Family Discord and Conduct Disorder: Cause, Consequence, or Correlate?

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The inferences to be drawn from statistical associations between family discord and conduct disorder in children are discussed with respect to the need to differentiate between risk indicators and risk mechanisms, the conceptualization of risk mechanisms, measurement issues, and the research strategies needed to test causal hypotheses. Such testing needs to indicate genetic research strategies, as well as to focus on children's effects on parents, person–environment interactions, nonshared environmental effects, causal chain effects, and the need to use natural experiments.

The background to the current interest in the effects on children of marital conflict derives from the old observation that "broken homes" are associated with delinquency. Following Wootton's (1959) scathing critique of this field of research, studies in the 1960s and 1970s showed that the main risks accompanied divorce or separation, rather than parental death, and it was suggested that family conflict, not separation as such, might constitute the key risk factor (Rutter, 1971). The finding that conflict and discord in intact families also carried a raised risk of psychopathology was consistent with the hypothesis, as were findings in the 1980s that the psychological risks associated with divorce preceded family breakup (Block, Block, & Gjerde, 1986; Cherlin et al., 1991). Subsequent evidence that continuing conflict between parents postdivorce was also associated with psychopathology in children if they felt caught in the conflict also suggests that the risk mechanisms involve conflict in some way (Buchanan, Maccoby, & Dornbusch, 1991; Hetherington, 1989, 1991).

Clearly, there has been much progress since those early contradictory findings on "broken homes." Even so, there are many unresolved issues, and numerous key questions remain unanswered, as is well brought out by the four thoughtful articles in this special section. Fincham, Grych, and Osborne (1994) focus on two main issues. First, they highlight the crucial point that the concept of conflict is a very broad one and, hence, that it is necessary to determine which aspect of interparental conflict constitutes the risk factor. Does the risk lie in the model of aggression and hostility provided by the parents or, instead, is it that conflict indexes a risk actually brought about by ineffective or maladaptive disciplinary practices, by aggression directed against the child, or by a poor parent–child relationship? Second, they note the importance of researchers moving from the finding of a statistical association between conflict and maladjustment to the rigorous testing of the hypothesis that this association represents a causal mechanism by which conflict predisposes to maladjustment. They emphasize that any testing of the causal hypothesis demands a clear conceptualization of postulated risk processes, and they draw attention to the important point that the factors involved in the origins of a disorder are not necessarily the same as those that influence its course thereafter. They draw attention to the need to consider causal chains over time, to consider the possibility of threshold effects, and to examine the role of individual differences in response to conflict together with the mechanisms involved in such differences. The situation that they rightly portray is undoubtedly a complex one, but this does not mean that it is not susceptible to rigorous empirical examination and they present a variety of practical ways of moving forward.

Kitzmann and Emery (1994) report the findings of a study designed to determine whether mediation to settle child custody disputes following divorce reduces problem behavior in
children. The question is of interest in its own right but, in addition, as the authors point out, the intervention strategy also provides an important means of testing the hypothesized causal relationship between parental conflict and child disorder. Insofar as there was no difference in outcome 1 year later between the mediation and litigation groups, the findings are noncontributory to the causal hypothesis testing. However, the finding that a decrease in conflict over that year was associated with a lower rate of behavioral problems in the children provides some indirect support for the causal hypothesis. Intervention strategies potentially provide an important experimental means of putting causal hypotheses to the test, but their success is crucially dependent on the therapeutic intervention actually having the effects that are intended. As numerous studies have shown, treatment research is a difficult enterprise for a host of practical reasons. There may well be other benefits of mediation over custody disputes, but the results of the study undertaken by Kitzmann and Emery suggest that something more than (or different from) brief psychological interventions are needed to reduce parental conflict. If an effective intervention can be developed, this would provide a most useful experimental testing of the notion that interparental conflict plays a significant role in the causation of childhood psychopathology, but that day has not yet arrived.

The other two articles in the special section focus on the question of the mechanisms that might be involved in individual differences in children’s responses to marital conflict. Both also focus on children’s immediate reactions to conflict, leaving open the question of the extent to which such short-term responses reflect more enduring features. Cummings, Davies, and Simpson (1994) focus on children’s perception of marital conflict and on their styles of coping with it. The findings are most striking and informative in the light that they throw on gender differences in response to marital conflict. Boys’ perceptions of marital discord tended to agree with that of their mothers’, whereas girls’ perceptions did not; boys who coped well tended to be better adjusted, whereas this association did not apply in girls; and boys’ perception of threat in the marital discord was associated with their own externalizing problems, whereas girls’ perception of self-blame was associated with their own internalizing problems.

As the authors bring out, further research is needed to determine whether these gender differences mean that boys are more sensitive to marital conflict than are girls or that boys tend to be drawn into the conflict to a greater extent than are girls, or whether boys’ tendency to respond to conflict with oppositional behavior means that coercive interchanges between parent and child are more likely to develop and persist.

