

St. Lawrence University Interlibrary



ILLiad TN: 113740

Borrower: ORZ

Lending String: *XLM,NNM,UPP,ORU,XII

Patron: Friend, Douglas

Journal Title: Cognition & emotion.

Volume: 9 **Issue:** 2

Month/Year: 1995**Pages:** 229-264

Article Author:

Article Title: Hooven, Carole; Parental meta-emotion structure predicts family and child outcomes

Imprint: Hove, East Sussex ; L. Erlbaum Associate

ILL Number: 50348163



Call #: SCIENCE LIB Periodicals
BF309 .C617

Location:

ARIEL

Charge

Maxcost: \$20.00IFM

Shipping Address:

Library - Interlibrary Loan
Portland State University
951 SW Hall Avenue
Portland, OR 97201 USA

Fax: (503) 725-4527

Ariel: 131.252.35.66

Parental Meta-emotion Structure Predicts Family and Child Outcomes

Carole Hooven, John Mordechai Gottman, and
Lynn Fainsilber Katz

University of Washington, USA

Fifty-six families with a preschool child whose parents varied widely in parental marital satisfaction were studied at two time points: at time-1 when the children were 5 years old and again at time-2 when the children were 8 years old. At time-1 each parent was separately interviewed about their "meta-emotion structure", that is, their feelings about their own emotions, and their attitudes, and responses to their children's anger and sadness. Their behaviour during this interview was coded with a meta-emotion coding system. Two meta-emotion variables were studied for each parent, awareness of the parent's own sadness, and parental "coaching" of the child's anger. We termed the high end of these variables an "emotion coaching" (EC) meta-emotion structure. Meta-emotion structure was found to relate to time-1 marital and parent-child interaction. EC-type parents had marriages that were less hostile and they were less negative and more positive during parent-child interaction. Their children showed less evidence of physiological stress, greater ability to focus attention, and had less negative play with their best friends. At time-2 those children showed higher academic achievement in mathematics and reading had fewer behaviour problems, and were physically healthier than non-EC parents. The relations between child outcome and parental meta-emotion structure were not explained by social class variables, emotional expressiveness, or the greater happiness and stability of parents with an EC-type meta-emotion structure.

INTRODUCTION

For the past 20 years our laboratory has been studying the social interaction processes related to marital satisfaction (Gottman, 1979), to longitudinal change in marital satisfaction (Gottman & Krokoff, 1989), and, more

Requests for reprints should be sent to John Mordechai Gottman, Department of Psychology, Mailstop NI-25, University of Washington, Seattle, Washington 98195, USA.

recently, to marital stability (Gottman, 1994; Gottman & Levenson, 1992). For the past decade we have been studying the relation between the parents' marriage and the emotional and social development of children. We have suggested that this relation is mediated through the development of emotion-regulation abilities in the child (Gottman & Fainsilber, 1989). By emotion-regulation abilities we meant the ability to inhibit inappropriate negativity, the ability to self-soothe, and the ability to focus attention in the service of an external goal.

In pilot work for our first study of the effects of the parents' marriage on children, we discovered a great variety in the experiences, philosophies, and attitudes that parents had about their own emotions and the emotions of their children. One pair of parents said that they viewed anger as "from the devil", and that they would not permit themselves or their children to express anger. A similar negative view toward anger was echoed by other parents who focused on destructive or explosive qualities of anger. There were other parents who felt that anger was natural, but ignored the experience of anger in their children. Still other parents encouraged the expression and exploration of anger. There was similar variety with respect to sadness. Some parents minimised sadness in themselves and in their children, saying such things as, "I can't afford to be sad", "What does a kid have to be sad about?" or "Sad is for the big things, like when your pet dies". Other parents thought that emotions like sadness in themselves and in their children were important and viewed themselves as someone who taught their child about the world of emotion, as a kind of emotion coach. In our pilot work there also appeared to be gender differences: Fathers seemed less likely to be aware of their own sadness or to assist when their children were sad; fathers who were oriented toward emotion seemed more interested in their children's anger than in their sadness. Mothers seemed to be more concerned with their children's sadness than fathers. These were our initial impressions.

To explore this area of family life, we designed a "meta-emotion interview" (Katz & Gottman, 1986). Each parent was separately interviewed about their own experience of sadness and anger, their philosophy of emotional expression and control, and their attitudes and behaviour about their children's anger and sadness. Their behaviour during this interview was audio-taped and later coded with the Meta-emotion Coding System (Hooven, 1994). Similar concepts have been discussed by Hochschild (1983) and by Salovey and Mayer (1990) in their discussion of emotional intelligence, and by Mayer and Gaschke (1988) in their state and trait meta-mood scales.

We decided that we were studying parents' *feelings about feelings*, which we called their *meta-emotion structure*. The notion we had in mind parallels meta-cognition, which refers to the executive functions of

cognition (Allen & Armour, 1993; Bvinelli, 1993; Flavell, 1979; Fodor, 1992; Olson & Astington, 1993). We will use the term "meta-emotion structure" to refer broadly to similar emotion-based executive functions of emotion. What we mean by this construct, specifically, is the parents' awareness of specific emotions, their awareness and acceptance of these emotions in their child, and their coaching of the emotion in their child. Coaching refers to talking to the child about the emotion, the conditions that elicited it, and strategies for coping with it. If this construct is to be useful, it ought to relate to how the family actually functions, and our goal is to test this notion in this paper.

Our informal review of popular parenting guides revealed that the overwhelming majority of these parenting guides are based on obtaining and maintaining child discipline. However, a small set of parenting guides focuses on children's emotions and on how to make an emotional connection with a child that is not critical and contemptuous but accepting. These kinds of parenting guides can be traced to the influence of one child psychologist, Haim Ginott (Ginott, 1959, 1971, 1975). As we began coding our data, we realised that the high end of our meta-emotion variables acceptance and coaching were similar, but not identical, to the views initially expressed by Ginott. The major difference between our data and Ginott's views is that we think that Ginott placed less emphasis on coaching than our parents described in the meta-emotion interview. We will use the terms "emotion-coaching" or EC parents and "EC-type" meta-emotion structure to describe parents (and a style) high in awareness of emotion and high in coaching their children and we note that this style is somewhat similar to that advocated by Ginott and his followers (e.g. Faber & Mazlich, 1975, 1980; Levant & Kelly, 1989). Although it may be an oversimplification, by and large, research in developmental psychology on the effects of parenting has focused on parental effect and discipline, selecting variables such as warmth, control, authoritarian or authoritative styles, etc. (for a review see Maccoby & Martin, 1983); hence, the focus of research on parenting has been on the parents' affect, but not on their affect about the child's affect. To our knowledge there has been no research directly addressed to the prospective longitudinal effects of a Ginott or EC meta-emotion structure on children and families. As in research on meta-cognition, because our coding is based on an interview, it is important to develop an accuracy criterion. In our investigation, the coding of parent-child and marital interaction will serve as a first approximation to this accuracy criterion.

How might these variables be related to child and family outcomes? We offer the following theory. We propose that having an EC-type meta-emotion structure is related to the parents' actual social skill in emotion regulation, indexed by the management of negative affect in parenting and

in the marriage. We also expect that this skill will be reflected in our prospective longitudinal design in greater marital satisfaction and greater marital stability. We also propose that part of the role of an EC meta-emotion structure is a superior ability in the regulation of emotion in the service of the management of stress (Fox, 1982, 1989a,b). Because of the connection between the management of stress and physical health (e.g. see Barnett, Biener, & Baruch, 1987), we expect this emotion-regulation ability to be reflected longitudinally in higher parental physical health. We will also explore the hypothesis that this skill will also be reflected in the parents' philosophy of their marriage, as measured by our Oral History Interview (Buehlman, Gottman, & Katz, 1992). We predict that the parents' emotion-regulation abilities will relate to similar abilities in the child. We expect (as part of our search for an accuracy criterion) that this EC-type meta-emotion structure will be related to more positive and less negative parent-child interaction.

We assume that more positive and less negative parent-child interaction will be reflected in lower levels of child stress as displayed by the child's physiology, particularly a lower baseline heart rate, a higher child vagal tone, which is an index of the tonus of the parasympathetic branch of the autonomic nervous system (Izard, Porges, Simons, & Haynes, 1991; Porges, 1984), and lower levels of stress-related hormones (both catecholamines and cortisol) in a 24-hour urine sample. We expect that the meta-emotion variables will be related to child health. We posit that through the mechanism of lower levels of physiological stress in the child, the child will be better at focusing attention and self-soothing. Toward this end, we will examine both the child's physiological responses and the child's performance on the Stroop Interference Test, which assesses attentional competence and the ability to inhibit impulsive responses (e.g. see Lufi, Cohen, & Parish, 1990) and attention deficit disorder (e.g. see Grodzinsky & Diamond, 1992). We also propose that there will be a relationship between having EC-parents and the child's developing social competence with other children. We expect that the child's peer social competence will be indexed by the inhibition of negative affect (Guralnick, 1981), particularly aggression, whining, oppositional behaviour, fighting requiring parental intervention, sadness, and anxiety with peers. We propose that having EC-parents will buffer the child against the development of child psychopathology. In this study we examine the correlates of the parents' meta-emotions with the longitudinal development of child behaviour problems on the Achenbach scale (Achenbach & Edelbrock, 1986). Finally, we hypothesise that having EC-parents will predict the development of superior *cognitive* skills of the child (through superior vagal tone and greater ability to focus attention). Because we think that this superior cognitive performance is mediated by the parents' meta-emotion structure,

we predict that the relationship between the parents' meta-emotion structure and the child's achievement at age 8 would hold over and above preschool measures of intelligence. Thus, we predict that two preschool children of equal intelligence will differ, in part, in their ultimate achievement in school as a function of the parents' meta-emotion structure. In this paper we examine the relationship between the parents' meta-emotion when the child is of preschool age and the child's subsequent academic achievement at age 8.

We recognise that this correlational study cannot *test* the theory we have proposed; that is, we are quite aware of the fact that correlation does not imply causation. However, we expect the correlational data to provide some insight into the potential validity of this theory and to suggest some directions for future research. We recognise that at this point in our research we are learning about what we are actually measuring with our meta-emotion variables. We will discuss some rival hypotheses about what we are actually measuring; in particular, we will discuss whether our variables are related to the parents' education and income, marital satisfaction and stability, and emotional expressiveness.

