

Buffering Children From Marital Conflict and Dissolution

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Examined several protective mechanisms that may reduce deleterious correlates of marital conflict and marital dissolution in young children. One set of potential buffers focused on parent-child interaction: parental warmth, parental scaffolding/praise, and inhibition of parental rejection. As a second set of potential buffers, each parent was interviewed about their "meta-emotion philosophy"—that is, their feelings about their own emotions, and their attitudes and responses to their children's anger and sadness. The third set of potential buffers concerned intraindividual characteristics of the child, including the child's intelligence and regulatory physiology (basal vagal tone and vagal suppression). Fifty-six families with a preschool child were studied at two time points: when the children were 5 years old (Time 1) and again when the children were 8 years old (Time 2). At Time 1, naturalistic observations of marital and parent-child interaction were conducted and assessment of child regulatory physiology was obtained through measures of basal vagal tone and suppression of vagal tone. Parents were also interviewed individually about their feelings about their own and their children's emotions, and children's intelligence was assessed. At Time 2, assessment of child outcomes were obtained, including observations of peer interaction, mother ratings of behavior problems and mother and teacher ratings of peer aggression, mother ratings of child physical illness, and measures of achievement. Results indicated that all Time 1 buffering factors protected children in face of marital conflict and dissolution.

Marital conflict and dissolution are among the most pervasive problems that children currently face. With estimates of the divorce rate ranging between 50% (Cherlin, 1981) and 67% (Martin & Bumpass, 1989), millions of children will experience divorce of their parents. Many laboratories have now reported that the consequences of both marital conflict and dissolution for children's social and psychological adjustment are ubiquitous, negatively affecting many different areas of children's well-being. Marital distress and conflict have been associated with depression, withdrawal, poor social competence, health problems, poor academic performance, and conduct-related difficulties in children (e.g., Cummings & Davies, 1994; Grych & Fincham, 1990; Gottman & Katz, 1989; Hetherington, Cox, & Cox, 1982; Rutter, 1971). Moreover, the consequences of marital conflict and disruption during childhood appear to last well beyond the childhood years (Glenn & Kramer, 1985; Kulka & Weingarten, 1979). A recent analysis of longevity data from the Terman study of

intellectually gifted children found that one's parents' and one's own marital disruption together was associated with a reduction in average longevity by about 8 years for both men and women (Friedman, Tucker, Schwatz, & Tomlinson, 1995).

Despite the ubiquity of marital conflict and marital dissolution, and its associated relations with negative child outcomes, there is little or no data indicating how parents can protect children from the negative effects of their ailing marriage. In this article, we examine a small number of potentially protective factors that may reduce negative outcomes for children faced with marital conflict.

Parenting as a Source of Potential Protective Mechanisms

There is widespread theorizing that one pathway through which children are affected by marital conflict involves the parent-child relationship. Many dimensions of parenting have been identified as potential buffers. Parents experiencing marital distress have been found to show more negativity, less warmth, greater inconsistency in discipline, greater rejection, greater withdrawal, and less responsiveness than nonmaritally distressed parents, and these dimensions of poor parenting have been linked to poorer child adjustment (e.g.,

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Fauber, Forehand, Thomas, & Wierson, 1990; Gottman & Katz, 1989; Miller, Cowan, Cowan, Hetherington, & Clingempeel, 1993). The importance of parenting practices in buffering children in maritally distressed homes has also been noted (Easterbrooks & Emde, 1988; Emery, 1988). Generally, children fare better in divorced families when their relationship with each parent is good and parenting quality is high (Emery, 1988; Peterson & Zill, 1986). In intact families with severe family discord, children appear to be protected if there is a good relationship with one of the parents, a sibling, or an adult outside the family (Jenkins & Smith, 1990; Rutter, 1990). These findings provide preliminary evidence that if couples can maintain a positive relationship with their child despite marital conflict, the associated negative outcomes for children may be minimized.

However, it is unclear precisely which dimension of positive parenting is doing the buffering. To advise parents and to develop intervention programs to help parents undergoing severe marital conflict or dissolution, it is necessary to be specific in identifying the parenting processes that may buffer children from marital conflict. In this article, we explore four different parenting processes as potential protective mechanisms: parental warmth, parental scaffolding, inhibition of parental rejection, and a new dimension of parenting which we refer to as "emotion coaching."

Parental Warmth as a Potential Protective Mechanism

One possibility is that a globally positive dimension such as parental warmth may protect children from marital conflict. In early multidimensional parenting research that employed factor analysis, a warm-cold-hostile dimension was one of the two independent dimensions that consistently emerged (Becker, 1964; Schaefer, 1959). Lack of parental warmth has also been found to mediate the relationship between marital conflict and child adjustment (Cox, Owen, Lewis, & Henderson, 1989; Easterbrooks & Emde, 1988; Miller et al., 1993). If parents can remain warm and positive toward their child despite marital conflict, this may be sufficient to moderate the negative child outcomes associated with living in a maritally discordant home.

Parental Scaffolding as a Potential Protective Mechanism

Another hypothesis is that parental warmth alone is not sufficient to protect children from marital conflict. Built on the early dimensional approach to parenting (Becker, 1964), Baumrind (1967, 1971) identified three parenting styles: authoritarian, authoritative, and permissive. *Authoritative* parents set limits on their child's behavior, but are flexible and provide explana-

tions and lots of warmth. In our research, we built on Baumrind's notion of authoritative parenting to include the responsive style that attachment theorists have identified (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969, 1973) and the scaffolding concept introduced by Vygotsky (1987). We call it "scaffolding/praising" (regarding the general scaffolding concept, see Choi, 1993; Vygotsky, 1987). In observing our videotapes, we noted that parents who scored low on this scaffolding/praising dimension either provide little structure to their children in a learning context, or they give information rapidly and with high density, appearing to excite and confuse the child. They also wait until their child has made a mistake to comment on the child's performance, and are then usually critical. Parents who score high on the scaffolding/praising dimension provide structure for the task, and then provide praise and approval primarily when the child has done something right. By introducing this concept, we go beyond the dimension of parental warmth as a protective mechanism.