Easterbrooks, Cummings, and Emde (1994) observed children’s responses during marital interaction in which a revealed differences approach was used to bring out conflict. Some two dozen families were observed when their infants were 12, 18, 24, and 36 months of age. The main findings were that, although there was stability over time in the style of the couples’ interaction, there was not stability in the patterns of child behavior, that the relationship between the two varied across time periods, and that the children showed a complex mixture of positive and interfering behaviors during the marital interactions. Within this sample of generally well-functioning middle-class families with very young children, it was clear that parental discussions of disagreements between them could be constructive interactions. Whether it is appropriate to label these conflict may be a matter that is open to question, but it is clear that it would be an error to equate constructive discussions designed to resolve disputes with hostile discordant relationships. Previous research has indicated that the latter constitutes risk factors for psychopathology in the children, whereas the former may not.

This set of four articles succeeds admirably in opening up the topic of the possible psychopathological risks for children resulting from their exposure to marital conflict. In seeking to develop a better understanding of the risk processes that may be involved, research designs will need to pay attention to the conceptualization of risk mechanisms, measurement issues, and the devising of effective means of putting causal hypotheses to the test. These three key issues constitute the focus of this article. The discussion of these issues concentrates on the association between family discord and conduct disorder in children, but closely similar considerations apply to other forms of psychopathology.
The Distinction Between Risk Indicators and Risk Mechanisms

Until relatively recently, most research into the psychological risks associated with psychosocial features has focused mainly on the identification of risk indicators. There is, as a result, a large literature documenting the huge range of psychosocial variables that are statistically associated with an increased risk of conduct disorder (Farrington, 1992, in press; Patterson, 1982; Robins, 1991; Rutter & Giller, 1983). However, researchers know much less about what is involved in the psychosocial risk mechanisms underlying this association. This lack of information is very crucial, because in the absence of an adequate understanding of the mediating mechanisms, researchers are in severe danger of drawing the wrong conclusions and, thereby, advocating the wrong policies and practices (as well as, of course, making the wrong inferences about processes of psychological development).

For example, in the 1950s sweeping recommendations were made that mothers should not go out to work and that group daycare should be abolished (Baers, 1954; World Health Organization Expert Committee on Mental Health, 1951). Subsequent systematic research has made it clear that neither maternal employment nor group care per se constitutes a major risk factor for children. There may be slight risks associated with both in certain circumstances, but, if so, they seem to derive from the particular features of the experiences involved rather than from maternal employment or daycare (Belsky, 1988; Gottfried & Gottfried, 1988; Heyns & Catsambis, 1986; McCartney & Galanopoulos, 1988; Milne, Myers, Rosenthal, & Ginsburg, 1986; Terr, 1989; Zigler & Gordon, 1982). In more recent times, the confusion of risk indicators with risk mechanisms may be seen in the expectation that combating poverty will prevent mental disorder. There is good evidence that poverty makes good family functioning more difficult, and hence it plays a role in the causal chain leading to conduct disorder. But economic hardship as such does not seem to constitute the direct risk mechanism for psychopathology in children (Conger et al., 1992, 1993; Lempers, Clark-Lempers, & Simons, 1989). Thus it is striking that in the several decades following the Second World War, economic conditions in most western countries improved markedly, but, nevertheless, this improvement was accompanied by a rise in the rate of juvenile delinquency and other forms of psychosocial disorder in young people (Rutter & Smith, in press).

It is important to emphasize that even quite strong associations do not imply that a risk factor measures a risk mechanism. For example, one way to pick out from the general population those who are most likely to be exhibiting antisocial behavior would be to focus on Black male teenagers (Smith, in press). But what risk mechanisms are involved? What is it about maleness that is associated with antisocial behavior: the Y chromosome, prenatal hormonal effects on the developing brain, testosterone postpuberty, or societies’ reactions to and expectations of men? Black skin per se obviously does not constitute a risk mechanism in that within the United Kingdom, crime rates in Asians (who are equally subject to racial discrimination) are below those of Whites. Also, in the rather different situation of the United States, Blackness equally does not constitute an explanation, let alone a mechanism (Wilson, 1987). Also, what is it about the teenage period that constitutes the risk factor? Age as such provides no explanation (Rutter, 1989). Risk is not likely to be caused by puberty, because the precursors of crime in the form of antisocial behavior go back to the childhood years (Moffitt, 1993a; Patterson & Bank, 1989; Patterson, Capaldi, & Bank, 1991; Robins, 1991; White, Moffitt, Earls, Robins, & Silva, 1990). Also, during the time period when the peak age of crime in male adolescents has gone up (Farrington, 1986), the average age of puberty has been going down (Tanner, 1989).

The dangers of neglecting the importance of differentiating risk indicators and risk mechanisms are obvious and need no further discussion. However, part of the reason for that neglect stems from an overready acceptance of the scientific defeatism that seems to be implicit in the teaching that correlations do not mean causation. Of course, the warning that causation cannot be inferred from even the strongest statistical correlations is appropriate and certainly needs heeding. Nevertheless, there are many ways in which nonexperimental data can be used to test causal hypotheses (see Rutter, 1981, in press), and it is crucial that these methods be used effectively. Before
these methods are considered in greater detail, however, it is necessary to clarify the causal hypotheses regarding family discord that require testing.

Conceptualization of Risk Mechanisms Associated With Family Discord

As Fincham et al. (1994) emphasize, any systematic testing of the hypothesis that family discord or marital conflict causes conduct disorders in children requires further specification of the possible mechanisms postulated to be involved in the conflict or discord. It may be helpful, perhaps, to break down the issue into three interlinked questions: Wherein lies the risk (i.e., which aspect of conflict or discord carries the risk)? How does the risk mechanism operate? and How are the effects carried forward in time?