METHOD

Subjects

Fifty-six normal families were recruited from the Champaign-Urbana Community via newspaper advertisement for this study; 32 families had a male and 24 a female 4- to 5-year-old child. We employed a 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. Half of the couples scored above 100, the Locke-Wallace mean in many studies, and half scored below. The mean marital satisfaction score in this sample was 111.1 (SD = 29.6). Three years later 53 of the 56 families were re-contacted (95% of the original sample).

Procedures

Overview. Procedures consisted of laboratory sessions and home interviews for both parents and children. A combination of naturalistic interaction, highly structured tasks, and semi-structured interviews were used. Home and laboratory visits consisted of two home visits, one with the marital couple and one with the child, and three laboratory visits, one with the couple only, one with the couple and their 4- to 5-year-old child, and one with the child alone. Time-1 assessments were conducted when the

children were 4–5 years old, and Time-2 assessments were conducted 3 years later, when the children were in the early elementary school years.

Time-1 Assessments

Meta-emotion Interview

A semi-structured interview was conducted with each parent separately about their own experience of sadness and anger, their philosophy of emotional expression and control, and their attitudes and responses to their children's anger and sadness. Interview questions were quite general, asking what it was like and how they felt about experiencing a particular emotion, whether their experience was shared with others and what they specifically did and how they felt when their child experienced this emotion. The interviewer probed if the parent did not address those aspects of the emotion experiences. If parents' responses were unclear or incomplete, they were asked to elucidate. The parent's behaviour during this interview was audio-taped.

Marital Assessments

Marital Satisfaction. Marital satisfaction was assessed using the telephone version of the Locke-Wallace Marital Satisfaction Inventory (Krokoff, 1984) and subsequent husband and wife's scores on the Locke-Wallace Inventory (Locke & Wallace, 1959).

Marital Interaction. Couples were seen in a laboratory session whose main function was to obtain a naturalistic sample of the couple's interaction style during a high-conflict task. The high-conflict task consisted of a 15-minute discussion of two problem areas in the marriage. To determine which problem areas the couple would discuss, each spouse independently completed the Couple's Relationship Inventory (Gottman, Markman, & Notarius, 1977). This questionnaire consists of 10 general areas in which couples typically report disagreement (e.g. money, communication, in-laws), and each spouse indicates the extent and length of the disagreement. Based on each spouse's ratings, and through the course of a "Play-by-Play" interview in which each spouse articulated their version of the problem (Gottman, 1979), two top problems were selected for the interaction task. Problems were selected for discussion if they were areas in which the spouses had differing perspectives, rather than areas in which both spouses recognise that they are living with a problematic situation (e.g. both agree that they do not have enough money). Video-tapes of marital interaction were obtained and used for later observational coding.

Oral History Interview

The oral history interview is a semi-structured interview conducted with the couple together in their home, in which the interviewer asks a set of nine open-ended questions. The interviewer asks about the history of the couple's relationship: How they met, how they courted and decided to get married, about the good times and the bad times in their marriage, their philosophy of what makes a marriage work, and how their marriage has changed over the years. The interview encourages couples to tell the story of their marriage. Buehlman et al. (1992) found that variables from this coding system predicted divorce or marital stability in a discriminant function analysis with 94% accuracy, and related to marital interaction patterns and physiological reactivity during marital conflict.

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 asked to obtain information from their child. The parents were informed that the child had heard a story and they are to find out what the story was. 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. The second task involved teaching the child how to play an Atari game that the parents had learned to play while the child was hearing the story. The interaction lasted 10 minutes.

Peer Interaction Home Visits

Play sessions were included to assess the child's social competence in dyadic interaction. Each child was audio-taped at home in one 30-minute dyadic play session with a peer the mother identified as the child's best friend. With best friends a range of social processes tend to occur that are less likely with an unacquainted peer. Hence, this procedure provides an estimate of maximum social competence. No adult was present during the audio-taping. The peer interaction was conducted again at Time-2.

Child Physiology

Autonomic Assessment. We assessed the following physiological variables from the child under baseline conditions and during parent-child interaction: (1) *Cardiac interbeat interval (IBI)*; this measure was determined by measuring the time interval between successive spikes (R-waves) of the electrocardiogram (ECG); (2) *Pulse Transmission Time to the Finger*

(PTT-F), a measure of the elapsed time between the R-wave of the ECG and the arrival of the pulse wave at the finger; (3) *Finger Pulse Amplitude* (FPA), an estimate of the relative volume of blood reaching the finger on each heart beat; (4) *Skin Conductance Level* (SCL), this measure was sensitive to changes in levels of sweat in the eccrine sweat glands located in the hand; (5) *General somatic activity* (ACT), to measure somatic activity, the subject's chair was mounted on a platform that was coupled to a rigid base in such a way as to allow an imperceptible amount of "flexing".

Child's Stress-related Hormones. We collected a 24-hour sample of urine from the child. A 24-hour sample was necessary to control for variations of hormones within a day.

Child Intelligence

The Wechsler Preschool Scales of Intelligence (WPPSI, Wechsler, 1974) Block Design, Picture Completion, and Information Subscales were administered to each child.

Time-1 Measures/Coding

Meta-emotion Coding System

The audio-tapes of the meta-emotion interview were coded using a 5-point checklist rating system that coded parent responses to the interview questions. Coding dimensions were parents' awareness and acceptance of their own anger and sadness, their own regulation of anger and sadness, and their acceptance and assistance (coaching) with their child's anger and sadness. In this paper we focused on the dimensions of parent awareness of their own emotion and coaching of their child's emotion. For each dimension the coding manual was quite detailed and specific. The *Awareness* score was a sum of five subscales: recognising the experience of the emotion; easily distinguishing the emotion from other emotions; speaking at length and descriptively of the emotion; answering questions about the emotion easily, without hesitation or confusion; and showing interest or engagement in talking about this emotion. *Coaching* was a sum of six subscales: showing interest in talking about the child's experience of the emotion; showing respect for the child's experience of the emotion; showing evidence of involvement in the child's experience of the emotion; expressing confidence about how to deal with this emotion; showing evidence of having given thought and energy to the emotion and what he or she wants their child to know about this emotion (goals); and, using

strategies that are age and situation appropriate. The scales were used for both anger and sadness and for both husband and wife. The range of inter-observer reliabilities, computed as correlations across scales for independent observers of this coding was 0.73 to 0.86.

Observational Measures of Time-1 Marital Interaction: Toward an Accuracy Criterion

Problem-solving Behaviour. The marital interaction was coded using the Rapid Couple Interaction Scoring System (RCISS, Krokoff, Gottman, & Hass, 1989), which employs a checklist of behaviours that are scored for the speaker and nine behaviours that are scored for the listener on each turn of speech. We computed, for each spouse, the overall cumulated speaker slopes for the variable Positive minus Negative. Overall Cohen's kappa reliability was 0.71, with a range of 0.70 to 0.81. The slope of these curves was found to be predictive of marital stability (Gottman & Levenson, 1992).

Affect. Marital interaction was also coded in real time using the Specific Affect Coding System, (Gottman, 1989; SPAFF-V2.0). SPAFF is a gestalt coding system in which coders consider the verbal content, voice tone, context, facial expression, gestures, and body movement of the spouse they are coding. This system codes 16 emotions and emotional behaviour patterns at both high and low levels of intensity. In addition to Neutral there are 10 negative codes: (1) Anger; (2) Disgust; (3) Contempt; (4) Sadness; (5) Tension; (6) Whining; (7) Defensiveness; (8) Domineering; (9) Belligerence; (10) Stonewalling. There are five positive codes: (11) Affection; (12) Humour; (13) Interest; (14) Joy; (15) Validation. Emotions were coded separately for both husband and wife, in real time. Scores reflect the percentage of time over the 15-minute interaction that each code was used. Codes were collapsed across intensity level for all analyses. Reliability for SPAFF codes was computed using inter-observer correlation coefficients. Only those behaviours that have been found to predict marital dissolution in other studies (e.g. Gottman & Levenson, 1992) were analysed; these codes are husband and wife contempt, belligerence, and defensiveness, and their sum (a variable we called "hostility").

Oral History Coding System. The oral history interview was coded with the Buehlman Coding System (Buehlman & Gottman, in press). In our exploratory analyses of meta-emotion, we were particularly interested in whether the meta-emotion variables were related to codes reflecting a philosophy of marriage related to emotion. Hence, we explored the codes: (1) We-ness versus Separateness (husband and wife) codes how

much a spouse identifies him or herself as part of a couple versus emphasises his or her individuality or independence. (2) Couples were also rated on how they reported dealing with conflict. They were rated on the following dimensions: (a) Emotional expressiveness as a marital philosophy (one score per couple), a dimension that reflects interactive intensity in both positive and negative ways. Both spouses have extreme feelings towards each other. They fight a lot but they are still very much in love with one another. (b) Chaos (one score per couple) is a dimension that codes couples who report that they have little control over their own lives. These couples may have had unexpected problems and hardships come up within their relationship that they were not prepared to deal with. They have a *laissez-faire* attitude that life is hard and must be accepted as hard. (c) Glorifying the Struggle (one score per couple) is a dimension for couples who have had hard times in their marriage but have come through them and are proud of the fact. The difficult times have helped them grow stronger and closer to each other. They glorify their marriage as being the most important thing in the world to them. Overall reliability for the oral history Coding System was 75% agreement between coders. Intercorrelations for individual dimensions ranged between 0.71 and 0.91.

Observational Coding of Parent-Child Interaction: Toward an Accuracy Criterion

As a step toward an accuracy criterion, we will correlate the meta-emotion variables with our observational coding of the parent-child interaction. Using the SPAFF codes, parent-child affect was coded. The total amount of time father, mother, and child spent in the negative affective states of whining, sadness, anxiety, and the blend of whining and anxiety for the child and the totals summing across all family members was computed. Cohen's kappas were computed for the entire coding system and the average kappa was 0.69, with a range from 0.52 to 0.85. Parenting styles were also coded using the Kahen Engagement and Affect Codes (KEACS). The KEACS codes consist of the following: derisive humour, anger, criticism, intrusiveness, enthusiasm, affection, and positive direction. The number of seconds that each variable occurred in the 10-minute parent-child interaction session was recorded and totals (across time) were calculated for each of the parent-child interaction variables. This index is therefore an estimate of the frequency of the parenting behaviour within a 10-minute period. 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 percentage agreement. The mean correlation was 0.96, with a range of 0.86 to 0.99.