Parental Meta-Emotion Philosophy as a Potential Protective Mechanism

Ginott (1965) emphasized the importance of how parents interact with their children when the children are emotional. Following Ginott, our search for protective mechanisms was guided by our study of a hitherto unstudied area of parenting that we called parental "meta-emotion philosophy" (Gottman, Katz, & Hooven, 1997). We interviewed parents about their own feelings, metaphors, and philosophies toward their own and their children's anger and sadness. We found that parents had an organized set of thoughts and an approach to their own emotions and to their children's emotions, which we called their "meta-emotion philosophy." We found that parents who had what we called an "emotion-coaching" philosophy were aware of both their own and their children's emotions, valued their children's emotional expressions, could talk about their own and their children's emotions in a differentiated fashion, and assisted their children with their emotions of anger and sadness. Essentially, these parents saw their role as a coach during their children's emotional moments. This parental meta-emotion philosophy we called an emotion coaching philosophy. In contrast, a dismissing meta-emotion philosophy was one in which parents felt that the child's sadness or anger were potentially harmful to the child—that it was the parents' job to change these toxic negative emotions as quickly as possible, or convey to the children a sense that they could "ride out" these negative emotions without damage. Often they perceived a child's strong emotion as a demand that they fix everything and make it better, and they hoped that the dismissing strategy would make the emotion go away quickly.

We found that emotion coaching had broad implications for the emotional well-being of all family members and familial subsystems (Gottman, Katz, & Hooven, 1996, 1997). Emotion-coaching parents showed less hostility in their marital relationship, and less negativity and more positivity in the parent-child relationship. Their children showed less evidence of physiological stress, greater ability to focus attention, and had less negative play with their best friends. Given the broad implications of parental meta-emotion philosophy for the emotional and physical health of family members, we wondered whether parental meta-emotion philosophy could function to buffer children in face of marital conflict.

Inhibition of Parental Rejection as a Potential Protective Mechanism

The correlates of parental rejection have been well documented. Parental rejection has been associated with depression, alcohol use, delinquency, truancy and runaway behavior, disruptive classroom behavior, and physical aggression in children (Loeber & Dishion, 1984; Peretti, Clark & Johnson, 1984; Simons, Robertson & Downs, 1989; Williams, 1989). Parental rejection has also been found to predict adjustment problems in adulthood, including poor relationships between adult children and their parents, alcohol abuse, depression, intergenerational transmission of depressed mood, and Type A behavior (e.g., Crook, Raskin, & Eliot, 1981; Emmelkamp & Karsdorp, 1987; Lefkowitz & Tesiny, 1984; Whitbeck, Hoyt, Simons & Conger, 1992; Wright & Moore, 1982). Because parental rejection also mediates the relation between marital distress and child behavior problems (e.g., Fauber, Forehand, Thomas & Wierson, 1990; Katz & Gottman, 1995a), parents' ability to inhibit rejecting behavior toward their children may buffer children from marital conflict.

Child Characteristics as Protective Mechanisms

Individual differences in children's resilience to stress play a role in determining the degree to which children are buffered from the negative consequences of adverse life circumstances (e.g., Garmezy, 1985). In this article, we examine children's intelligence and regulatory physiology as two potential protective mechanisms.

Child Intelligence

There is considerable evidence that children's intelligence functions as a protective factor against psychosocial adversity. For example, despite exposure to

significant psychosocial stress, children with higher levels of intelligence show fewer behavior problems, greater school competence, and lower frequency of psychiatric diagnosis (Cederblad, Dahlin, Hagnell, & Hansson, 1995; Masten, Morison, Pellegrini, & Tellegen, 1990; Pianta, Egeland & Sroufe, 1990). In our study, we examine whether child intelligence buffers children exposed to marital conflict and dissolution.

Child Regulatory Physiology

Given recent evidence that children of unhappily married parents are chronically aroused physiologically and have slower recovery from emotional arousal (Gottman & Katz, 1989; Shortt, Bush, McCabe, Gottman, & Katz, 1993; Walker, Wilson, Katz, & Gottman, 1997), we hypothesized that those children who are better able to calm themselves down physiologically from emotional arousal may show greater buffering in face of marital conflict. Porges (1984) argued that baseline vagal tone may provide a physiological substrate for the child's ability to self-soothe physiologically, focus attentional processes, and inhibit inappropriate action. Basal vagal tone is related to the regulation of attentional processes in infants, children, and adults and to children's emotion regulation abilities (Fox, 1989; Linnemeyer & Porges, 1986; Suess, Porges, Plude, 1994). The child's ability to perform a transitory suppression of vagal tone in response to environmental and particularly emotional demands is also an important regulatory function. In general, vagal tone is suppressed during states that require focused or sustained attention, mental effort, focusing on relevant information, and organized responses to stress (Porges, Doussard-Roosevelt, Portales, & Greenspan, in press). To the extent that vagal tone and the suppression of vagal tone function to help children calm down and focus attention, those children who are able to regulate their physiological arousal under stressful conditions may be better equipped to handle the stress of marital conflict.

In a previous article, we found that high basal vagal tone can buffer children against marital hostility (Katz & Gottman, 1995b). For children with low vagal tone, there was a strong association between marital hostility and child externalizing behavior, but children with high vagal tone did not show this expected association. In this article, we extend these findings by including measures of both baseline vagal tone and vagal suppression, and we also examine several other domains of child outcome: observations of peer interaction, mother ratings of behavior problems and peer aggression, teacher ratings of peer aggression, ratings of child physical illness, and measures of achievement. These specific domains were selected to cover a broad range of child outcomes, and because of the importance of these do-

mains in predicting long-term adjustment. For example, in the area of peer relations, Parker and Asher (1987) found that poor peer relations during childhood predicted adjustment problems in later life.

Method

In the interests of conserving space, an abbreviated set of procedures is presented in this article (for more detail, see Gottman & Katz, 1989; Katz & Gottman 1991, 1993).

