.05 (.18)
Self-Blame	Oppositionality	.29 (.18)**	.57 (.17)**	.10 (.16)	.17 (.14)
	Conduct Problems	.69 (.22)**	.83 (.20)**	-.17 (.16)	.32 (.14)
	ADHD	.60 (.21)**	.54 (.19)**	.03 (.19)	.36 (.17)

Note. Age, ethnicity, and sex were included as fixed effects in each analysis. ** indicates that correlation is significantly greater than zero at $p < .01$

Table 8.

Co-twin Control Analyses Evaluating the Association between child-report CPIC scores and parent-report CBCL externalizing scores for the most discordant twins.

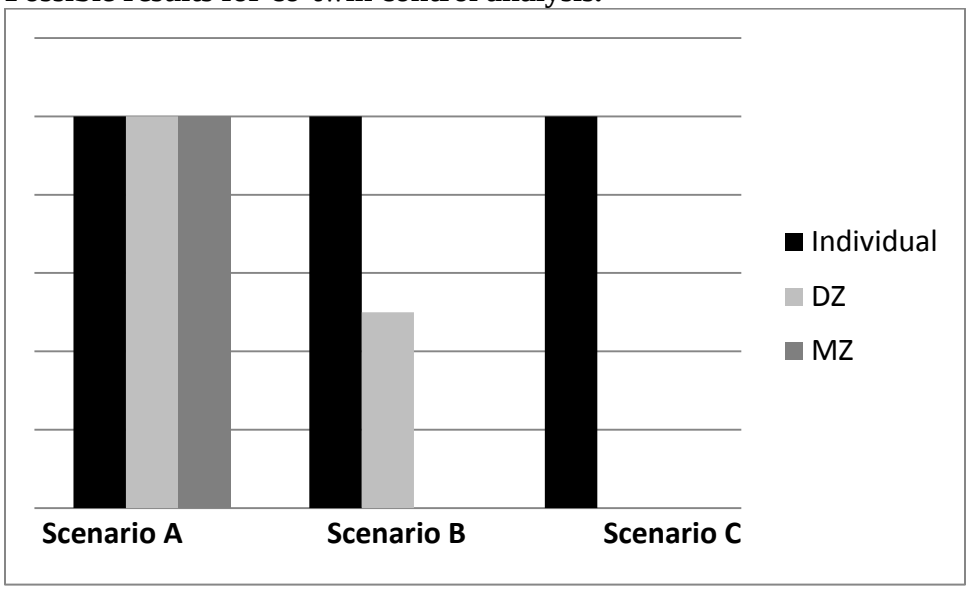
		Fixed-Effect Estimate (SE)			
		Between-Pair		*Within-Pair*	
CPIC Variable	*CBCL Variable*	MZ Twins	DZ Twins	MZ Twins	DZ Twins
Conflict Properties	Oppositionality	.47 (.20)**	.76 (.20)	.07 (.16)	-.08 (.14)
	Conduct Problems	.86 (.24)**	.82 (.23)	.02 (.16)	.01 (.14)
	ADHD	.13 (.23)	.55 (.23)	-.08 (.19)	-.09 (.16)
Triangulation / Stability	Oppositionality	-.32 (.29)	.31 (.22)	-.10 (.15)	.04 (.14)
	Conduct Problems	.40 (.36)	.30 (.28)	-.25 (.16)	.03 (.16)
	ADHD	-.10 (.33)	.21 (.26)	-.17 (.18)	.01 (.18)
Self-Blame	Oppositionality	.60 (.33)**	.55 (.33)	.08 (.15)	.16 (.13)
	Conduct Problems	.88 (.41)	.34 (.41)	-.17 (.17)	.27 (.14)
	ADHD	.60 (.35)**	.49 (.35)	.08 (.21)	.27 (.18)

Note. Age, ethnicity, and sex were included as fixed effects in each analysis. ** indicates that correlation is significantly greater than zero at $p < .01$.

APPENDIX B: FIGURES

Figure 1.

Possible results for co-twin control analysis.