Several possibilities need to be considered in relation to the first question. The risk could derive from children witnessing strongly negative interchanges between their parents. If this does constitute the risk variable, it would be necessary to go on to consider whether this factor applies across the range (e.g., whether there is a greater risk associated with occasional disputes between parents than no disputes at all) or, rather, whether the risk stems only from frequent disputes that involve the expression of dislike, hostility, or aggression. Alternatively, the risk might apply only when the child is drawn into the marital discord or when the discord is between parent and child. It could also be that it is not the presence of quarreling per se that matters, but rather a lack of a supportive, affectionate relationship between the parents or between the parent and child. Yet another alternative could be that it is not the overall level of discord or lack of loving relationships in the home that matters, but rather that either of these tends to lead to differential treatment of the children. That is, when family relationships are strained, parents tend to express their negative feelings more on one child in the family than on others (Rutter, 1978). It could be that it is the scapegoating of children or the presence of a small, consistent, but persistent tendency to favor one child over another that does the damage (Dunn & Plomin, 1990). Alternatively, the risk might be mediated by maladaptive parenting practices that are fostered by family discord rather than by marital conflict (Fauber & Long, 1991).

These distinctions are far more than mere academic niceties. There are hugely important implications for policy in practice, as well as for theories concerning the processes involved in the development of psychopathology. Two examples may serve to illustrate the matter. For many years there was vigorous dispute in the literature about whether parental loss in childhood predisposed to depression in adult life (Brown & Harris, 1978; Crook & Eliot, 1980; Tennant, Bebbington, & Hurry, 1980). On the one hand, numerous studies had shown statistical associations, but, on the other hand, the associations tended to be quite weak and there were many conflicting findings in the literature. Two sets of findings have done much to clarify the issue. First, Harris, Brown, and Bifulco (1986) showed that parental loss was not associated with an increased risk of depression unless poor parenting followed the loss; equally, poor parenting was associated with an increased risk of depression even in the absence of loss. The implication is that loss is important only because it tends, in some instances, to predispose to poor parenting. Loss itself is not, however, the risk mechanism. Also, Kendler, Neale, Kessler, Heath, and Eaves (1992) showed in a genetically informative twin design that parental loss due to divorce or separation was associated with a substantial increase in the risk for emotional disorders in adult life, whereas parental death was not to any substantial extent. The implication here is that some aspect of discordant relationships is likely to carry the risk rather than loss as such. The second example is provided by Fergusson, Horwood, and Lynskey’s (1992) analyses of the Christchurch longitudinal study. They showed that although both multiple family changes and family discord were associated with psychopathological risks for children, discord remained as a substantial risk factor in the absence of family changes whereas family changes constituted a risk only when they reflected discord. When discord was held constant, family changes did not add to the risk. The implication is that the risk mechanism is likely to involve something to do with discord rather than with changes in family composition. These findings indicate that progress can be made in differentiating one postulated risk mechanism from another, pro-
vided the right measurements and comparisons are made. The same need applies to the various alternatives suggested with respect to family discord and marital conflict.

At first, it might be supposed that the second question about risk mechanisms (How do they operate?) is much the same as the first question, but it is not. To begin with, human beings are not passive recipients of their experiences. Rather, they interact in an active fashion with their environment, and they actively process such experiences. It is for that reason that Kagan (1984a, 1984b) suggested that the sequelae of adverse experiences in infancy tended to be rather less than those associated with the same experiences in middle childhood, because the cognitive processes possible in the infancy period are so much more limited. Numerous studies have shown that there is only a very modest level of agreement between experiences as objectively measured, or as perceived by parents, and the same experiences as perceived by children. Thus, Cummings et al. (1994) found that the perceptions of boys were much more consonant with those of their mothers than was the case with girls. Also, it was boys’ perception of the threat involved in marital discord that was associated with both internalizing and externalizing problems, whereas in girls it was self-blame that was associated with internalizing problems and no associations were found with externalizing problems. Similarly, Buchanan et al. (1991) found only a modest level of agreement between parents’ report of discord and their children’s expressed feelings of being caught between parents. The latter was related to depression/anxiety and deviant behavior in the offspring, but discord was so related only indirectly through the adolescents’ feelings of being caught.

A second issue with respect to the operation of risk mechanisms derives from the findings on the heterogeneity of conduct disorder. Many studies have shown that persistent conduct disorders and recidivist delinquency are associated with a particularly early onset that is associated with hyperactivity, inattention, impulsivity, and aggression. These features are much less apparent with respect to delinquency or conduct disorders that develop in adolescence and which are more likely to be transient. Moffitt (1993a) suggested that this distinction within the overall group of conduct disorders may well prove to be a fundamental one with rather different causal pathways involved in the two types. The suggestion has yet to be put to the test in a systematic fashion, but it is consistent with the available evidence and implies that the mechanisms by which family discord operates as a risk factor may not be the same in these two circumstances. A further issue that derives from the same set of findings concerns the question of the extent to which family discord and conflict predispose to the occurrence of this composite early pattern of disorder involving a combination of multiple features or whether, instead, family discord and conflict only operate as a mechanism for translating the vulnerability associated with early hyperactivity, inattention, and impulsivity into disorder. That is to say, does family discord predispose to disorder in the absence of these individual characteristics (Hinshaw, Lahey, & Hart, 1993; Moffitt, 1990, 1993b)?