Participants

Fifty-six normal families were recruited from a Midwestern community for this study; 32 families had a male and 24 had a female 4- to 5-year-old child. Ninety-six percent of the parents were Caucasian. The mean ages of husbands and wives were 33.5 and 32.9 years, respectively. Number of years education for husbands and wives averaged 14.1 and 13.7, respectively. Approximately two thirds of the families were classified as white-collar workers, and the remaining families were classified as blue-collar workers (for classification criteria, see Krokoff, 1984). We employed our telephone version of the Locke-Wallace Marital Satisfaction Scale (Krokoff, 1984) to ensure that couples had a wide range of marital satisfaction in our study. The mean marital satisfaction score was 111.1 ($SD = 29.6$). Following initial assessments at Time 1, families were contacted again 3 years later for a Time 2 assessment of child and marital functioning. For all procedures, written consent was obtained from both spouses and the parents of the target child's best friend, and oral assent was obtained from the target child and his or her best friend.

Procedures

Time 1 Assessments

Meta-emotion interview. Each parent was interviewed separately about his or her own experience of sadness and anger; their philosophy of emotional expression and control; and their feelings, attitudes and behavior about their children's anger and sadness (Katz & Gottman, 1986b). Their behavior during this interview was audiotaped. A script for this semistructured interview is available from the authors.

Marital assessments. Marital satisfaction was assessed using the Locke-Wallace Marital Satisfaction Inventory (Locke & Wallace, 1959). To measure mari-

tal interaction, couples were seen in a laboratory session, the main function of which was to obtain a naturalistic sample of the couple's interaction style during a high-conflict task. The task consisted of a 15-min discussion of two areas of continuing disagreement in the marriage. Videotaped recordings of marital interaction were obtained

Parent-child interaction. The parent-child interaction session consisted of a modification of two procedures used by Cowan and Cowan (1987). In the first task, parents were instructed to find out about a story that the child had previously heard. The story that the children heard did not follow normal story grammar and was read in a monotone voice, and so the story was only mildly interesting for the children and hard to recall. The second task involved teaching the child how to play an Atari videogame that the parents had learned to play while the child was hearing the story. The interaction lasted 10 min.

Children's film viewing. Children were shown segments of emotion-eliciting films. Each film clip was preceded by a neutral story and an emotion-induction film clip of an actress who acted out the emotions of the protagonist in the upcoming story. The function of the emotion induction was to direct the child to identify with the protagonist and to experience the specific emotion in question. The child viewed clips from six films: fly fishing, *The Wizard of Oz* (flying monkey scene), *Charlotte's Web* (Charlotte dies), *Monty Python's The Meaning of Life* (restaurant scene), *The Wizard of Oz* (taking Toto away), and *Daisy*.

Child's physiological functioning. We assessed cardiac interbeat interval (IBI) from the child during the film viewing by measuring the time interval between successive spikes (R-waves) of the electrocardiogram (EKG). Silver-silver chloride miniature electrodes were placed on either side of the child's chest for signal detection. EKG was amplified using a Lafayette Instrument amplifier, and the R-wave of the EKG was detected using a Schmitt trigger. EKG was sampled at a rate of 750 times/sec and averaged into 1-sec intervals.

Peer interaction. The child's social competence in dyadic interaction was obtained by audio-taping the child at home in a 30-min dyadic play session with a peer the mother identified as the child's best friend.

Intelligence. During a home visit, the child's intelligence level was assessed using the Information, Picture Completion and Block Design subscales of the Wechsler Preschool Scales of Intelligence (Wechsler,

1974). Full scale IQ was computed by prorating scale scores.

Time 1 Measures and Coding

Meta-emotion coding system. The audio tapes of the meta-emotion interview were coded using a specific checklist rating system that codes for parents' awareness of their own anger and sadness, their own regulation of anger and sadness, and their acceptance and coaching of their child's anger and sadness. Parents who were high in awareness (self and child) were easily able to describe their experiences of emotion (including cognitive processes and physical sensations), were able to distinguish emotions from one another, knew the causes of the emotion, were aware of remediation processes, and answered questions about the emotion easily, without hesitation or confusion and with interest. Parents who coached their children's emotions showed respect for the child's emotional experience, reported talking to the child about the emotion and intervened in situations that gave rise to it, and taught the child rules for appropriate expression of the emotion and strategies to soothe the child's own emotion (for specific items see Hooven, 1994, which is available from the authors). Awareness and coaching were selected as indices of meta-emotion philosophy based on previous research indicating that these variables are related to qualities of family functioning (Gottman et al., 1997). Interrater reliability was computed on 25% of the sample. The range of interobserver reliabilities, computed as correlations across scales for independent observers of this coding was .73 to .86.

Observational measures of affect in Time 1 marital interaction. Marital interaction was coded in real time using the Specific Affect Coding System (Gottman, McCoy, Coan, & Collier, 1996). Only those behaviors that have been found to predict marital dissolution in other studies (e.g., Gottman & Levenson, 1992) were analyzed in our research; these codes are husband and wife contempt, disgust, and belligerence. Husband and wife were coded by separate independent observers, who were trained staff members. Scores reflect percentage of time over the 15-min interaction that each code was used. Reliability was computed using interobserver correlation coefficients. Reliabilities for these codes were computed on 100% of the sample and ranged from .76 to .94 ($M = .84$).

Observational coding of parent-child interaction. Parenting was coded using the Cowans' Observational System (Cowan & Cowan, 1987), the Kahen Engagement Coding System (KECS), and the Ka-

hen Affect Coding Systems (KACS; Kahen, 1993, available from the authors). For purposes of this study, only the warmth dimension from the Cowan and Cowan coding system was of interest. Parental warmth towards the child and warmth between parents were both coded. Coders rated the overall degree of warmth and highest level of warmth and coldness exhibited by each parent toward the child and toward each other. Our warmth variable is defined as the sum of all the warmth variables minus the sum of all the coldness variables. Interrater reliability was computed on 50% of the sample, and was .64 for the warmth code.