Observational Coding of Peer Interaction

The audio-tapes of the peer interactions were coded with the MACRO coding system (see Gottman & Parker, 1986); the variables we expected to be related to the meta-emotion variables were failed interaction and the negative affect variables, in particular, discussion failure, oppositional behaviour, behaviour that required parental intervention, negative parallel play, failed fantasy play, crying, bossiness, fighting, negative teasing, and sadness.

Child Physiology

Autonomic Physiology. We computed one index of "vagal tone" as the amount of variance in the interbeat interval (related to the heart rate: heart rate = 60,000/interbeat interval) spectrum that was within the child's respiratory range; we used a spectral time-series analysis. This measures respiratory sinus arrhythmia, a measure of parasympathetic nervous system tonus, which has been found to index attentional processes and emotion regulation abilities (Porges, 1984). We also computed mean levels of interbeat interval at baseline, interbeat interval variability (a measure of vagal tone; Izard et al., 1991), and the reactivity of heart rate variability from baseline to the mean of the parent-child interaction (an index of the child's ability to modulate vagal tone; DiPietro, Porges, & Uhly, 1992), and mean skin conductance level during baseline (first visit to the lab). These were designed as indices of the amount of the child's chronic physiological arousal, and the parasympathetic functioning of the child. In addition to their relation to attentional measures and measures of recognition memory and attention to novel stimuli in 6-month-old infants (Linnemeyer & Porges, 1986), and regulatory competence (DeGangi, DiPietro, Greenspan, & Porges, 1991), vagal tone measures are related to socioemotional competence. For example, vagal tone measures have been found to relate to facial expressivity in 5-month-old infants (Stifter, Fox, & Porges, 1989), to general developmental well-being (DiPietro et al., 1992), to the ability to cope with mildly frustrating situations and stressful events (Fox, 1989a,b), and to the initial entry to preschool (Fox & Field, 1989). The computation of vagal tone has included spectral and cross-spectral analysis (with respiration) and the computation of heart period variability; generally, these measures are developmentally stable, related to one another and function well (Grossman, Van Beek, & Wientjes, 1990; Izard et al., 1991).

Stress-related Urinary Hormones. Assays were conducted to determine urinary catecholamines dopamine, norepinephrine, epinephrine as well as cortisol concentrations. The catecholamine hormones are generally responsive to acute and chronic stressors related to both hostility and active coping whereas cortisol is responsive to sadness, depression, separation anxiety, loss, and passive coping (Gunnar, 1989; Henry, 1986; Henry & Meehan, 1981; Henry & Stephens, 1977; Kagan, Reznick, & Snidman, 1987).

The Child's and the Parents' Emotional Expressiveness. Children engaged in a directed facial action (DFA) task (Ekman, Levenson, & Friesen, 1983; Shortt, Bush, McCabe, Gottman, & Katz, 1994) in which they were asked to move their faces into particular facial configurations characteristic of emotional expressions; the task had a condition of imagining particular emotional situations and moving the face. Facial configurations were scored with the Ekman and Friesen Emotion Facial Action Scoring System (EMFACS) for specific emotions (see Shortt et al., 1994, for procedures and reliabilities). To measure the parents' emotional expressiveness, we used the EMFACS to score the patients' facial expressions during marital interaction, and computed the total number of facial action units for each spouse, and the total number of positive and negative emotional facial configurations (Positive = sum of Duchenne and nonDuchenne smiles, other happiness expressions, and interest; Negative = sum of anger, contempt, disgust, fear, and sadness; Duchenne smiles involve both zygomaticus and orbicularis oculi contractions and are usually thought to represent a full and felt smile).

Time-2 Assessments

Overview. Time-2 assessment consisted of parent and teacher ratings of child outcomes, couple's reports of considerations of marital dissolution, and the observational coding of a peer interaction. Families were re-contacted three 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 out of 56) of the families in the initial sample and 86% (48 out of 56) of the children's teachers at follow-up agreed to participate in the Time-2 assessments.

Time-2 Marital Satisfaction and Marital Dissolution. Marital satisfaction was again assessed using the Locke-Wallace Inventory. Assessments of marital dissolution were conducted using telephone interviews. Interview questions were aimed at assessing whether couples had separated or

divorced during the intervening three-year period or had any serious considerations of separation or divorce. Each spouse was interviewed individually and was asked the following five questions: "In the last three years, have you seriously considered separation?"; "In the last three years, have you seriously considered divorce?"; "In the last three years, have you and your spouse separated?"; "If so, how many months have you been separated, or how long was your separation period?"; and "In the last three years, have you and your spouse divorced?" Marital outcomes consisted of answers to questions regarding marital dissolution. Spouses were assigned a score of 1 for the marital dissolution questions they endorsed and a score of 0 for questions they did not endorse. Thoughts about marital dissolution predict actual dissolution (Booth & White, 1980; Gottman, 1994; Gottman & Levenson, 1992).

Ratings of Children's Behaviour Problems. Mothers and teachers completed the parent and teacher versions of the Achenbach Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983). Both are well-established measures. The parent form consists of two sections: ratings of social competence and of 112 problem behaviours. The Teacher Report Form of the Child Behavior Checklist (TRF; Achenbach & Edelbrock, 1986) consists of teachers' ratings of academic performance, four general adaptive characteristics, and 112 behaviour problems. In addition to individual subscales, both versions of the CBCL are also grouped into Externalising and Internalising factors according to age and gender norms (see Achenbach & Edelbrock, 1986). Raw scores were used for all analyses. Mother and teacher scores computed were total scores and internalising and externalising factors.

Peer Interaction Home Visits. The peer interaction was repeated at Time-2 and the audio-tapes of the peer interactions were coded with the MACRO coding system as in Time-1.

Child Academic Achievement and the Child's Ability to Focus Attention. Children were individually administered the Peabody Individual Achievement Test (PIAT-R) as a measure of academic achievement (see e.g. Costenbader & Adams, 1991): the mathematics, reading recognition, reading comprehension, and general information subtests. To assess the children's ability to focus attention in the presence of distraction, they were also given the Stroop Interference Task. This test has three sections, one section in which the names of colours written in black ink (W), one section in which there are coloured Xs (C), and one section in which the names of colours are written in ink different than the colour name (CW). The score of interest here is CW. This latter section produces

the colour-word interference score. This score has been used as an assessment of attention deficit hyperactivity disorder (Lufi et al., 1990) and linked with the frontal lobe functioning (Grodzinsky & Diamond, 1992).

Differential Emotions Scale. Mothers filled out a differential emotions scale about their child's emotions in the past week, checking the specific emotions they observed their children to display. The total number of positive and the total negative emotions for the week were computed.

Physical Health. The health of adults was assessed using the Cornell Medical Index (e.g. Klonkoff & Landrine, 1992) and the Krokoff Health Index. The Krokoff Index attempts to control for reporting biases (males tend to under-report illness) by having each spouse report on the health of their partner. Child illness was assessed by parental report using a version of the Rand Corporation Health Insurance Study measures (see Gottman & Fainsilber, 1989): The following Likert or true-false items were summed: "In general, would you say that this child's health is excellent, good, fair or poor?"; "The child's health is excellent"; "The child seems to resist illness very well"; "When something is going around this child usually catches it"; "This child has had a nosebleed in the past 30 days". ($\text{Alpha} = 0.82$.)

RESULTS

Overview of the Analyses. We began with some preliminary analyses of the meta-emotion variables for the purpose of data reduction. With a reduced set of meta-emotion variables we examine gender differences between parents. This is followed by analyses in the service of finding an accuracy criterion, particularly with parent-child and marital interactions. We then explore the relations between the meta-emotion variables and the child's physiology, the mother's and teacher's ratings of the child's behaviour problems at age 8, the child's daily emotions (at age 8) as rated by the mother, the child's peer interaction (at ages 5 and 8), the child's academic achievement and ability to focus attention (age 8), the physical health of both parents and children, and the parents' emotion-related philosophy of marriage. We then explore the relations between these variables, searching for a model using structural equations modelling. Finally, we discuss a research agenda and examine rival hypotheses. This is our first report on the meta-emotion interview and is therefore exploratory. Because of this fact, we wish to prepare the reader for the large number of correlations in the results: We are exploring the possibility that the meta-emotion variables form the "hub". In an exploratory study of this nature, of course, 5% of the correlations will be significant by chance

alone. Instead of single correlations we emphasise patterns of meaningful correlations.

Data Reduction of Meta-emotion Variables. We used structural equations modeling of the meta-emotion variables as a data-reduction technique. We began with eight variables, each parent's awareness of their own sadness and anger and their coaching of their child's anger and sadness. From this set of eight variables we selected four for further analysis (see Fig. 1). The first two variables selected were the exogenous variables of awareness of one's own sadness. The second two variables selected were the variables in each model that had the least explained variance (i.e. were most independent of the awareness of sadness); for the father this variable was the father's coaching of the child's anger ($R^2 = 0.25$) and for the mother this variable was also the mother's coaching of the child's anger ($R^2 = 0.08$). For the remainder of this paper we will explore the correlates of these four meta-emotion variables. Figure 1(a) summarises the structural equations model that fit the father's meta-emotion data; the $\chi^2(1) = 0.24$; $P = 0.62$, with Bentler-Bonnett Normed Index (BBN) = 0.999. This model suggests that the exogenous driving variable is the father's awareness of his own sadness, which is strongly related to both his awareness of his own anger and his coaching with the child's anger, his coaching with the child's anger then determines his coaching with the child's sadness. The father's model did not fit the mother's meta-emotion data, $\chi^2(1) = 5.94$, $P < 0.05$. The model that fits the mother's data is shown in Fig. 1(b), $\chi^2(2) = 0.26$, $P = 0.88$, BBN = 0.999. In this model, the mother's awareness of her own sadness is still the exogenous driving variable; however, it acts through her awareness of her own anger to affect her coaching with her child's anger; her coaching with the child's sadness is related both to her awareness of her own sadness and her coaching with the child's anger. In the interests of parsimony, we used these structural equations models to select four meta-emotion variables for further exploration; two were selected for the father and two for the mother. We do not suggest that these models reveal causal structure; we are using them only as a device for exploring the covariance structure within our correlational data set.