It is necessary to go on to ask as well how the experience of family discord produces conduct disorder in the child. Several rather different possibilities may be suggested. For example, it could be that there is a direct modeling of behavior. Thus, by observing their parents deal with interpersonal difficulties by aggressive hostile behavior, children may come to do the same. A different possibility is that the experience of family discord leads to disorder because of its effect on social information processing. Numerous studies have shown that children who display hostile attributional biases are likely to behave aggressively (Dodge, 1980; Quiggle, Garber, Panak, & Dodge, 1992). The possibility arises, therefore, that this form of maladaptive social information processing might constitute the mediating variable. Dodge and his associates (Dodge, Bates, & Pettit, 1990; Weiss, Dodge, Bates, & Pettit, 1992) have examined this possibility with respect to young children’s experience of early harsh discipline. Their results suggested that there was both a direct effect of the harsh discipline on aggression in the home and an indirect effect on aggression at school through a hostile attributional bias.

Another suggestion is that family discord predisposes to later conduct disorder because it impairs the security of children’s attachment relationships (Greenberg, Speltz, & DeKlyen, 1993; Waters, Posada, Crowell, & Lay, 1993). The suggestion here is that the risk mechanism lies in the damaged potential for later relation-
ships and implies that the connections between damaged early attachment relationships and poor peer relationships in adolescence (Hodges & Tizard, 1989) may be important. Numerous studies have shown the associations between poor peer relations and various forms of later psychopathology (Parker & Asher, 1987), and peer rejection seems to make it more likely that youngsters will become involved in antisocial peer groups (Dishion, Patterson, Stoolmiller, & Skinner, 1991; Patterson & Bank, 1989; Patterson et al., 1991). Yet another alternative is that because parents have dealt with difficulties by quarreling and shouting, the children fail to learn effective coping or social problem-solving strategies (see Cummings et al., 1994).

The third aspect of the conceptualization of risk mechanisms concerns the question of how the effects of family discord are carried forward in time. This is an important issue because there is abundant evidence that conduct disorders tend to be strongly persistent, not only through childhood, but with a substantial proportion continuing into adult life in the form of personality disorders (Loeber, 1982; Olweus, 1979; Robins, 1978, 1991). The question is why they are so persistent. Is it because, once the disorder becomes established, it becomes self-perpetuating in some fashion (and if so, how), or is it that the disorder is maintained over time through environmental circumstances of one sort or another? In a follow-up into adult life of children reared by mentally ill parents, Quinton, Rutter, and Gulliver (1990) showed that persistent parental discord was quite strongly associated with the persistence of psychopathology from childhood into adult life. Further analyses on the different links in the causal chain over time (based on two other long-term follow-ups from childhood into adult life) showed that the persistence of conduct disorder was quite strongly dependent upon involvement in an antisocial peer group and, later on, by a discordant marriage to an unsupportive deviant spouse (Quinton, Pickles, Maughan, & Rutter, 1993). Family relationships continued to play a part in these later links in the chain, as well as in the earlier ones. Thus, young people from disharmonious families were more likely to move into deviant peer groups, and a supportive harmonious family provided some protection against marriage to a deviant spouse.

**Measurement Issues**

The majority of studies of family discord and conduct disorder have relied on questionnaire measures of both, and most have dealt with associations in terms of single measures. Some studies have sought to obtain questionnaire assessments of different aspects of the family. Thus, Kitzmann and Emery (1994) used a measure of parent-parent relationships as well as a measure of parent conflict, and Cummings et al. (1994) used both a measure of marital discord and of marital conflict. Provided the appropriate multivariate analyses are undertaken, the use of questionnaire measures to tap different aspects of family functioning can be informative. Thus, Jouriles, Murphy, et al. (1991) found that boys’ behavior problems were more strongly associated with child rearing disagreements between the parents than with a measure of global marital adjustment (there was no measure of family discord or marital conflict). Nevertheless, the reliance on single questionnaire measures does not seem optimal. Not only is there substantial error variance in any one questionnaire score but also there will be systematic variance unique to the perspective of the rater. For some purposes, of course, it may be important to tap individual perspectives, but unless measures are combined in some way, it will not be possible to sort out the aspects of the score that reflect individual perspectives as distinct from the broader construct that the measure also taps. Schwarz, Barton-Henry, and Pruzinsky (1985) have shown the advantages of aggregating scores across raters. Aggregated scores are not anything special to family measures but rather are a general reflection of the psychometric properties of instruments (Epstein, 1983). Also, although simple aggregated scores improve reliability, they do not deal with error variance. For this purpose, a latent variable approach has many advantages (Cook & Goldstein, 1993). This statistical approach may be problematic with small samples, but with larger samples, it is likely to be the method of choice.