The KECS and KACS systems were used to form the parental Derogation (rejection) and Scaffolding/Praising dimensions. Derogation was computed as the sum of derisive humor, intrusiveness, and criticism for both parents. Scaffolding/Praising was computed as the sum of parental affection, engagement, positive structuring, responsiveness across parents, and mother enthusiasm (father's enthusiasm was not included because it correlated with negative parenting indices; for specific descriptions of these codes, see Gottman et al., 1997). These variables were grouped on both conceptual and empirical grounds. Parent-child interaction was coded continuously in real time with coding synchronized to the original parent-child interaction. The total number of times each variable occurred in the 10-min parent-child interaction session was recorded, and totals across time were calculated for each parent-child interaction variable. The KECS and KACS systems were used by independent observers, and mothers and fathers were coded by independent observers. Reliability was calculated across coders using a correlation coefficient. Because total number of seconds within each parent code was the variable computed and used in all data analyses, the appropriate reliability statistic is a correlation coefficient rather than Cohen's kappa or percent agreement. Interrater reliability was computed on 50% of the sample. For the KECS, the mean correlation was .96 (range = .86-.99), and for the KACS the mean correlation was .93 (range = .84-.97). All parent-child interaction coding was done by undergraduate student observers.

Peer interaction. The Rapid Macro (R-MACRO) peer interaction coding system (Gottman, 1983) was used to code children's coordination of play. Totals for individual codes were calculated by summing the frequency of each code's occurrence across all 3-min periods. Reliability was calculated across undergraduate coders using a correlation coefficient, and was based on 25% of the sample. The mean correlation was .72 (range = .60-.88). Only those variables that showed stability over time were used as child outcomes measures (see Time 2 assessment of peer interaction hereafter).

Child regulatory physiology. Two measures of vagal tone were computed: baseline vagal tone and suppression of vagal tone. An estimate of the child's baseline vagal tone (BASE VAGAL) was obtained when the child was listening to the introduction to and subsequent segment of a neutral film clip (clip about fly fishing). The child's ability to suppress vagal tone (DELTA VAGAL) is estimated as a difference between this estimate of basal vagal tone and the child's vagal tone during an exciting film clip taken from *The Wizard of Oz* (the scene in which the flying monkeys kidnap Dorothy), a clip designed to elicit a strong emotional response. Estimates of basal vagal tone and suppression of vagal tone are based on 3-min recordings of cardiac interbeat interval. Vagal tone was computed using spectral time-series analysis as the amount of variance in the interbeat interval spectrum that was within the child's respiratory range. Because children in this age group breathe at a rate of 18 to 27 times per minute (Vaughan & McKay, 1975), vagal tone was estimated as the sum of the power densities within the .33-to-.42 Hz band of the IBI spectrum. The Gottman-Williams algorithm for conducting frequency-based time-series analysis was used to compute the vagal tone statistic (Williams & Gottman, 1982). Least-squares linear regression was used to detrend IBI data.

Time 2 Assessments

Overview. Families were recontacted 3 years later for follow-up assessments of child and marital outcomes. Children were, on average, 8 years old ($M = 96.9$ months; range = 82–110). Ninety-five percent (53 of 56) of the initial sample and 86% (48 of 56) of the children's teachers at follow-up agreed to participate in Time 2 assessments.

Time 2 marital satisfaction and marital dissolution. Marital satisfaction was assessed using the Locke-Wallace Inventory (Locke & Wallace, 1959). Assessments of marital dissolution were conducted using telephone interviews. Each spouse was individually interviewed and asked five questions about whether the couple had separated or divorced during the intervening 3-year period, had any serious considerations of separation or divorce and the number of months they had been separated or divorced (Gottman, 1994). Endorsed items received a score of 1, except for number of months separated or divorced, which was coded according to subject responses. Twenty-one percent of the sample ($n = 12$) were separated or divorced at Time 2, and of those, 96.2% were separated or divorced for 8 months or less.

Ratings of children's behavior problems. Mothers completed the Parent Report Form of the Child Behavior Checklist (CBCL-P; Achenbach & Edelbrock, 1986). Teachers completed the Child Adaptive Behavior Inventory (CABI; Cowan & Cowan, 1990), which is a measure that contains sub-scales that are less pathological in nature than the Teacher's Report Form of the CBCL (CBCL-T) and controls for teacher-rating bias by having teachers complete the scale on all same-sexed children in the classroom and deriving z scores for the target child. The CABI has good internal consistency (average $\alpha = .81$; range = .66–.90) and predictive validity (Cowan & Cowan, 1987). The CABI scales include Hyperactivity, Antisocial Behavior, Negative Engagement With Peers, Hostility, Fairness/Responsibility (keyed negatively), Calm Response to Challenge (keyed negatively), Kindness/Empathy (keyed negatively), Introversiveness, Depression, Victim/Rejected, Tension, and Extraversiveness (keyed negatively).

Peer interaction. Best-friend dyadic interaction was again assessed using the same procedure utilized at Time 1, and data were coded using the R-MACRO coding system. For purposes of data reduction, we adopted a conservative strategy in examining the child's peer play. Because the same peer interaction procedure had been used at age 5 (see Gottman & Katz, 1989), we correlated the R-MACRO scales at age 5 and at age 8 to assess their stability. Three negative codes were stable: Negative Parallel Play, Noncompliant, and Crying ($r_s = .32-.49$). They were summed to form a code called *Observed Negative Affect*, which had a developmental stability correlation of 0.51 ($p < .001$).

Teacher ratings of peer aggression. Teachers indicated the degree to which the child uses overt aggression with peers using the Dodge Peer Aggression Scale (DPAS; Dodge, 1982).

Child academic achievement. Children were individually administered the Peabody Individual Achievement Test as a measure of academic achievement (see, e.g., Costenbader & Adams, 1991). They were administered the mathematics, reading recognition, reading comprehension, and general information tests.

Emotion Regulation Questionnaire (ERQ). Mothers filled out a newly developed 45-item questionnaire (Katz & Gottman, 1986a, available from the authors) about the degree to which their child requires external regulation of emotion. This questionnaire includes both

items that reflect instances when the parent needs to “down-regulate” the child (i.e., help the child soothe themselves from an intense negative emotional state), and “up-regulate” the child (i.e., engage a disinterested or bored child in an activity). The alpha coefficient for the total scale was .89; the Down Regulation subscale had an alpha of .74.