Note. Should differential child perceptions of marital conflict be environmentally or causally linked to differential child externalizing, we would expect to observe this association at the individual level, within DZ twin pairs discordant for perceptions, and within MZ twin pairs discordant for perception (scenario A). By contrast, the failure to observe this association within discordant MZ twin pairs would imply that the association between perceptions of marital conflict and child externalizing is not attributable to nonshared processes. More specifically, if perceptions are associated with externalizing at the individual level and in discordant DZ twins (scenario B), we would infer genetic mediation of that association. If perceptions are associated with externalizing only at the individual level (scenario C), we would infer genetic and shared environmental mediation of that association.

APPENDIX C: MATERIALS

CPIC

I live with __ both my mom and my dad
__ only one of my parents
__ another relative (e.g. grandmother, aunt)

In every family there are times when the parents don't get along. When their parents argue or disagree, kids can feel a lot of different ways. We would like to know what kind of feelings *you* have when *your* parents have arguments or disagreements.

If your parents don't live together in the same house with you, think about times that they are together when they don't agree or about times when both of your parents lived in the same house, when you answer these questions.

T = True
ST = Sort of True
F = False

1. I never see my parents arguing or disagreeing.	T	ST	F
2. When my parents have an argument they usually work it out.	T	ST	F
3. My parents often get into arguments about things that I do at school.	T	ST	F
4. My parents get really mad when they argue.	T	ST	F
5. When my parents argue I can do something to make myself feel better.	T	ST	F
6. I get scared when my parents argue.	T	ST	F
7. I feel caught in the middle when my parents argue.	T	ST	F
8. I'm not to blame when my parents have arguments.	T	ST	F
9. They may not think I know it, but my parents argue or disagree a lot.	T	ST	F
10. Even after my parents stop arguing they stay mad at each other.	T	ST	F
11. My parents have arguments because they are not happy together.	T	ST	F
12. When my parents have a disagreement they discuss it quietly.	T	ST	F
13. I don't know what to do when my parents have arguments.	T	ST	F

ID_____

14. My parents are often mean to each other even when I'm around.	T	ST	F
15. When my parents argue I worry about what will happen to me.	T	ST	F
16. It's usually my fault when my parents argue.	T	ST	F
17. I often see my parents arguing.	T	ST	F
18. When my parents disagreee about something they usually come up with a solution	T	ST	F
19. My parents' arguments are usually about something I did.	T	ST	F
20. The reasons my parents argue never change.	T	ST	F
21. When my parents have an argument they say mean things to each other.	T	ST	F
22. When my parents argue or disagree I can usually help make things better	T	ST	F
23. When my parents argue I'm afraid that something bad will happen.	T	ST	F
24. My mom wants me to be on her side when she and my dad argue.	T	ST	F
25. Even if they don't say it, I know I'm to blame when my parents argue.	T	ST	F
26. My parents hardly ever argue.	T	ST	F
27. When my parents argue they usually make up right away.	T	ST	F
28. My parents usually argue or disagree because of things that I do.	T	ST	F
29. My parents argue because they don't really love each other.	T	ST	F
30. When my parents have an argument they yell a lot.	T	ST	F
31. When my parents argue there's nothing I can do to stop them.	T	ST	F
32. When my parents argue I worry that one of them will get hurt.	T	ST	F

ID_____

33. I feel like I have to take sides when my parents have a disagreement.	T	ST	F
34. My parents often nag and complain about each other around the house.	T	ST	F
35. My parents hardly ever yell when they have a disagreement.	T	ST	F
36. My parents often get into arguments when I do something wrong.	T	ST	F
37. My parents have broken or thrown things during an argument.	T	ST	F
38. After my parents stop arguing, they are friendly toward each other.	T	ST	F
39. When my parents argue, I'm afraid that they will yell at me too.	T	ST	F
40. My parents blame me when they have arguments.	T	ST	F
41. My dad wants me to be on his side when he and my mom argue.	T	ST	F
42. My parents have pushed or shoved each other during an argument.	T	ST	F
43. When my parents argue or disagree there's nothing I can do to make myself feel better.	T	ST	F
44. When my parents argue I worry that they might get divorced.	T	ST	F
45. My parents still act mean after they have had an argument.	T	ST	F
46. My parents have arguments because they don't know how to get along.	T	ST	F
47. Usually it's not my fault when my parents have arguments.	T	ST	F
48. When my parents argue they don't listen to anything I say.	T	ST	F

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