In addition, it is very dubious whether it is satisfactory to rely on questionnaire measures when it is necessary to make distinctions between different aspects of family interaction, as is certainly required in tackling the questions on risk mechanisms discussed above (Fincham & Bradbury, 1987; Kurdek, 1992; Sabatelli, 1988). Questionnaires are reasonably good at
differentiating good and poor marriages but are much less satisfactory for separating, say, marital satisfaction and marital conflict. In order to assess different aspects of family interaction, there is much to be said for the use of more discriminating standardized interview measures (Brown & Rutter, 1966; Jacob & Tennenbaum, 1988; Rutter & Brown, 1966), observational measures (Reid, Baldwin, Patterson, & Dishion, 1988), or both.

The same issues arise with respect to the assessment of child psychopathology. Questionnaires are reasonably satisfactory as a means of detecting emotional–behavioral disturbance, but they are not very good at making distinctions between different types of psychopathology. Thus, neither questionnaire measures of depression nor questionnaire measures of anxiety have acceptable discriminative diagnostic validity in relation to clinical concepts and measures of disorder (Fristad, Weller, Weller, Teare, & Preskorn, 1991; Perrin & Last, 1992; Roberts, Lewinsohn, & Seeley, 1991). There is much to be said, as with measures of family interaction and relationships, for the use of standardized interview and observation measures, and not just questionnaires. Also, there is the same need to use multiple measures from multiple informants (Epstein, 1983). In addition, for many purposes, it will also be advantageous to combine data across different points in time (Rutter, 1977). Although this combining of data means a loss of the distinction between influences on onset and influences on persistence of disorder, it avoids the problem of the high proportion of children in the general population who show transient disorders or disturbances from time to time. Thus, Rutter and Quinton (1984) found that the associations between parental mental disorder and psychopathology in the children (mainly mediated through family discord) were much more strongly evident in relation to persistent psychopathology than with measures of disorder in the child at any one point in time. Again, too, as with the assessment of family features, latent construct methods based on structural equation modeling constitute the best means of taking into account both systematic situational or rater variance and error variance (Fergusson & Horwood, 1988; Rutter & Pickles, 1990). Not only do latent construct approaches provide a better differentiation between different types of psychopathology, but also they bring out more clearly the associations with risk factors of various kinds (Fergusson & Horwood, 1987, 1989; Fergusson, Horwood, & Lloyd, 1991).

Testing Causal Hypotheses With Respect to Family Discord

The need for rigorous testing of causal hypotheses, together with careful consideration of complicating assumptions, is well discussed by Fincham et al. (1994). However, although the testing of causal hypotheses is more difficult outside the experimental laboratory, the combination of epidemiological and longitudinal data can carry the testing a long way, provided that the most appropriate research designs are used. Such designs seek to find naturally occurring situations that approximate to the controlled experimental situation in the laboratory in terms of separating variables or mechanisms that ordinarily go together (Rutter, in press; Susser, 1991). Fincham et al. concentrate on the need to test competing hypotheses on particular environmental risk mechanisms. However, a prior concern is to determine whether there is any environmental risk effect of family discord on child psychopathology, regardless of the particular environmental mechanism that may be involved. Two chief alternatives need to be considered and tested for: genetic mediation and the reverse causal direction (i.e., an effect of children on parents).

Genetic Research Strategies

The need to take seriously the possibility that the effects of family discord on conduct disorder in children might be mediated genetically is emphasized by the findings from longitudinal studies that conduct disturbance in childhood is strongly associated with a much increased rate of stress experiences in adult life (Champion, Goodall, & Rutter, 1994) and especially of marital discord (Quinton et al., 1993). The consistent finding that conduct disorder in childhood is also associated with parental psychopathology and criminality (Farrington, in press; Robins, 1991) underlines the possibility of genetic mediation. The evidence in the Frick et al. (1992) study that antisocial personality disorder accounts for much of the association between poor parenting and conduct disorder points in the same direction. Nevertheless, there are rea-
sons for thinking that genetic factors are unlikely to explain the whole of the effect. Thus, the genetic contribution to conduct disorder in childhood seems modest, although it may be somewhat stronger for that which persists into adult life (DiLalla & Gottesman, 1989). Also, there is evidence, as already noted, that the persistence of childhood conduct disorder into adult personality disorder is dependent upon various intervening experiences (Quinton et al., 1993). Nevertheless, the matter needs to be settled, not by assumptions, but by direct testing.

There are many ways in which this may be done, but four may be mentioned. All require the inclusion of specific measures of the postulated environmental risk factor. First, twin designs may be used to examine the effects of a specific environmental risk factor, after taking account of genetic influences. This was the approach followed, for example, by Kendler et al. (1992) in their examination of the role of parental loss as a risk factor for depressive disorders in adult life. Second, adoptee designs may similarly be used to separate the effects of nature and nurture. Thus, Cadoret, Troughton, Merchant, and Whitters (1990) showed that although there was indeed genetic mediation of the association between antisocial problems in parent and offspring, there was also an environmental effect by which parental antisocial disorder increased the risk of depressive symptomatology in children. It should be noted that a complete design is not essential for the use of adoptee samples to study environmental effects. Much can be learned from the study of associations between family features and child outcomes within adoptee samples (e.g., see Tienari et al., 1990) without parallel data on the biological families, provided that selective placement biases can be excluded. Third, environmental effects may be examined by a comparison of their operation in the presence and in the absence of particular psychiatric disorders in the parent. This design does not provide the same control of genetic factors, but it may be helpful in indicating whether the genetic possibility is strong or weak. Thus, Rutter and Quinton (1984) showed that the effects of family discord on conduct disorder in sons still operated after taking account of personality disorder in the parents. Fourth, nonfamily situations may be used as analogues. Thus, Rutter, Maughan, Mortimore, and Ouston (1979) examined school characteristics in relation to pupil behavior. One of the findings was that the frequent use of unofficial physical punishments, such as slapping or cuffing the children, was associated with greater behavioral disturbance in the pupils. Similarly, Sinclair (1971) found that boys' success in probation hostels was greatest in those with warm but strict wardens whose wives agreed with them on how the hostel should be run. Of course, neither of these studies provides an exact parallel with marital discord, but the finding that discordant relationships within nonfamily environments is associated with disturbed behavior makes the environmental mediation hypothesis with respect to marital discord more plausible.