Differential Emotions Scale (DES). Mothers completed the 36-item DES by checking the frequency with which they observed their child display positive and negative emotions in the past week (Izard, 1981). The total number of positive and the total number of negative emotions for the week were computed.

Child physical health. Child illness was assessed by parental report using a version of the Rand Corporation Health Insurance Study measures (see Gottman & Katz, 1989). Five items regarding the child’s general health were summed ($\alpha = 0.82$; for specific items, see Gottman et al., 1997).

Summary of Variables

Child outcome variables. In the interest of data reduction, we created six child outcome variables. Individual indices of each outcome variable were selected based on conceptual and empirical considerations (e.g., high intercorrelations; stability across time). The outcome variables were:

1. *Child achievement* was the sum of mathematics and reading comprehension scores.
2. *Child’s emotion regulation abilities* were assessed using the Down Regulation subscale of the ERQ.
3. *Child behavior problems* was the sum of mother’s CBCL total score, teacher’s total CABI score, and mother’s report on the DES, summing all negative moods at age 8.
4. *Child’s peer relations* was the sum of the CABI Negative Peer scale, the CABI Antisocial scale, and the DPAS.
5. *Observed negative affect*, which was the sum of the R-MACRO codes Negative Parallel Play, Noncompliant, and Crying.
6. *Child illness*.

Potential buffers. As potential buffers, we selected:

1. *Parental meta-emotion philosophy*, which were the codes of Awareness and Coaching.
2. *Parental warmth*, computed as the sum of warmth minus the sum of coldness.
3. *Derogation*, computed as the sum of derisive humor, intrusiveness, and criticism for both par-

ents.

4. *Scaffolding/praising*, computed as the sum of parental affection, engagement, positive structuring, responsiveness across parents, and mother’s enthusiasm.
5. *Basal vagal tone*, computed as the amount of power in the respiratory band of the IBI spectrum when the child was listening to a neutral story.
6. *Suppression of vagal tone*, computed as a difference between the estimate of basal vagal tone and the child’s vagal tone during a film clip designed to elicit strong emotion.
7. *Child intelligence*.

See Table 1 for correlations among measures.

Results

Selecting a Risk Variable: The Marital Distress and Marital Dissolution Index

Our first task was to identify an index of marital conflict and dissolution that could function as a risk factor. Such a risk variable ought to satisfy two criteria: it ought to be predictive of divorce, and it ought to be associated with negative child outcomes.

The Cascade Toward Marital Dissolution

We identified a cascade model of variables predictive of marital dissolution. Figure 1 summarizes the cascade toward marital dissolution. This model fit the data, with $\chi^2(3) = 4.63, p = .20, BBN = .998$. There is a strong correlation among these variables, compatible with the idea that serious considerations of dissolution are precursors of actual separation, and that separation (operationalized as the number of months separated) is a precursor of divorce. These results are consistent with other research (Booth & White, 1980). Table 2 summarizes correlations of child outcome variables with variables indexing actual marital dissolution. Each variable indexing marital dissolution was related to at least one child outcome variable. Negative peer ratings and child physical illness were unrelated to dissolution.

Correlations Between Processes That Predict Marital Dissolution and Child Outcomes

Table 3 summarizes the correlations of the child outcome variables with a small set of specific affect marital interaction behaviors that are known to be predictive of marital dissolution (Gottman, 1994): disgust,

Table 1. Correlations Among and Between Buffering Factors and Child Outcomes

Variables	Potential Buffers										Child Outcome Variables					
	Aware	Coach	Scaff	Derog	Warmth	BasVag	DelVag	Child IQ	NegAff	Behave	Peer	Achiev	Illness	Regul		
Aware	—															
Coach	.61****	—														
Scaff	.26*	.26*	—													
Derog	-.45****	-.36****	-.50****	—												
Warmth	.02	-.07	-.21	.12	—											
BasVag	.15	.41**	.15	-.28**	-.05	—										
DelVag	.08	.15	.24*	-.24*	.09	.64****	—									
Child IQ	.06	.01	.14	-.38**	-.13	.25**	.16	—								
NegAff	-.29**	-.04	-.17	.47****	.05	-.33****	-.43****	-.18	—							
Behave	.42****	.17	-.34**	.37**	-.06	-.11	-.31*	-.10	.32**	—						
Peer	.22	.18	-.24	.39****	-.01	.11	-.08	-.16	.28*	.73****	—					
Achiev	.16	.18	.43****	-.37****	-.07	.17	.25	.55****	-.29**	-.30*	-.15	—				
Illness	-.44****	-.55****	-.04	.22	.13	-.27*	.04	-.07	.13	.13	-.33*	-.29*	—			
Regul	-.05	.03	-.37****	.30*	-.01	-.34****	-.52****	-.19*	.44****	.45****	-.14	-.11	-.09	—		

Note: Aware = Awareness of Emotion (meta-emotion philosophy); Coach = Coaching of Emotion (meta-emotion philosophy); Scaff = Scaffolding/Praising; Derog = Derogatory Parenting; Warmth = Parental Warmth; BasVag = Basal Vagal Tone; DelVag = Delta Vagal Tone; Child IQ = Child Intelligence; NegAff = observed negative affect with peer; Behave = child behavior problems; Peer = teacher ratings of child peer relations; Achiev = academic achievement; Illness = child illness; Regul = child regulation abilities. * p < .10. ** p < .05. *** p < .01. **** p < .001.