Gender Differences Among Parents. Mothers were coded as being more aware of their own sadness than fathers, $t(52) = -2.69$, $P < 0.01$ (mothers' mean = 19.17, fathers' mean = 18.53). There were no significant differences in the coding of parents' awareness of their own anger, $t(52) = -1.04$, n.s. There was a marginally significant difference in parental coaching with the child's sadness, with mothers assisting more than fathers, $t(52) = -1.70$, $P < 0.10$ (mothers' mean = 22.55, fathers' mean

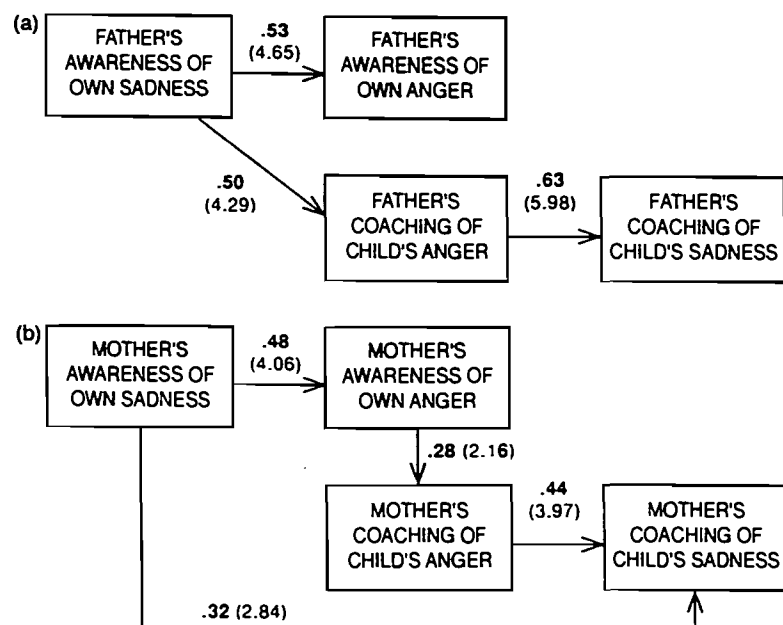


FIG. 1 (a). Structural equations model for father's meta-emotion variables.

FIG. 1 (b). Structural equations model for mother's meta-emotion variables.

= 21.96). There were no significant differences in parental coaching with the child's anger, $t(51) = -1.65$, n.s.

Toward an Accuracy Criterion. In this paper we are using our coding of the parent-child and marital interactions as indices of accuracy for the meta-emotion variables. The issue of accuracy in the emotion context is complex, and a complete assessment of accuracy probably needs to involve the parent's ability to detect emotion (their own as well as their child's), and the observation of their actual interaction with other adults as well as with their spouse, and with their children in emotion-relevant situations. Table 1 summarises the coding of the child's negative emotions during the parent-child interactions. Mothers who were high in awareness of their own sadness had children who whined less. Mother's coaching of the child's anger was related to less anxiety and less of the blend of whining and anxiety in the child. These relationships characterised the entire triad's interaction as well. The KEACs variables were related to the meta-emotion variables. Fathers were less intrusive with their children when mothers were aware of their own sadness, and when both parents coached the child's anger. When fathers (and marginally mothers) were aware of their

TABLE 1
Toward an Accuracy Criterion: Relationship of the Meta-emotion Variables to Parent-Child Interaction

	Meta-emotion Variables			
	Father Sadness Awareness	Mother Sadness Awareness	Father Coaching Child Anger	Mother Coaching Child Anger
<i>SPAFF Variables</i>				
Total whining	-0.13	-0.30*	-0.05	-0.07
Total sadness	-0.08	-0.01	-0.10	0.04
Total anxiety	-0.28*	-0.04	0.07	-0.42**
Total whining/anxiety	-0.06	-0.13	0.06	-0.37**
Child whining	-0.11	-0.27*	-0.04	-0.05
Child sadness	-0.10	-0.01	-0.11	0.03
Child anxiety	-0.21	0.08	0.07	-0.29*
Child whining/anxiety	-0.06	-0.13	0.06	-0.37**
<i>KECS and KACS Variables</i>				
Father derisive humour	-0.01	-0.11	-0.21	-0.13
Father anger	0.08	-0.07	0.00	0.23 ^a
Father criticism	0.21	0.01	-0.23	0.19
Father intrusiveness	-0.20	-0.34*	-0.28*	-0.35**
Father enthusiasm	0.13	0.19	-0.09	0.05
Father affection	0.20	0.18	-0.11	0.12
Father positive direction	0.31*	0.03	0.21	0.07
Mother derisive humour	-0.45***	-0.24 ^a	-0.21	-0.23
Mother anger	-0.25 ^a	-0.01	-0.19	-0.22
Mother criticism	0.13	-0.06	0.13	0.06
Mother intrusiveness	-0.31*	-0.07	-0.15	0.01
Mother enthusiasm	-0.12	0.19	0.10	0.06
Mother affection	0.12	0.31*	0.02	-0.16
Mother positive direction	-0.20	0.06	-0.16	-0.07

^a $P < 0.10$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

own sadness, mothers were less likely to use derisive humour toward their children. When fathers were aware of their own sadness, mothers were less intrusive. Mother awareness of her own sadness was correlated with greater maternal affection toward her child. Thus, although the data come from an interview with parents about their interactions with their preschool child, these results suggest that parental reports are veridical.

The correlations of the meta-emotion variable with marital interaction can also be viewed as indices of an accuracy criterion. Table 2 summarises the relationship between the meta-emotion variables and marital interaction, coded with the SPAFF and the RCISS. On the SPAFF, the

TABLE 2
Toward an Accuracy Criterion: Relationship of the Meta-emotion Variables to Marital Interaction

	Meta-emotion Variables			
	Father Sadness Awareness	Mother Sadness Awareness	Father Coaching Child Anger	Mother Coaching Child Anger
<i>SPAFF Codes</i>				
Husband contempt	-0.14	-0.11	-0.14	0.12
Husband belligerence	-0.21	-0.35**	-0.20	-0.13
Husband defensive	0.14	0.01	-0.22	0.13
Husband validation	0.00	0.20	0.17	-0.18
Husband affection	0.31*	0.14	0.28*	0.22*
Husband joy	0.14	-0.12	0.06	-0.05
Wife contempt	-0.32*	-0.35**	-0.41**	-0.16
Wife belligerence	-0.25*	-0.20	-0.24*	-0.17
Wife defensiveness	-0.02	0.12	-0.31*	0.04
Wife validation	0.16	0.11	0.10	-0.11
Wife affection	0.21*	0.13	0.30*	0.20*
Wife joy	-0.22*	0.37**	0.09	-0.01
Overall hostility	-0.29*	-0.35**	-0.30*	-0.18
<i>RCISS Codes</i>				
Husband positive speaker	0.03	0.08	0.24*	0.03
Husband negative speaker	-0.07	-0.15	-0.27*	-0.04
Wife positive speaker	0.13	0.15	0.23*	0.05
Wife negative speaker	-0.15	-0.21*	-0.27*	0.07
Husband speaker slope (positive minus negative)	0.06	0.13	0.28*	0.04
Wife speaker slope (positive minus negative)	0.15	0.20	0.27*	0.07

* $P < 0.10$; * $P < 0.05$; ** $P < 0.01$.

meta-emotion variables were significantly and negatively related to the husband's belligerence (wife sadness awareness), the wife's contempt (husband sadness awareness, wife sadness awareness, and the father's coaching of the child's anger), and the wife's defensiveness (father's coaching). The husband's and the wife's sadness awareness and the father's coaching were negatively related to overall marital hostility (a sum of husband and wife belligerence and contempt). On the RCISS, the father's coaching was significantly and negatively related to the husband's defensiveness and the wife's defensiveness. The wife's sadness awareness was significantly and negatively related to the husband's contempt. The father's coaching of the child's anger was significantly positively related to the RCISS speaker point graph slopes, which Gottman and Levenson (1992) reported were predictive of marital stability.

TABLE 3
Relationship of the Meta-emotion Variables to Child Physiology

	Meta-emotion Variables			
	Father Sadness Awareness	Mother Sadness Awareness	Father Coaching Child Anger	Mother Coaching Child Anger
<i>Autonomic Physiology</i>				
Vagal tone during story	0.05	0.11	0.23	0.43***
Baseline IBI	0.05	-0.16	0.19	0.30*
Baseline heart rate variability	0.13	0.02	0.11	0.31*
Change in heart rate variability	-0.11	0.31*	0.10	0.21
Baseline skin conductance level	0.00	0.11	-0.02	-0.37**
<i>Urinary Stress Hormones</i>				
Dopamine	-0.36*	-0.02	-0.23	-0.14
Norepinephrine	-0.14	0.05	0.00	-0.20
Epinephrine	-0.27*	-0.13	0.19	-0.15
Cortisol	-0.34*	0.00	-0.01	-0.11

* $P < 0.10$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Correlates of the Meta-emotion Variables

Child Physiology. Table 3 summarises the relation between the meta-emotion variables and the child's physiology. Children whose mothers coached their anger had higher vagal tone (when hearing the sad story), larger interbeat interval at baseline (lower resting heart rates), higher heart rate variability (an index of vagal tone), lower skin conductance level during the baseline (second lab session while listening to a neutral story), lower heart rate during the baseline (first lab visit), and higher activity during this baseline. Children whose mothers were aware of their own sadness had a change in vagal tone during the parent-child interaction compared to a base line (second session). Fathers who were aware of their sadness had children with lower levels of stress-related hormones in their urine: lower levels of urinary catecholamines (dopamine and marginally epinephrine),¹ and lower levels of cortisol.

¹ Gottman and Fainsilber (1989) found that the child catecholamines formed a large principal component, so that dopamine concentrations are strongly related to epinephrine and norepinephrine concentrations.