**Children's Effects on Parents**

The possibility that the association between family discord and conduct disorder represents an effect of children's behavior on parents also needs to be taken seriously. There is quite a lot of evidence that children with conduct disorder differ from others in their neuropsychological characteristics (Moffitt, 1993b), in their temperamental features (Maziade, 1989), and in their autonomic responsivity (Lahey, McBurnett, Loeber, & Hart, in press). Also, conduct disorders, particularly those that persist, are frequently first manifest in the preschool years (White et al., 1990). All of these findings may apply more with respect to hyperactivity than to conduct disorder in the absence of overactive behavior, but, nevertheless, they do provide the need to examine possible child effects.

Bell and Chapman (1986) summarized some of the key ways in which child effects may be examined, and Lytton (1990) summarized some of the key findings with respect to boys' conduct disorder. Five main research strategies have been used. First, there is the confederate participant design. For example, Brunk and Henggeler (1984) trained 10-year-old child confederates to exhibit oppositional or socially withdrawn behavior while playing a board game with a range of different mothers. The findings showed that mothers behaved quite differently in these conditions and, even more surprisingly, that they did so even in response to neutral behaviors. Over the course of just a few minutes, the adults tended to react in terms of their anticipations of the meaning of child behaviors. Second, there is the altered behavior...
design. For example, stimulant medication has been used to alter the behavior of children with hyperkinetic problems. Both Barkley and Cunningham (1979) and Schachar, Taylor, Wieselberg, Thorley, and Rutter (1987) found that the mothers of drug responders altered their style of interaction with their children, although there was not an effect on marital conflict.

The third design of altered perception is characterized by the "baby X" experiments in which toddlers are dressed in unisex snowsuits and given names that indicate gender, with the names only coinciding with their own gender half the time. This strategy is a useful one but is not particularly applicable in the case of conduct disorder. The fourth strategy of sample selection is exemplified by a design that was probably first used by Gardner (1977) with autistic children and later used by Anderson, Lyyton, and Romney (1986) with conduct-disordered boys. Mothers of normal and of conduct-disordered children were observed interacting with their own child, with someone else's normal child, and with someone else's conduct-disordered child. By these means it was possible to separate the effects of the mothers' style of the child being their own or someone else's and of the child being normal or conduct disordered.

A substantial effect of the child's behavior on maternal behavior was found. Finally, longitudinal investigations provide a less rigorous testing of the direction of causal relations but have the advantage of studying effects over time in real-life settings. Thus, Martin (1981) in his longitudinal study of children from 10 to 42 months showed that demanding behavior in infancy was followed by a tendency for mothers to back away, which in turn was associated with an increased tendency for boys' noncompliant behavior to persist. Two-way, coercive cycle effects were also found in Patterson's observational studies of conduct-disordered boys and their parents (Patterson, 1982; Patterson & Bank, 1989; Patterson et al., 1991).

There seems little doubt that there are true child effects on parents, but it is much more questionable whether this accounts for the association between marital conflict or family discord and conduct disorder in offspring. To begin with, most of the demonstrations of child effects concern the immediate situation in relation to parental responses and not the longer term effects on parental behavior or family relationships. Moreover, as already noted, Schachar et al. (1987) found no effects of improved child behavior on family discord, in spite of beneficial effects on parent–child interaction. Also, in at least some instances, it is clear from longitudinal data that the family discord must have preceded the children's conduct disorder (Rutter & Quinton, 1984). Bidirectional influences seem likely (Patterson & Bank, 1989), but further research is required to determine the relative strength of effects in each direction. Treatment strategies could be informative, but only if the design was such as to examine the effects on child behavior of therapeutically induced reductions in family discord. Unfortunately, although there is substantial evidence of the efficacy of behaviorally oriented treatments designed to improve parental management techniques, the data are not such as to indicate what change in the family or in parenting has brought about changes in the children's behavior (Kazdin, 1993; but see also Patterson & Bank, 1989). Furthermore, the main focus of treatments has tended to be on parental management techniques rather than on marital relationships.