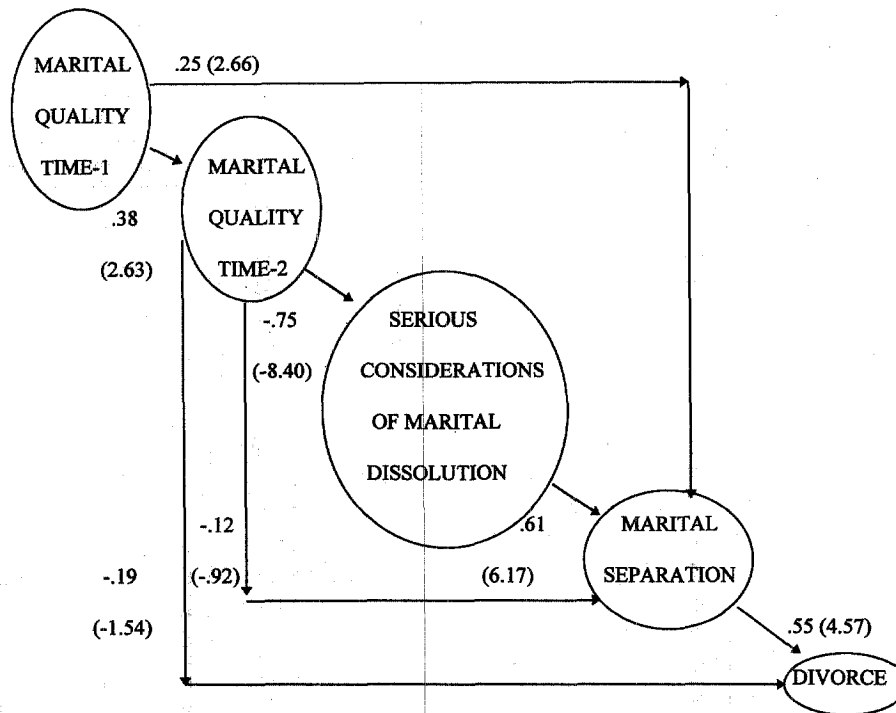


Figure 1. Cascade toward marital dissolution.

Table 2. Correlation of the Marital Dissolution and Child Outcome Variables

Variable	Who Seriously Considered Dissolving Marriage?		Months Separated
	Husband	Wife	
Negative Affect (Observed)	.28*	.25*	.10
Child Behavior Problems	.04	.21	.28**
Peer	-.06	.13	.00
Child Illness	-.14	-.04	.23
Child Achievement	-.21	-.25**	-.30**
Child Regulation	.33**	.32**	.26*

* $p = .07$. ** $p = .05$.

contempt, and belligerence. The conclusion one draws is the power of the wife's affect, particularly her contempt toward her husband to predict child outcomes 3 years later. Given the importance of the wife's contempt and disgust in predicting negative child outcomes, previous research indicating that wife's contempt and disgust are lead indicators of marital dissolution (Gottman, 1994), and the cascade model indicating the number of months separated is the most proximal variable predicting divorce, we decided to select the sum of the number of months the couple had separated in the 3 years and the wife's Time 1 contempt and disgust toward her husband as our marital risk variable. This risk variable is thus a combination of indices of marital hostility and indices of actual marital dissolution.

Buffering Effects

Rutter (1990) suggested a stringent set of criteria for a variable to qualify as a buffer. First, the buffering needs to take place in the presence of the risk factor; hence, it must first be shown that reduced risk is not the result of less exposure to the risk factor. A set of *t* tests checking whether the buffering variables showed significant differences in terms of the level of the marital risk variable showed no significant effects. There were no differences in marital risk in families that were high or low in warmth, scaffolding/praising, derogation, awareness of emotion, coaching of emotion, basal vagal tone, suppression of vagal tone, and child intelligence.

Second, in Rutter's analyses, one splits on potential buffers and then assesses the extent to which the marital risk variable correlates with child outcomes with buffer high or low. For a variable to qualify as a buffer, there need to be significant reductions in these correlations with the buffer high, as compared to when it is low. For this buffering analyses, we computed a median split on each of the potential buffers and then correlated the marital risk and child outcome variables separately for groups high and low on the buffering factor. Fisher *z* scores comparing the two correlations were then computed. Because hypotheses were directional, one-tailed tests were used to test the significance of the Fisher *z* scores. Note that a large number of univariate tests were conducted. Given the pressing need for interventions to help children in maritally distressed homes, we took a Bayesian approach by considering the relative costs of Type I versus Type II error (Hartigan, 1983). Because

Table 3. Correlation of the Marital Interaction Variables Known to Be Predictive of Marital Dissolution and Child Outcome Variables

Variable	Husband			Wife		
	Disgust	Contempt	Belligerence	Disgust	Contempt	Belligerence
Negative Affect	.00	-.02	.00	-.06	.52***	-.03
Child Behavior Problems	-.12	.02	.05	-.07	.46**	.26
Peer	-.06	.13	.08	-.11	.41**	.23
Child Illness	.41**	-.04	.16	.52***	.15	.17
Child Achievement	.01	-.01	-.22	-.15	-.38**	-.21
Child Regulation	-.07	-.08	.12	-.14	.20	.04

** $p < .01$. *** $p < .001$.

these data may lead to the development of interventions for families experiencing marital distress, there is a high cost of Type II error in potentially limiting the development of such intervention approaches relative to the cost of Type I error. As such, we chose to simply report the findings without adjusting alpha levels for the number of tests conducted. Of course, caution is necessary in interpreting findings, including those that are consistent with a priori hypotheses, and these results await replication.

Table 4 summarizes the results. Parental warmth buffered children against negative outcomes in academic achievement and emotion regulation ability. In face of marital conflict, parental scaffolding/praising, nonderogatory parenting, parental awareness and coaching of the child's emotions, basal vagal tone, vagal suppression, and child intelligence buffered children against negative outcomes on the child's negative affect with peers (observed) and academic achievement. Scaffolding/praising also functioned to buffer children against child behavior problems and teacher ratings of child's negativity with peers. Basal vagal tone and vagal suppression both buffered children from child behavior problems, whereas vagal suppression and low levels of parental derogation buffered children from physical illness. Basal vagal tone also buffered children from negative outcomes in terms of emotion dysregulation.

Complete or Partial Buffers? Regression Analyses

To examine whether these buffering variables act as complete or partial buffers, we performed a series of hierarchical regression analyses in which we first stepped the buffers into a regression attempting to predict child outcomes and then stepped in the marital risk variable (see Table 5). If the buffering variables are complete buffers, we would expect that marital conflict and dissolution would not account for any additional variance in predicting the child outcome; hence, a non-significant F ratio for change indicates complete buffering. Buffers were entered in groups to minimize the number of analyses. All buffers indexing the quality of

parent-child interaction were grouped together, as were variables indexing meta-emotion philosophy (awareness and coaching), regulatory physiology (basal vagal tone and vagal suppression) and child intelligence.