TABLE 4

Relationship of the Meta-emotion Variables to Child Behaviour Problems and Diary Measures of Child Affect at Age 5

	Meta-emotion Variables			
	Father Sadness Awareness	Mother Sadness Awareness	Father Coaching Child Anger	Mother Coaching Child Anger
<i>Mother CBCL</i>				
Total score	-0.15	-0.45**	-0.13	-0.27*
Internalising	0.04	0.20	-0.07	0.07
Externalising	0.08	0.31*	0.13	0.09
<i>Teacher CBCL</i>				
Total score	0.09	0.05	0.21	-0.10
Internalising	0.01	-0.13	0.04	-0.36*
Externalising	-0.01	-0.01	0.11	0.03
<i>Differential Emotions Scale</i>				
Positive affect	0.08	0.37**	0.26*	-0.03
Negative affect	-0.05	-0.30*	0.13	-0.22

* $P < 0.10$; * $P < 0.05$; ** $P < 0.01$.

Mother and Teacher Ratings of Child Behaviour Problems at Age 8 and the Child's Daily Emotions. Table 4 summarises the relation between the meta-emotion variables and the mother's and teacher's ratings of child behaviour problems on the Child Behaviour Checklist. In general, sadness awareness and the mother's coaching of the child's anger were related to fewer child behaviour problems as rated by the mother. The results were less strong but generally in the same direction for the teacher ratings. The differential emotions data suggested that children whose mothers were aware of their own sadness are more affectively positive and less negative on a daily basis.

Child Peer Interaction. Table 5 summarises the relation between the meta-emotion variables and the child's interaction with a best friend when the child was 5 years old and when the child was 8 years old. At Time-1 the meta-emotion variables were related to less oppositional behaviour by the child (less leaving of playroom), less negative parallel play, less need for parental intervention, less crying, and less bossiness. These relations held particularly with the mother's coaching of the child's anger. At Time-2 these relations were less strong; they held for discussion failure (father's coaching) and for sadness. We should note in passing that, as expected, developmentally by age 8 there was far less parallel play and fantasy play,

TABLE 5

Relationship of the Meta-emotion Variables to Negativity during Child-Peer Interaction

	Meta-emotion Variables			
	Father Sadness Awareness	Mother Sadness Awareness	Father Coaching Child Anger	Mother Coaching Child Anger
<i>At Age 5</i>				
Discussion failure	0.05	0.06	-0.03	-0.11
Oppositional	-0.12	-0.11	-0.23*	-0.32*
Parental intervention	0.06	-0.04	-0.16	-0.24*
Negative parallel play	-0.32*	-0.44***	-0.30*	-0.31*
Failed fantasy play	0.00	0.01	0.14	-0.29*
Crying	-0.04	-0.12	-0.20	-0.33*
Bossy	-0.23*	0.05	-0.27*	0.02
Fighting	0.02	0.03	-0.07	-0.13
Negative teasing	-0.11	-0.14	-0.12	0.06
Sadness	-	-	-	-
<i>At Age 8</i>				
Discussion failure	-0.25*	-0.21	-0.30*	-0.19
Oppositional	0.16	-0.23	-0.01	-0.09
Parental intervention	-	-	-	-
Negative parallel play	-0.12	-0.21	-0.13	-0.08
Failed fantasy play	-	-0.02	-	0.03
Crying	0.07	-0.10	-0.13	-0.07
Bossy	0.03	-0.03	-0.19	0.08
Fighting	0.10	-0.07	-0.12	-0.09
Negative teasing	0.06	-0.04	-0.22	-0.15
Sadness	-0.34*	-0.45**	-0.32*	-0.31*

* $P < 0.10$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; dashes indicate that the behaviour did not occur, so the correlation could not be computed.

oppositional and disruptive behaviour and more discussion; hence the regulation of oppositional forms of negativity is far less salient at this age in this context, and the meta-emotion variables are instead related negatively to sadness, and to discussion failure.

Child Academic Achievement and the Child's Ability to Focus Attention (Stroop Interference Test). Table 6 summarises the relations between the meta-emotion variables and academic achievement, and the Stroop Interference Test. The child's mathematics scores were significantly predicted by the mother's awareness of her own sadness, the child's reading recognition scores were marginally predicted by the father's coaching with the child's anger, and the child's reading comprehension scores were

predicted by the father's coaching of the child's anger. The general information score was marginally predicted by the mother's awareness of her own sadness, and the total test score was predicted by the mother's awareness of her own sadness and the father's coaching of the child's anger. Table 6 also shows that the mother's awareness of her own sadness was related to her child's ability to focus attention as measured by the Stroop Interference Test.

Physical Health. Table 7 summarises the correlations between the meta-emotion variables and the parents' and the child's health. There were significant relations between child health and the meta-emotion variables, particularly the father's awareness of his own sadness and the mother's assistance with the child's anger. The health of the adults was also significantly related to the meta-emotion variables. This was true even controlling for reporting bias by using the Krokoff scale.

Philosophy of Emotion in the Marriage. Is there a relation between the meta-emotion variables and a general philosophy toward emotion and marital conflict? Table 8 summarises the relation between the meta-emotion variables and the relevant oral history variables. In general, the father's sadness awareness and his coaching of the child's anger were significantly related to his and his wife's expressions of we-ness in the discussions of the history and philosophy of the marriage, positively related

TABLE 6
Relationship of the Meta-emotion Variables to Child Academic Achievement (Peabody Individual Achievement Test) and the Child's Ability to Focus Emotion (Stroop Interference Task)

	<i>Meta-emotion Variables</i>			
	<i>Father Sadness Awareness</i>	<i>Mother Sadness Awareness</i>	<i>Father Coaching Child Anger</i>	<i>Mother Coaching Child Anger</i>
<i>Peabody Individual Achievement Test</i>				
Math score	0.08	0.40**	0.17	0.01
Reading recognition	-0.10	0.17	0.25*	-0.01
Reading comprehension	0.06	0.20	0.43**	0.02
Spelling	-0.09	0.13	0.02	-0.05
General information	0.10	0.27*	0.22	0.08
Total test score	0.04	0.33*	0.28*	-0.03
<i>Stroop Interference Test</i>				
Colour and word discrepant	-0.05	0.28*	0.07	0.09

* $P < 0.10$; * $P < 0.05$; ** $P < 0.01$.

TABLE 7
Relationship of the Meta-emotion Variables to Child and Adult Physical Health

	<i>Meta-emotion Variables</i>			
	<i>Father Sadness Awareness</i>	<i>Mother Sadness Awareness</i>	<i>Father Coaching Child Anger</i>	<i>Mother Coaching Child Anger</i>
<i>Child Health</i>				
Rand Scale	-0.33*	-0.25 ^a	-0.23	-0.51***
<i>Time-2 Adult Health</i>				
Husband Cornell	0.02	-0.25 ^a	-0.05 ^a	0.09
Wife Cornell	-0.19	-0.43***	-0.01	-0.11
Krokoff: Husband report of wife	0.33*	0.29*	0.34*	0.11
Krokoff: Wife report of husband	0.12	0.38*	0.27 ^a	0.12

Note: On the Cornell Medical Index a negative correlation means greater health; on the Krokoff a positive correlation means greater health.

^a $P < 0.10$; * $P < 0.05$; *** $P < 0.001$.

TABLE 8
Relationship of the Meta-emotion Variables to the Oral History Interview Marital Philosophy Variables

	<i>Meta-emotion Variables</i>			
	<i>Father Sadness Awareness</i>	<i>Mother Sadness Awareness</i>	<i>Father Coaching Child Anger</i>	<i>Mother Coaching Child Anger</i>
Husband we-ness	0.42**	0.17	0.55***	0.17
Wife we-ness	0.35*	0.16	0.48***	0.14
Emotional expressiveness marital philosophy	0.39**	0.18	0.31*	0.07
Life is out of control	-0.27 ^a	-0.27 ^a	-0.39**	0.01
Glorify the struggle	0.42**	0.17	0.40**	0.07

^a $P < 0.10$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

to the philosophy that it is good to be emotionally expressive in the marriage, negatively related to a sense of chaos in the marriage, and positively related to glorifying the struggle in the marriage (feeling that marital conflict is worth it). The father's coaching of the child's anger was related to all five variables. There were no significant relations with the wife meta-emotion variables.

Toward a Model

Figure 2 is a first attempt to explore the relations between some of the variables discussed in this paper following the model we discussed in the introduction. The use of structural equations modelling is meant as exploratory rather than confirmatory; we do not think of this modelling as testing causal structure as these data are entirely correlational. Nonetheless, we explore the idea here that the meta-emotion variables are the exogenous variables driving the system and affecting child outcome. We expect that, on the basis of other literature (e.g. Dickstein & Parke, 1988), the major effects of the father's meta-emotion variables will be through the marriage whereas the mother's effects are direct. We expect that the major effects of the mother will operate by affecting the child's emotion-regulation abilities, reflected in the child's physiology, the child's ability to focus. Figure 2 presents a structural model that explores these hypotheses. This is a complex model, particularly for a relatively low sample size; it should be viewed as exploratory and hypothesis-generating. This model fits the data well, with $\chi^2(42) = 42.75$, $P = 0.44$, BBN = 0.98. It also accounts for a

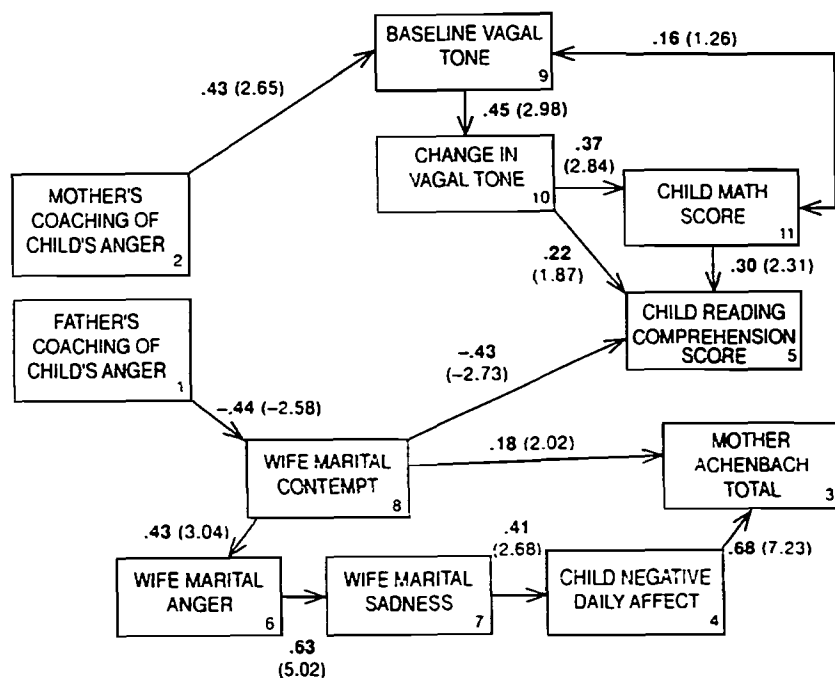


FIG. 2. Structural model with pathways in the data linking meta-emotion variables to child outcome.