### Person–Environment Interactions

Although person–environment interactions are widespread in biology and medicine (Rutter & Pickles, 1991), they have received relatively little attention up to now in studies examining the effects of family discord. Nevertheless, there are various pointers suggesting that they may be important. Several studies have suggested that the effects of family disruption, and associated stressors, may be greater in genetically vulnerable children (Cadoret, 1985). Also, it is clear from studies of children with a hyperkinetic disorder (generally thought to have a strong constitutional component) that they are very vulnerable to the adverse effects of family discord and disruption (Moffitt, 1990; Taylor, Sandberg, Thorley, & Giles, 1991). Vorria (1991) found that children reared in institutions in Greece because they were orphaned or because of parental poverty did not show the marked behavioral disturbance that was characteristic of a high proportion of children in the same institutions because of a breakdown in parenting stemming from family discord and disruption. It is possible, too, that the findings on multiple stressors reflect the same phenomenon. Thus, several studies (e.g., Kolvin, Miller,
Scott, Gatzanis, & Fleeting, 1990; Rutter, 1979) have shown that a single family stressor (including discord) does little to raise the risk of disorder in children but that two or more stressors substantially increase the risk. This relationship has usually been interpreted as an interactive effect between environmental risk factors, but it could equally well mean that environmental effects tend to be greater when the children are genetically vulnerable. The reason for laboring this point is that the possibility of person–environment interactions has been so little investigated up to now. If the causal hypothesis is to be tested most effectively, it will be necessary to use strategies that examine such effects. Comparisons of children who are high and low in genetic vulnerability and comparisons of children who differ in terms of personal risk factors—such as hyperactivity, neuropsychological deficits, and autonomic underresponsivity—would be particularly informative.

Nonshared Environmental Effects

Plomin and Daniels (1987), on the basis of behavior–genetic evidence, argued that, for most outcomes, family influences that impinge differentially on children within the same family tend to make a greater impact than family influences that impinge on the family as a whole to a roughly equal degree. Conduct disorders appear to constitute somewhat of an exception to this general rule. It is frequent for several children in the same family to show conduct disorder, and the limited genetic data available so far also point to the operation of shared, as well as nonshared, environmental effects (DiLalla & Gottesman, 1989). Even so, there is a need for research into family discord to obtain measures that explicitly assess features that may be relevant for nonshared effects. Thus, it would be helpful to quantify the extent to which each child is embroiled in the family conflict and perceives himself or herself as caught up in the discord and to assess the extent to which the family conflict leads to differential treatment of children or even to scapegoating. Jenkins and Smith (1990) found that a good relationship with an adult inside or outside the family was associated with less psychopathology when children were exposed to marital discord. This finding has been interpreted as a protective effect—and probably does represent this with respect to relationships outside the family—but it may well imply that the main risk to children derives from poor parent–child relationships rather than from discord per se. Thus, there was very little effect of a poor parental marriage when the child’s relationship with the mother was a good one. The implication could be that it is a discordant relationship between parent and child that matters (i.e., a nonshared effect) rather than a general effect of family discord.

Causal Chain Effects

As discussed above, there is a growing body of evidence that the persistence of conduct disorder from early childhood into adult life is much influenced by indirect causal chain effects. Thus, Patterson and his colleagues (Patterson & Bank, 1989; Patterson et al., 1991; Patterson, DeBaryshe, & Ramsey, 1989) have argued that there is a developmental progression for antisocial behavior. They found that this behavior started with poor parental discipline and monitoring, leading to child conduct problems that, in turn, led to both rejection by normal peers and academic failure; both of these features then predisposed to involvement in a deviant peer group and this predisposed to delinquency. Quinton et al. (1993) also demonstrated the key mediating role of a deviant peer group in the persistence of conduct disorder over time. Both studies suggested that family influences continued to be important in adolescence, but it may well be that they operate in a somewhat different way from influences in early childhood. The importance of the finding of indirect causal chain effects is that it points to the need both for longitudinal data and for methods of analysis that provide for tests of the postulated causal mechanisms at each point in the chain.

The Need to Use Natural Experiments

Rutter (in press) has argued that an experimental approach is just as necessary for testing causal hypotheses in epidemiological–longitudinal studies as it is in the controlled conditions of the experimental laboratory. With the exception of therapeutic interventions (see above), the experimental variations have to be brought about through naturally occurring circumstances, rather than through the control of con-
trived experimental conditions. Nevertheless, the aim is exactly the same in terms of finding circumstances that separate risk variables that ordinarily go together. Genetic designs do this with respect to the separation of nature and nurture, and other designs do so in relation to determining the direction of causal influences from parent to child or the other way round. Broadly similar issues apply with respect to the testing of competing hypotheses about postulated environmental mechanisms associated with family discord.

Mention has already been made of the pitting of family discord and family separations as alternative mechanisms. Other studies have sought to do the same with respect to discord and poor parenting. Some of the results suggest that parenting practices exert a greater effect than does family conflict (e.g., Fauber & Long, 1991; Patterson & Bank, 1989), but other data suggest a direct effect of family conflict that is not mediated by parenting practices (Emery, Fincham, & Cummings, 1992). These findings all rely on multivariate analyses of one kind or another that seek to partial out the effects of one variable when examining the effects of another. Inevitably, this provides a weak test, and experiments involving either contrasting circumstances or changes in circumstances are always to be preferred.

For example, Hodges and Tizard (1989) contrasted two groups of children who spent their first few years in a residential nursery, one of which returned to the biological parents and one of which was adopted. Both showed a rather similar pattern of peer relationships (suggesting that these had been influenced by the early experiences in the institution rather than by the very different family circumstances in adolescence), but conduct disorders were more prevalent in the children restored to their biological parents than in those who had been adopted. Because biological families provided a much more disrupted, disorganized, and disharmonious environment (at least as far as could be judged from the limited data available), the implication is that the family circumstances in adolescence and middle childhood had indeed had an effect on the children's conduct disorder. It is unlikely to have been a selection bias because, if there had been such a bias, it is likely to have worked in such a way that the children from less disturbed homes would have gone back to their biological parents. The outcome findings that showed a higher level of conduct disorder, therefore, run against any such selection bias.