The buffering analyses in Table 5 indicate that there are variables that can buffer the child completely in face of high levels of marital conflict. The three parenting variables, warmth, scaffolding/praise, and low-derogation parenting provide a complete buffer from negative outcomes on academic achievement, emotional regulation, teacher ratings of negative peer relations, and child physical illness. Meta-emotion variables provide complete buffers for emotional regulation, teacher ratings of negative peer relations, observed negative affect with a peer, and child physical illness. The vagal tone variables provide complete buffers against negative outcomes in emotional regulation and child physical illness. Child intelligence did not provide complete buffering on any of the negative outcomes we measured, although effects are only marginally significant for child illness and child regulation abilities. In addition, the only variable that is not completely buffered is ratings of child behavior problems; marital risk was still associated with child behavior problems as rated by mother and teacher. To examine whether child behavior problems persist when all the buffers are operative, a hierarchical regression analysis was performed in which all the buffers were stepped into the equation first, followed by the marital risk variable. Marital risk still accounted for variance in child behavior problems, $F(8, 21) = 4.95, p = .04$. Thus, even when all the buffers are taken together, the one child outcome that is not completely buffered in face of marital conflict and dissolution is the child's behavior problems.

Discussion

In this article, we present an optimistic picture that children can be buffered in face of high levels of marital conflict. We have identified several interpersonal and intrapersonal factors that moderate the negative outcomes associated with marital conflict and dissolution. The quality of parenting, parental meta-emotion phi-

Table 4. Buffer Analyses: Splitting on the Buffering Variables

	NEGAFF	BEHAVE	PEER	ILLNESS	ACHIEV	REGUL
Parental Warmth						
Low	-.52*	.66**	.56	.29	-.60**	.49
High	.33	.40	.26	.27	-.14	-.03
z	.72	.96	1.07	.07	1.70*	1.85*
Scaffolding/Praising						
Low	.57**	.70**	.56**	.36	-.52**	.47*
High	.03	.20	.03	.30	.11	.02
z	2.01*	1.84*	1.85*	.21	2.24*	1.63
Derogatory Parenting						
Not Negative	-.09	.63**	.24	-.11	-.03	.17
Negative	.58***	.60**	.49**	.42*	-.52**	.44*
z	2.47**	.13	.89	1.74*	-1.99*	-1.01
Awareness						
Low	.43*	.41	.58**	.25	-.59**	.31
High	-.25	.51*	.10	.01	.04	.12
z	2.23*	.34	1.63	.74	1.98*	.65
Coaching						
Low	.51**	.55**	.47**	.26	-.61**	.31
High	-.19	.50*	.26	-.19	.11	.37
z	2.31*	.19	.73	1.41	2.60**	-.22
Basal Vagal Tone						
Low	.59***	.73***	.42*	.43*	-.61***	.42*
High	-.19	.31	.32	-.11	-.17	-.07
z	2.84**	1.67*	.36	1.80*	-2.88**	1.73*
Suppression of Vagal Tone						
Low	.51**	.74**	.45*	.37*	-.60***	.39*
High	-.06	.13	.27	.10	-.15	.01
z	2.01*	2.25*	.63	.90	1.75*	1.34
Intelligence						
Low	.49**	.49**	.37*	.34*	-.56**	.34*
High	-.01	.57**	.40*	.10	-.01	.12
z	1.77*	-.32	-.13	.83	2.11**	.78

Note: NEGAFF = observed negative affect with peer; BEHAVE = child behavior problems; PEER = teacher ratings of child peer relations; ACHIEV = academic achievement; ILLNESS = child illness; REGUL = child regulation abilities.
p* < .05. *p* < .01. ****p* < .001.

Table 5. How Complete Are the Effects of Buffering?

Parenting Buffers	Warmth Scaffolding/Praise Derogation	Meta-Emotion: Awareness and Coaching
	NEGAFF	<i>F</i> (4, 39) = 5.88**
BEHAVE	<i>F</i> (4, 28) = 5.18**	<i>F</i> (3, 31) = 8.83***
PEER	<i>F</i> (4, 35) = 3.22, <i>ns</i>	<i>F</i> (3, 37) = 3.02, <i>ns</i>
ILLNESS	<i>F</i> (4, 37) = 3.11, <i>ns</i>	<i>F</i> (3, 39) = 0.06, <i>ns</i>
ACHIEV	<i>F</i> (4, 39) = 0.08, <i>ns</i>	<i>F</i> (3, 42) = 5.40**
REGUL	<i>F</i> (4, 41) = 1.88, <i>ns</i>	<i>F</i> (3, 47) = 1.79, <i>ns</i>
Intraindividual Buffers	Regulatory Psychology	Intelligence
	NEGAFF	<i>F</i> (3, 44) = 7.26***
BEHAVE	<i>F</i> (3, 33) = 8.34***	<i>F</i> (2, 35) = 12.17***
PEER	<i>F</i> (3, 39) = 5.62**	<i>F</i> (2, 42) = 6.92**
ILLNESS	<i>F</i> (3, 41) = 3.26, <i>ns</i>	<i>F</i> (2, 44) = 3.09*
ACHIEV	<i>F</i> (3, 44) = 7.15***	<i>F</i> (2, 47) = 10.43***
REGUL	<i>F</i> (3, 46) = 1.51, <i>ns</i>	<i>F</i> (2, 49) = 3.58*

Note: NEGAFF = observed negative affect with peer; BEHAVE = child behavior problems; PEER = teacher ratings of child peer relations; ACHIEV = academic achievement; ILLNESS = child illness; REGUL = child regulation abilities.
p* < .10. *p* < .05. ****p* < .01.

losophy, child's regulatory physiology, and child intelligence all buffered children from the negative outcomes characteristically exhibited by children in maritally distressed homes. Moreover, buffering occurred in both cognitive and socioemotional domains. For each index of child outcome included in this study, there was at least one protective mechanism that acted to ameliorate children's adjustment. Given the broad range of outcomes measured, many different aspects of children's adjustment can potentially be improved with changes in the quality of parenting, parental meta-emotion philosophy, or children's vagal tone.