reasonable amount of variance in child outcome. The multiple R for reading comprehension was 0.71, the multiple R for mathematics was 0.41, and the multiple R for the mother's CBCL was 0.82. The model suggests that the husband's coaching of the child's anger operates on child outcome through its effect on the marital interaction patterns, particularly wife contempt and sadness. The husband's coaching of the child's anger is to some extent an index of his involvement and social skill in the marriage. The wife's coaching of the child's anger affects the child's vagal tone, which, in turn has an effect on mathematics and reading achievement. However, the actual model differed in some ways from our assumptions. The wife's sadness during marital conflict affects the child's daily negative affect (differential emotions scale) and the wife's contempt has a strong direct effect on reading comprehension. Thus, this model incorporates the meta-emotion variables, child physiology, marital interaction, and child daily affect with the prediction of child outcome. It is a first step in understanding how these variables may be related.

Toward a Research Agenda: Exploring Rival Hypotheses

In this section we explore several rival hypotheses that will help clarify what we are measuring with the meta-emotion variables. It is quite possible that the meta-emotion variables are not exogenous variables, but that other variables are driving the system in producing child outcomes.

Marital Satisfaction and Stability. Table 9 summarises the correlates of marital satisfaction when the children were 5 years old (Time-1) and when the children were 8 years old (Time-2), and marital stability when the children were 8 years old. There was a 23% divorce/separation rate in this sample in the three-year follow-up period (12 couples of 53). The mother's awareness of her sadness and the father's coaching of the child's anger were significantly and positively related to the mother's marital satisfaction on our initial contact telephone interview; the father's awareness of his own sadness and the mother's coaching of the child's anger were marginally related to the mother's Time-1 marital satisfaction. The father's coaching of the child's anger was significantly related to both Time-1 and Time-2 marital satisfaction of both spouses. The meta-emotion variables were also negatively related to the father's serious considerations of separation during the three-year longitudinal period (father's coaching of the child's anger), the mother's serious considerations of separation during the three-year longitudinal period (father's coaching of the child's anger), the number of months the couple were actually separated (the mother's awareness of her sadness, and marginally the coaching of both parents with

TABLE 9
Relationship of the Meta-emotion Variables to Marital Satisfaction and Stability

	Meta-emotion Variables			
	Father Sadness Awareness	Mother Sadness Awareness	Father Coaching Child Anger	Mother Coaching Child Anger
Telephone mar. sat.	0.25 ^a	0.31*	0.30*	0.23 ^a
<i>Time-1</i>				
Father mar. sat.	0.06	0.04	0.34*	-0.08
<i>Time-1</i>				
Mother mar. sat.	0.11	0.17	0.38**	-0.08
<i>Time-2</i>				
Father mar. sat.	-0.03	0.13	0.34*	-0.16
<i>Time-1</i>				
Mother mar. sat.	-0.06	0.14	0.28*	-0.11
<i>Time-2</i>				
Father cns. sep.	-0.21	-0.14	-0.35*	0.10
<i>Time-2</i>				
Father cns. div.	0.10	-0.06	-0.06	0.05
<i>Time-2</i>				
Mother cns. sep.	-0.09	-0.13	-0.32*	0.16
<i>Time-2</i>				
Mother cns. div.	-0.01	-0.22	-0.23	0.18
Months separated	-0.21	-0.37**	-0.26 ^a	-0.25 ^a
Divorced	-0.05	-0.06	-0.25 ^a	0.04

^a $P < 0.10$; * $P < 0.05$; ** $P < 0.01$; cns. = considers.

the child's anger), marginally predictive of actual divorce (the father's coaching).

If it is the case that marital satisfaction and stability are doing the work in predicting child outcome, and not the meta-emotion variables, we would expect two criteria to be met. First, we would expect that the marital satisfaction and stability variables would be related to child outcome, and second that the partial correlations of meta-emotion variables with child outcome, controlling variables related to marital satisfaction and stability, would be nonsignificant. The second criterion was not met in these analyses. For example, consider the child's mathematics and reading comprehension achievement scores; the child's mathematics score corre-

lates 0.40 ($P < 0.001$) with the mother's sadness awareness, and the child's reading comprehension score correlates 0.43 ($P < 0.001$) with the father's coaching of the child's anger. Indeed, the child's reading comprehension score was significantly correlated with the father's marital satisfaction ($r = 0.26$, $P < 0.05$), with the number of months the parents had been separated ($r = -0.26$, $P < 0.05$), and whether the mother had seriously considered divorce ($r = -0.25$, $P < 0.05$); the child's mathematics score was significantly correlated with whether the couple had separated ($r = -0.23$, $P < 0.05$), the number of months the couple had separated ($r = -0.26$, $P < 0.05$), and whether the couple had divorced ($r = -0.25$, $P < 0.05$); hence, the first criterion was met. However, when the marital satisfaction and stability variables were entered first and the meta-emotion variables entered second in stepwise regression analyses, the F -ratios for change were all significant. For reading comprehension, when the father's marital satisfaction was entered first and the father's assistance with anger entered second, the F -ratio for change was $F(2,40) = 4.10$, $P < 0.05$, and the partial correlation was 0.30; with months separated entered first, the F -ratio for change was $F(2,44) = 8.32$, $P < 0.01$, partial correlation = 0.40; for the mother having seriously considered divorce, the F -ratio for change was $F(2,45) = 9.17$, $P < 0.01$, partial correlation = 0.41. For the child's mathematics score, when the variable of whether the couple separated or not was entered and then the mother's awareness of her own sadness, the F -ratio for change was $F(2,50) = 9.20$, $P < 0.01$, partial correlation = 0.39; when months separated was entered first, the F -ratio for change was $F(2,48) = 7.37$, $P < 0.01$, partial correlation = 0.36; when the variable of whether the couple divorced or not was entered first, the F -ratio for change was $F(2,49) = 10.77$, $P < 0.01$, partial correlation = 0.42. Thus, these relations are not at all diminished by considerations of marital satisfaction and stability. These analyses provide evidence that the outcome effects predicted by the meta-emotion variables are not an artifact of marital satisfaction and stability. They suggest that, regardless of how satisfying or stable the marriage is, the meta-emotion variables will provide a buffer in terms of child outcome. This is quite a remarkable result.

Income and Education. The meta-emotion variables were uncorrelated with the family's income, or either the mother's or the father's occupational prestige or the mother or the father's educational level.

Emotional Expressiveness. It is possible that the meta-emotion variables are tapping emotional expressiveness in the family (Halberstadt, 1991). To test this rival hypothesis, we correlated the meta-emotion variables with the child's emotional expressiveness for specific emotions (anger, contempt, disgust, fear, happiness, sadness) and total expressive-

ness on the DFA task. Of the 28 correlations, only one was statistically significant (so this could be a chance finding) and it was *negatively* related to the meta-emotion variables: The number of the child's happy expressions was negatively correlated with the mother's assistance with anger ($r = -0.27$, $P < 0.05$). Both the husband's and the wife's total facial movement (action units) during marital conflict was uncorrelated with the four meta-emotion variables. The number of the husband's positive facial expressions was *negatively* correlated with his awareness of his own sadness ($r = -0.26$, $P < 0.05$), and the number of his negative facial expressions was *negatively* correlated with his coaching of his child's anger ($r = -0.24$, $P < 0.05$). There were no significant correlations for the mother's positive or negative facial expressions.

DISCUSSION

This report has demonstrated the utility of examining the family's meta-emotion structure for understanding the way families socialise their children. The meta-emotion variables were related to the parents' social skill at parent-child interaction and at resolving their marital conflict, particularly in terms of overall hostility. EC parents' marital interactions were less contemptuous, less belligerent, and less defensive than that of parents with a different meta-emotion structure. The slope of their RCISS point graphs was more positive. The meta-emotion variables were related to the couple's views of their history together: Parents who were aware of their own sadness and coached their children about their anger tended to emphasise we-ness in their marriage, and had a philosophy of marriage that involved emotional expression and facing marital conflict rather than avoiding it. They tended to view conflict engagement as worth the struggle and as a way of avoiding chaos. However, the effects of the meta-emotion variables on child outcome do not seem to be mediated by parental marital satisfaction or stability of the marriage. Instead the meta-emotion variables seem to operate through their effects on the child's emotion regulation abilities. The parents who were aware of their own sadness and who coached their children's emotions were also physically healthier at Time-2. This could well be an index of their ability to manage stress. Parents who were aware of their own sadness and coached their children when they were angry also had children who were less stressed physiologically: They had lower baseline heart rates, higher vagal tone, greater ability to modulate their vagal tone during parent-child interaction, and lower levels of urinary catecholamines and cortisol. The children were also healthier at Time-2 if their fathers were higher in sadness awareness and if their mothers coached their anger.

This lower level of physiological stress and higher vagal tone was related to regulatory competence. The children scored higher on the Stroop Interference Test, suggesting that they were able to inhibit impulsive responses to extraneous stimuli and focus attention. For parents, having an EC meta-emotion structure related not only to their own social competence (as marital partners), but also to the social competence of their children. The children were less negative affectively with a child peer. They were rated by their mothers and, to some extent by their teachers, as having fewer behavioural problems. We expected that this greater ability with emotion regulation in the children would also be reflected in higher academic achievement when they were in school.