One way of tackling the alternative that the risks stem from a lack of consistent, secure attachment relationships rather than discord is provided by the natural experiment of an institutional rearing (Quinton & Rutter, 1988). Discord is not a particular feature of well-run group foster homes. On the other hand, they are characterized by a huge turnover in parenting figures, so that there is little opportunity for children reared in them to develop close attachment relationships. The key group for this comparison, therefore, is that of children admitted to institutions in very early childhood who remained there until leaving school. Quinton and Rutter's (1988) findings indicated that this group did as poorly in terms of social outcome in early adult life as did those with a more prolonged exposure to family discord. The result does not indicate a lack of effect from family discord, but it does show that there is a risk of broadly similar degree associated with parenting provided on a roster basis in the absence of marked discord.

It is sometimes supposed that much of the effect of family conflict, especially that following divorce, is a function of associated economic hardship. The natural experiment of parental remarriage provides a convenient way of researchers examining this possibility, because it is usually associated with a very marked improvement in economic circumstances. The finding that remarriage is not accompanied by any consistent improvement in children's behavior (Hetherington & Clingempeel, 1992) suggests either that economic hardship is not the key mechanism or that remarriage brings new stressors that counterbalance any benefits that stem from improved living conditions. The fact that sometimes, following divorce, different children in the same family are placed in different homes provides another convenient contrast (Monahan, Feldman, Hammer, & Rosario, 1993). The finding that siblings who lived apart after divorce were behaviorally more different than those who lived together suggests a family effect, and potentially this design provides a useful way of examining the impact of family discord.

Rutter (in press) has argued that reversal effects provide a useful means of testing causal hypotheses, quoting the example of unemploy-
ment. The finding that there tends to be a relief of distress in unemployed individuals who obtain work, as well as an increase in distress when people lose their jobs, provides substantial support for the causal hypothesis. Fincham et al. (1994) express some skepticism on the value of reversals of key experiences in illuminating causal processes. Quite rightly, they note that the factors that lead to the development of the disorder are not necessarily the same as those that maintain it. Accordingly, whether one would expect a reduction in family conflict to have beneficial effects on conduct disorder necessarily depends on how the risk mechanisms are thought to work. If, for example, the maintenance of conduct disorder is dependent on the role of hostile attributional biases leading to aggressive behavior or to involvement in a deviant peer group, it may well be that a reduction in discord may not help a great deal. Also, if there are threshold effects, it may well be that modest reductions in conflict will make little difference (Richman, Stevenson, & Graham, 1982), although a major family change could be beneficial (Rutter, 1971). If the peer group constitutes a key variable in the prolongation of conduct disorder in middle childhood and adolescence (which seems to be the case), it may well be that parental supervision and monitoring may be more important at this stage than discord (Dishion, 1990; Dishion et al., 1991; Patterson & Bank, 1989). If this model is correct, it might be supposed that a reduction in family discord might make its greatest impact if it occurs in earlier childhood rather than later. Undoubtedly, there are difficulties in the assessment of reversal effects, but the finding from naturalistic studies (Fincham et al., 1994) and intervention studies (Kitzmann & Emery, 1994) showing that reductions in family conflict are associated with reductions in deviant behavior implies that reversal effects should operate.

As indicated, the key point of natural experiments is for researchers to search for circumstances that split variables to test competing hypotheses and that involve changes that either are associated with a systematic increase in the risk experience or, alternatively, with systematic decreases in it. Of course, it is not enough to use designs involving natural experiments that dissociate possible mechanisms and therefore allow tests of competing hypotheses on mechanisms. Testing for dose response relationships, examining effects specificity, considering biological plausibility, and assessing the strength of effects are also all very important in checking the likelihood that associations reflect the causal mechanisms that have been hypothesized (Rutter, in press).

Conclusion

There is now abundant evidence that serious family discord provides a good risk indicator for conduct disorder in children. For the most part, the associations found in the literature are of only moderate strength (Jouriles, Bourg, & Farris, 1991), but the weakness of effect is quite likely to reflect a reliance on single questionnaire measures of family functioning and single questionnaire measures of child psychopathology, so that the error variance in the studies will have been very large. On the other hand, it is equally possible that the weak associations mean that, although family discord is indeed a risk indicator, it does not represent a risk mechanism. Rather, it could be that the risk processes involve features that are associated with discord, instead of the discord itself. The research undertaken to date clearly indicates the importance of investigating the mechanisms involved, and there are ample leads to follow. It has been argued that progress is likely to come through a clear conceptualization of the hypothesized risk factors, a careful attention to measurement issues, and the use of designs that provide a rigorous testing of causal hypotheses.

References


Block, J. H., Block, J., & Gjerde, P. F. (1986). The


Vorria, P. (1991). *Children growing up in Greek institutions: Their behaviour and relationships at school and in the institution*. Unpublished doctoral
dissertation, University of London, Institute of Education.


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