When we assessed the extent of the buffering, for many of the child outcomes we studied, parenting, meta-emotion philosophy, and regulatory physiology were complete buffers against marital conflict. The sole exception was for ratings of child behavior problems; there were no variables that completely buffered children faced with high levels of marital conflict and dissolution from showing externalizing and internalizing behavior problems. This indicates that marital conflict continues to be associated with detrimental outcomes despite the presence of buffering factors. Still, even partial buffers help moderate the negative outcomes associated with marital conflict. Parents who are warm, scaffolding/praising, have an emotion coaching meta-emotion philosophy, and are able to inhibit derogatory remarks toward their children have children who are functioning at a relatively higher level than those parents who do not display these skills, despite similar levels of marital conflict. Similarly, the ability to regulate physiological arousal and child intelligence also function as protective mechanisms in face of strong interparental conflict.

Consistent with previous research on children's resilience to adversity, individual child characteristics reduced children's vulnerability to the negative outcomes associated with marital conflict. Children's intelligence partially buffered them from negative outcomes in peer relations and academic achievement. Intraindividual characteristics may also interact with qualities of the parent-child relationship in maximizing resilience. Porges and Doussard-Roosevelt (in press) argue that vagal tone represents a physiological substrate of a temperamental characteristic. Evidence of considerable stability in vagal tone from 9 to 36 months of age (Porges, Doussard-Roosevelt, Portales, & Suess, 1994) suggests that vagal tone may be measuring a lasting child characteristic. However, the degree to which this physiological substrate represents genetic influences or an interaction between genetic and environmental factors remains unclear. Possible environmental influences may range from prenatal intrauterine conditions (e.g., Denenberg & Rosenberg, 1967) to social interactions with significant others. Our data suggest that child's vagal tone may be related to qualities of the parent-child relationship

(see Table 1). Children's basal vagal tone was associated with parental coaching of emotion, low levels of parental derogation, and vagal suppression was marginally related to scaffolding/praising. Children with high vagal tone may be more flexible and responsive to parental input, and may therefore elicit more positive and less negative behavior from their parents. These children may also be better able to make use of parental coaching attempts, which in turn may reinforce parental coaching and create a dynamic interaction between parent and child that increases the likelihood of resilience in face of marital conflict. Alternatively, the quality of parent-child interactions may shape the child's physiological reactivity to environmental events. Through parental coaching and a climate of positive interaction, parents may teach children how to regulate their emotions by helping them gain control over their physiological reactivity to emotional events.

These hypotheses about potential buffers must be contextualized by noting that they are derived from correlational data. There is no substitute for an experiment or clinical trial in which we test whether a buffer actually protects children at risk. However, given the high levels of divorce in the United States today and the apparent ubiquity of marital conflict, these data offer some hope for the many families experiencing marital conflict and distress. They also provide specific direction for the development of intervention strategies that can help children in families experiencing marital discord and marital dissolution. Multiple avenues of intervention have been identified, both aimed at changing parental behavior as well as the individual coping skills of the child. Interventions focused on increasing parental awareness and ability to coach their children's emotions, and helping to decrease rejecting parenting and increase parental scaffolding/praising and warmth may help reduce the adjustment problems in children whose parents' marriages are ailing. Intervention strategies focusing on specific parenting behaviors have proven effective in helping children with behavior problems, because parents can learn to decrease coercive behavior and increase positive discipline and interactions with their children (e.g., Forehand & McMahon, 1981; Webster-Stratton, 1982). At this early juncture in our research on meta-emotion, it is unclear whether changes to parental meta-emotion philosophy are possible, and whether parents can be taught to be more aware of and coach their children during emotional events. Given the powerful effects of parental meta-emotion in buffering children from marital conflict, attempts to teach parents better ways of handling their children's emotions may be an important goal.

Interventions that focus on improving the child's ability to regulate physiological arousal may also be effective ways to buffer children from marital conflict. Such interventions must necessarily be founded on

strong understanding of the biological mechanisms that underlie variability in vagal tone. Porges (1995) argued that the source nucleus underlying variability in the respiratory sinus arrhythmia is the nucleus ambiguus (NA) portion of the brain. The NA has special visceral efferents that innervate striate muscle (e.g., facial muscles necessary for facial expression of emotion), and communicates with the source nuclei that control facial muscles and the muscles of mastication and communication. Given the linkage between respiratory activity and NA output, it is possible that respiratory exercises might influence or modify the output of pathways that regulate not only heart rate, but facial expression and vocalization. If children can be taught to use respiratory exercises effectively during times of marital conflict, accompanying increases in vagal tone may help reduce the relation between interparental conflict and negative child outcomes. Respiratory exercises that minimize respiratory variability, such as those used during relaxation training or meditation, may prove effective in this regard. Whether these exercises would result in permanent (i.e., traitlike) or only temporary (i.e., statelike) changes in vagal tone remains to be seen.

Several limitations of this study are worth noting. Given the small sample size, the relatively large number of variables, and the limited racial diversity of the sample, replication is clearly needed to see whether findings will generalize. Interrater reliability for some observational codes (i.e., warmth), although acceptable are lower than desirable, also pointing to the need for replication. We have now completed a replication study on a Seattle-based sample to help address these limitations. With the replication sample, we also hope to examine whether child or parent gender moderate the role of protective factors.

Also problematic is that many of the child outcome variables were not measured at Time 1 since either the variable was not appropriate for measurement at ages 4 to 5 (e.g., academic achievement) or because a large proportion of the children in the study were not attending preschool or daycare (e.g., teacher ratings of behavior problems). Given some expected level of stability in these behaviors, it is possible that results obtained are due to stability in the target behavior rather than to the prediction of child outcomes over time. Note that this caveat simply questions whether our buffering variables function to buffer children over time, but does not detract from the finding that our parenting and regulatory physiology variables function to buffer children from marital conflict and dissolution.

In sum, we have begun to identify some interpersonal and intraindividual factors that can buffer children from marital conflict and dissolution. Although these data require replication, they provide some preliminary direction for intervention for the many children living in families with high levels of interparental conflict.

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