If we may raise questions about our results, we would begin by expressing no small amount of amazement that the inner emotional worlds of parents could relate to so many important aspects of family functioning. What is it about the way parents think about their own and their children's emotions that makes such a fundamental difference in the stability of the marriage and in the way children eventually turn out? Are these traits we are tapping? How stable are they? How easy are they to change? What is the contribution of nature to these dimensions of thought and executive function about emotion? Why would some parents have developed an EC meta-emotion structure whereas others deny emotion in themselves and minimise its importance to children? On a purely descriptive level, we wonder what these coaching sessions with the child's anger and sadness are really like. How would culture affect these data? Some cultures are described as more emotionally centred and others as far less so; the meta-emotion interview would seem to be an ideal tool for studying cultural variation in families.

These data also suggest answers about emotion development within the family. Perhaps, as Ginott originally suggested, a parental cognitive structure that supports emotional connection supports social interaction that is inclusive of emotion. In these relationships and families, interpersonal interaction is enriched by the inclusion of emotion, at the same time that developing emotion abilities are enhanced by practice in expression, recognition, and appropriate modulation. In these families emotion is a useful and appreciated language, whereas in families where emotions are ignored and denied they may become dysregulated and problematic. Furthermore, non-EC meta-emotion philosophies may perpetuate themselves through generations. Parents who have ignored their own emotions, who find them unpleasant and difficult, are not parents who are willing participants in their child's negative emotions. Children who have not shared negative emotions constructively with another may not develop an emotion language others are able to share with them.

We are greatly encouraged by these results. It is rare in our experience to have such a small set of variables (two each for each parent) organise such a vast amount of data, and be so successful in making such sensible predictions among such an array of child outcomes. One promising aspect of this area of family functioning is that it has the potential for very specific interventions with parents that are oriented toward changing their own attitudes, philosophies, and experience with emotion, as well as teaching them age-appropriate strategies for coaching their children in the area of emotion. Presumably, if our correlational data can be taken as a hypothesis-generating guide, such an intervention may have far-reaching consequences for the quality of marital interaction, the stability of marriages, and the emotional, social and cognitive development of children.

It is important to point out that the parents who had a non-EC type of meta-emotion structure were not in any sense "bad" parents. They were not unloving toward their children, nor were they cruel to them. This was a very normal sample of working to middle class families, and the variation we observed was within this normal range. The parents' responses to their children is well illustrated by one interview in which a father said "When my daughter is sad I respond to her needs". The interviewer probed and asked what the parent said to her when she was sad, and the parent said, "I ask her what she needs". The interviewer asked, "What do you talk about?" "Huh? Oh, um, back to needs again. Do you want to watch television? Can I get you a movie or anything like that? Do you want to go upstairs, do you want to go play, do you want to go outside? You know, just on and on, just work with her and see what she answers back 'cause then you find out". We note that this parent was quite warm to his child and loved her very much and he was also high in setting limits; he would not be described as authoritarian, but as authoritative. He just had little idea of how to make an emotional connection or how to coach her when she was sad or angry.

The results may have implications for new marital and parent-training interventions. The prevailing marital therapies involve communication skill training and contracting (Jacobson & Margolin, 1979).² The prevailing parent training interventions involve focusing on reducing coercive cycles (Patterson, 1982), child management skills and the use of positive reinforcement and punishment (Atkeson & Forehand, 1978; Graziano & Diamant, 1992; Knapp & Deluty, 1989; Newby, Fischer, & Roman, 1991; Rogers-Wiese, 1992). The present report would suggest testing the usefulness of parent training in the area of emotion and meta-emotion.

² Although Greenberg and Johnson (1988) developed a form of marital therapy that focuses on emotion, their focus is not on meta-emotional structure.

This was the report of an initial exploratory study. We are aware of the fact that we have presented many analyses here with a relatively small sample, and that these results, although provocative, require replication. We explored the data to attempt to generate hypotheses about possible causal connections among the variables. We are well aware of the fact that these are correlational data, and that we can do little else but generate hypotheses about causality with these data. A structural model exploring some of our relationships suggested that the parents' meta-emotion variables function in different ways to have their effects on child outcome. The father's meta-emotion variables operated primarily through the marriage, and directly through the mother's affects (contempt, sadness, and anger). The model suggested that the effects of the father's meta-emotion variables on both cognitive and social-affective outcomes could be explained in this manner. However, the mother's meta-emotion variables had a direct effect on the child's vagal tone and presumably affected the child's attentional processes and achievement. With hindsight, these differential effects for fathers and mothers is not surprising. We have generally found that when the marriage is ailing fathers withdraw from both their wives and their children, whereas wives withdraw only from their husbands and not from their children. This idea of fathers having some of their effects on their children through the marriage is consistent with Dickstein and Parke (1988), who found that babies, in laboratory situations designed to produce uncertainty in the baby, do not socially reference their unhappily married fathers; the babies continue to reference unhappily married mothers, and they also reference happily married fathers and mothers. Other research shows that fathers play a unique role in children's socio-emotional development and peer social competence, particularly through their role in play and positive affect (MacDonald, 1987; see also Parke, 1981). Subsequent research with the meta-emotion construct needs to explore these separate roles of mother's and father's executive functions of meta-emotion. We also need to explore differential effects for boys and girls; we avoided these analyses at this time because we worried about our relatively small sample size.

It is of considerable interest that the relation between the meta-emotion variables and the child outcome variables of academic achievement held even when measures of marital dissatisfaction and marital instability were first stepped into the regression. This suggests that the meta-emotion variables may provide a buffer for children regardless of the nature of the marriage. Because we know that the nature of the marriage affects these child outcomes, this is a surprising finding. We are encouraged by this result and wonder whether in single-parent families the relationship between meta-emotion and child outcome might still hold.

A Research Agenda

In a large study it is exciting that so few meta-emotion variables were able to organise so much data on family interaction and child emotional, social, and cognitive development, and over an age range from the preschool period to the early elementary school years. Clearly, replication is now necessary. We need to determine the representativeness of our data and we are in the process of replicating this study with an additional sample of 65 families. We also recently collected data on the present sample when the children were approximately 12–13 years old. It will be important to determine whether or not initial gains in child outcome as a function of the parents' meta-emotion variables continue to hold. Subsequent research also needs to find a way of interviewing young children to discover their own meta-emotion constructs. Such work will prove to be challenging, but potentially rewarding (e.g. see Cassidy, Parke, Butkovsky, & Braungart, 1992). We need to explore child gender differences in these data. To have confidence in such analyses we will need our replication sample. However, our preliminary analyses suggest that these gender differences exist and are quite powerful (Hooven & Katz, 1993). We need to explore our unexpected findings of negative correlations between both positive and negative emotion facial expressiveness for fathers and our meta-emotion variables. This lack of facial expressiveness during marital conflict may reflect the father's ability to self-soothe and to regulate his own emotion.

There is a need for experiments to test any theory of causal connection such as the one we have proposed here. In such a series of experiments we would try to change only one variable in the theory and see how the other variables change. We would only expect to produce proximal change at first, and the goal would be to generate a theory. Eventually, as a result of such experiments, we might be in a position to design a field trial clinical intervention (e.g. a new parent training programme) to assess whether we can produce distal as well as proximal change, hopefully change with low potential for relapse. A big question in such experiments is whether, in an intervention study, the meta-emotion variables operate to produce their effects through the health of the marriage, through the development of regulatory abilities in the child (e.g. by affecting the child's vagal tone), or through the reduction of stress in the child. An understanding of the linkages between variables would be very illuminating. If we assume that meta-emotion structure has a causal influence on marital and child outcome, such training would involve a direct focus on the individual parent's executive system about emotions, their experience of emotion, their attempts to regulate emotion, their awareness of their own feelings, their awareness of their child's feelings (with a developmental emphasis), their acceptance or rejection of children's feelings, their ideas on

whether children's feelings are important, their knowledge about emotions, emotion-eliciting situations, and their ability to problem-solve about emotions. Furthermore, it would also probably involve building a parental consensus about an EC meta-emotion structure, and no doubt provide fascinating insight into what it means, and can mean, to address a family emotion culture.

REFERENCES

- Achenbach, T.M., & Edelbrock, C. (1983). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T.M., & Edelbrock, C. (1986). *Manual for the Teacher's Report Form and Teacher Version of the Child Behavior Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Allen, B.A., & Armour, T.E. (1993). Construct validation of metacognition. *Journal of Psychology*, 127, 203–211.
- Atkeson, B.M., & Forehand, R. (1978). Parent training for problem children: An examination of studies using multiple outcome measures. *Journal of Abnormal Child Psychology*, 6, 449–460.
- Barnett, R.C., Biener, L., & Baruch, G.K. (1987). *Gender and stress*. New York: Free Press.
- Booth, A., & White, L. (1980). Thinking about divorce. *Journal of Marriage and the Family*, 42, 605–616.
- Buehlman, K. (1991). *The oral history coding system*. Seattle, WA: University of Washington. [Unpublished manual].
- Buehlman, K., & Gottman, J.M. (in press). The Oral History Coding System. In J.M. Gottman (Ed.), *What predicts divorce: The measures*. Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Buehlman, K., Gottman, J.M., & Katz, L. (1992). How a couple views their past predicts their future: Predicting divorce from an oral history interview. *Journal of Family Psychology*, 5, 295–318.
- Burgess, E.W., Locke, H.J., & Thomes, M.M. (1971). *The family*. New York: Van Nostrand Reinhold.
- Bvinelli, D.J. (1993). Reconstructing the evolution of mind. *American Psychologist*, 48, 493–509.
- Cassidy, J., Parke, R.D., Butkovsky, L., & Braungart, J.M. (1992). Family-peer connections: the role of emotional expressiveness within the family and children's understanding of emotion. *Child Development*, 63, 603–618.
- Costenbader, V.K., & Adams, J.W. (1991). A review of the psychometric and administrative features of the PIAT-R: Implications for the practitioner. *Journal of School Psychology*, 29, 219–228.
- Cowan, P.A., & Cowan, C.P. (1987). *Couple's relationships, parenting styles and the child's development at three*. Paper presented at the Society for Research in Child Development, Baltimore, MD. April.
- DeGangi, G.A., DiPietro, J.A., Greenspan, S.I., & Porges, S.W. (1991). Psychophysiological characteristics of the regulatory disordered infant. *Infant Behavior and Development*, 14, 37–50.
- DeHaas, P.A., & Young, R.D. (1984). Attention styles of hyperactive and normal girls. *Journal of Abnormal Child Psychology*, 12, 531–545.

- Dickstein, S., & Parke, R.D. (1988). Social referencing in infancy: A glance at fathers and marriage. *Child Development*, 59, 506-511.
- DiPietro, J.A., Porges, S.W., & Uhly, B. (1992). Reactivity and developmental competence in preterm and full-term infants. *Developmental Psychology*, 28, 831-841.
- Ekman, P., Levenson, R.W., & Friesen, W.V. (1983). Autonomic nervous system activity distinguishes among emotions. *Science*, 221, 1208-1210.
- Faber, A., & Mazlich, E. (1975). *Liberated parents, liberated children*. New York: Avon.
- Faber, A., & Mazlich, E. (1980). *How to talk so kids will listen and how to listen so kids will talk*. New York: Avon.
- Flavell, J.H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, 34, 906-911.
- Fodor, J.A. (1992). A theory of the child's theory of mind. *Cognition*, 44, 283-296.
- Fox, N.A. (1982). Maturation of autonomic control in preterm infants. *Developmental Psychobiology*, 16, 495-504.
- Fox, N.A. (1989a). The psychophysiological correlates of emotional reactivity during the first year of life. *Developmental Psychology*, 25, 364-372.
- Fox, N.A. (1989b). Infant response to frustrating and mildly stressful events: A positive look at the first year. *New Directions in Child Development*, 45, 47-64.
- Fox, N.A., & Field, T.M. (1989). Individual differences in preschool entry behavior. *Journal of Applied Developmental Psychology*, 10, 527-540.
- Ginott, H.G. (1959). *Between parent and child*. New York: Avon.
- Ginott, H.G. (1971). *Between parent and teenager*. New York: Avon.
- Ginott, H.G. (1975). *Teacher and child*. New York: Avon.
- Gottman, J.M. (1979). *Marital interaction: Experimental investigations*. New York: Academic Press.
- Gottman, J.M. (1989). *Specific affect coding manual*. Seattle, WA: University of Washington. [Unpublished manuscript]
- Gottman, J. (1994). *What predicts divorce?* Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Gottman, J.M., & Fainsilber, L. (1989). The effects of marital discord on young children's peer interaction and health. *Developmental Psychology*, 25, 373-381.
- Gottman, J.M., & Katz, L. (1989). The effects of marital discord on young children's peer interaction and health. *Developmental Psychology*, 25, 373-381.
- Gottman, J.M., & Krokoff, L.J. (1989). The relationship between marital interaction and marital satisfaction: A longitudinal view. *Journal of Consulting and Clinical Psychology*, 57, 47-52.
- Gottman, J.M., & Levenson, R.W. (1992). Marital processes predictive of later dissolution: behavior, physiology, and health. *Journal of Personality and Social Psychology*, 63, 221-233.
- Gottman, J.M., Markman, H., & Notarius, C. (1977). The topography of marital conflict: A sequential analysis of verbal and nonverbal behavior. *Journal of Marriage and the Family*, 39, 461-477.
- Gottman, J., & Parker, J. (Eds.) (1986). *Conversations of friends*. New York: Cambridge University Press.
- Graziano, A.M., & Diamant, D.M. (1992). Parent behavioral training: An examination of the paradigm. *Behavior Modification*, 16, 3-38.
- Greenberg, L.S., & Johnson, S.M. (1988). *Emotionally focused therapy for couples*. New York: Guilford.
- Grodzinsky, G.M., & Diamond, R. (1992). Frontal lobe functioning in boys with attention deficit hyperactivity disorder. *Developmental Neuropsychology*, 8, 427-445.
- Grossman, P., Van Beek, J., & Wientjes, C. (1990). A comparison of three quantification methods for the estimation of respiratory sinus arrhythmia. *Psychophysiology*, 27, 702-714.
- Gunnar, M. (1989). Studies of the human infant's adrenocortical response to potentially stressful events. *New Directions in Child Development*, 45, 3-18.
- Guralnick, M.J. (1981). Peer influences on the development of communicative competence. In P. Strain (Ed.), *The utilization of classroom peers as behavior change agents* (pp. 31-68). New York: Plenum.
- Halberstadt, A.G. (1991). Toward an ecology of expressiveness: Family socialization in particular and a model in general. In R.S. Feldman & B. Rime (Eds.), *Fundamentals of nonverbal behavior* (pp. 106-160). New York: Cambridge University Press.
- Henry, J.P. (1986). Neuroendocrine patterns of emotional response. In R. Plutchik & H. Kellerman (Eds.), *Emotion, theory and research, Vol. 3: Biological foundations of emotion* (pp. 37-60). London: Academic Press.
- Henry, J., & Meehan, J. (1981). Psychosocial stimuli, physiological specificity, and cardiovascular disease. In A. Weiner, M. Hofer, & A. Stunkard (Eds.), *Brain, behavior, and bodily disease* (pp. 131-142). New York: Raven.
- Henry, J.P., & Stephens, P.M. (1977). *Stress, health, and the social environment*. New York: Springer.
- Hochschild, A. (1983). *The managed heart*. Berkeley, CA: University of California Press.
- Hoooven, C. (1994). *The meta-emotion coding system*. Seattle, WA: University of Washington. [Unpublished manuscript]
- Hoooven, C., & Katz, L.F. (1993). *Parents' emotion philosophies and their children's peer and academic success*. Paper presented at the Society for Research in Child Development Meeting in New Orleans, LA. April.
- Izard, C.E., Porges, S.W., Simons, R.F., & Haynes, O.M. (1991). Infant cardiac activity: Developmental changes and relations with attachment. *Developmental Psychology*, 27, 432-439.
- Jacobson, N.S., & Margolin, G. (1979). *Marital therapy*. New York: Brunner-Mazel.
- Kagan, J., Reznick, J.S., & Snidman, N. (1987). The physiology and psychology of behavioral inhibition in children. *Child Development*, 58, 1459-1473.
- Katz, L.F., & Gottman, J.M. (1986). *The meta-emotion interview*. Seattle, WA: University of Washington. [Unpublished laboratory manual]
- Klonkoff, E.A., & Landrine, H. (1992). Sex roles, occupational roles and symptom reporting: A test of competing hypotheses on sex differences. *Journal of Behavioral Medicine*, 15, 355-364.
- Knapp, P.A., & Deluty, R.H. (1989). Relative effectiveness of two behavioral parent training programs. *Journal of Clinical Child Psychology*, 18, 314-322.
- Krokoff, L. (1984). *Anatomy of negative affect in working class marriages. Dissertation Abstracts International*, 45, 7A. [University Microfilms No. 84-22 109]
- Krokoff, L.J., Gottman, J.M., & Hass, S.D. (1989). Validation of a global rapid couples interaction scoring system. *Behavioral Assessment*, 11, 65-79.
- Levant, R., & Kelly, J. (1989). *Between father and child*. New York: Penguin.
- Linnemeyer, S.A., & Porges, S.W. (1986). Recognition memory and cardiac vagal tone in 6-month-old infants. *Infant Behavior and Development*, 9, 43-56.
- Locke, H.J., & Wallace, K.M. (1959). Short marital adjustment and prediction tests: Their reliability and validity. *Marriage and Family Living*, 21, 251-255.
- Lufi, D., Cohen, A., & Parish, P.J. (1990). Identifying attention deficit hyperactivity disorder with the WISC-R and the Stroop Color and Word Test. *Psychology in the Schools*, 27, 28-34.
- Maccoby, E.E., & Martin, J.A. (1983). Socialization in the context of the family: Parent-child interaction. In E.M. Hetherington (Ed.), *Handbook of child psychology, Vol. 4: Socialization, personality, and social development* (pp. 1-102). New York: Wiley.

- MacDonald, K. (1987). Parent-child physical play with rejected, neglected and popular boys. *Developmental Psychology*, 23, 705-711.
- Mayer, J.D., & Gaschke, Y.N. (1988). The experience and meta-experience of mood. *Journal of Personality and Social Psychology*, 55, 102-111.
- Newby, R.F., Fischer, M., & Roman, M.E. (1991). Parent training for families of ADHD. *School Psychology Review*, 20, 252-265.
- Olson, D.R., & Astington, J.W. (1993). Thinking about thinking: Learning how to take statements and hold beliefs. *Educational Psychologist*, 28, 7-23.
- Parke, R.D. (1981). *Fathers*. Cambridge, MA: Harvard University Press.
- Patterson, G.R. (1982). *Coercive family process*. Eugene, OR: Castalia.
- Porges, S.W. (1984). Physiologic correlates of attention: A core process underlying learning disorders. *Pediatric Clinics of North America*, 31, 371-385.
- Rogers-Wiese, M.R. (1992). A critical review of parent training research. *Psychology in the Schools*, 29, 229-236.
- Salovey, P., & Mayer, J.D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, 9, 185-211.
- Shortt, J.W., Bush, L., MacCabe, J.R., Gottman, J.M., & Katz, L.F. (1994). Children's physiological responses while producing facial expressions of emotions. *Merrill-Palmer Quarterly*, 40, 40-59.
- Stifter, C.A., Fox, N.A., & Porges, S.W. (1989). Facial expressivity and vagal tone in 5- and 10-month-old infants. *Infant Behavior and Development*, 12, 127-137.
- Wechsler, D. (1974). *Selected papers of David Wechsler*. New York: Academic Press.

Mother-Child Talk of Maternal Language

Saint Louis
Susanne
Emotion

Emotional understanding
tural contexts; thus exa
emotions with their you
socialisation. In this lon
and their preschool child
were 40, 58, and 70 mo
more about emotions ar
daughters than with son
with daughters than wit
between girls and boys a
talked more about emot
boys and also initiated
Results are discussed in
and emotion across the

Historically, theories of
mental life. Presently, c
sciences as well as phil
of emotion (c.g. Armon-

Requests for reprints should
Louis University, St. Louis, M

This research was supportec
We would like to thank the r
including Catherine Haden, El
Eppen. We would also like to
throughout this project.