Interpretations of Child Emotion Expressions and Coercive Parenting Practices Among Adolescent Mothers

Zvi Strassberg and Dominique Treboux, *The State University of New York at Stony Brook*

Abstract

This study examined the relation between adolescent mothers' interpretations of various child emotion expressions and coercive parenting practices (n = 43 mother-child dyads, child ages = 10–34 mos.). The more coercive mothers decoded a range of child emotion expressions as exhibiting greater anger, and attributed greater defiant intentions to the child, compared to less coercive mothers. The findings for attributions of defiance were robust, as they were independent of both emotion decoding and level of child difficulty. Findings are discussed with regard to (a) mothers' basic assumptions about the child; (b) the robust character of attributions of defiance in relation to coercive parenting; (c) the potential implications of this study for research with adult mothers; and (d) investigation of temporal precedence and developmental pathways in the interrelations among child behavior, maternal cognition, and parenting behavior.

Keywords: Parenting; social cognition; emotion expression; coercion

Coercive parenting is ineffective for eliciting lasting positive behavior from children, and represents a risk factor for abusive discipline (e.g., Reid, 1986; Strassberg, Dodge, Pettit, & Bates, 1994). The social information processing perspective posits that coercive parenting can be understood as a function of the parent's mental processing of the information in the child's behavior cues (Dodge, 1986; Strassberg & Dodge, 1998). Maternal interpretations of child behavior in control situations (i.e., the psychological meaning of the behavior to the mother) have been of particular interest to researchers concerned with social information processing and coercive parenting. Attributing misbehavior and noncompliance to defiant and hostile intentions, the child's disposition, and to an imbalance of control in the adult-child relationship, as well as the expectation of misbehavior from the child, are correlated with affectively negative and coercive parenting (e.g., Bugental, Blue, & Lewis, 1990; Dix & Lochman, 1990; Larrance & Twentyman, 1982; MacKinnon-Lewis, Volling, Lamb, Dechman, Rabiner, & Curtner, 1994; Strassberg, 1995). This emerging body of literature has been interpreted as representing a self- and child-defeating "processing

Correspondence Zvi Strassberg, Ph.D. Department of Psychology The State University of New York Stony Brook, NY 11794-2500, USA Office; 516-632-9638 Fax: 516-632-7876 e-mail: zstrass@psychl.psy.sunysb.edu

trap" (Strassberg, 1995; 1997). The trap is a form of self-fulfilling prophecy, in which the mother's attributions stimulate harsh and ineffective (i.e., coercive) influence and discipline attempts, which in turn elicit or exacerbate the very behaviors that the mother seeks to control.

One goal of this study was to test the general interpretation-coercion model among adolescent mothers and their children, a population that represents parenting and child-outcome risk but has not been represented in the social information processing literature. On average, adolescent mothers are less responsive, synchronous, and affectionate, as well as more rigid, restrictive, and punitive than adult mothers (e.g., Barrat & Roach, 1995; Passino, Whitman, Borkowski, & Schellenbach, 1993; Schilmoeller & Baranowski, 1985). Further, problematic child-rearing and child-related beliefs are correlated with adolescent (versus adult) parenting status, as well as with parenting behavior within adolescent samples (Sommer, Whitman, Borkowski, & Schellenbach, 1993). It therefore appears that there is a cognitive basis for impaired levels of parenting skills among adolescent mothers, as well as for variability in parenting skill among samples of adolescent mothers (Sommer et al., 1993). Social information processing studies inform us more directly than general belief measures about the social cognitive skills, biases, and deficits that act as proximal mechanisms of parenting competence and dysfunction, because of concern with the situational stimuli to cognition and behavior. The present focus on maternal interpretations of child behavior cues is one such study. This study also extends the adolescent parenting literature in examining social information processing correlates of coercive parenting patterns that are harsher and more punitive than those that have previously been examined among adolescent mothers.

The other general goal of this study was to test a substantively novel variant on the fundamental "Stimulus (e.g., child behavior cues)—Organism (e.g., maternal interpretation)—Response (e.g., coercion)" structure of social information processing models. As such, this study tested hypotheses of broad interest and importance for understanding the bases of dysfunctional parenting and parent-child relationships. First, regarding the stimulus component of the model, recent studies of child behavior cue effects on maternal attributions have utilized gross behavior units (e.g., noncompliance) representative of problematic caretaking situations. A specific component of the child's behavior pattern that may be particularly compelling to mothers is his or her emotion expression. In the parent-child relationship, emotional behaviors are cues to caretaking responses, although there are individual differences in mothers' abilities to differentiate appropriately among different emotion cues (Campos, Campos, & Barrett, 1989). One would expect that mothers who are relatively unskilled in the interpretation of emotion cues would respond inappropriately to child behaviors. In fact, physically abusive mothers are physiologically hyper-reactive to child cries (Frodi & Lamb, 1980; Zeskind & Shingler, 1991), and are prone to misidentify both positive and negative infant emotion cues (Kropp & Haynes, 1987). However, studies of deviant parenting have not used emotion cues per se as stimuli to maternal interpretations. Thus, the psychological meaning of child emotion cues to coercion-prone mothers has remained untested. This study investigated the relation between maternal emotion cue interpretation and coercive parenting.

Moreover, we propose a dual-component process of maternal emotion cue interpretation. According to this model, interpretations of child behavior serve a functional role in preparing the mother for responding toward the child. When presented with a child emotion cue, the mother first attempts to identify, or decode, the child's emo-

tional state. She then uses this information to infer the child's behavioral intentions in preparation for coping. In other words, her "understanding" of the child's emotional reaction (enquoted to denote that she may or may not be accurate in decoding) indicates to her the likelihood that the child will intend to engage in one type of behavior or another. In turn, understanding the child's intentions prepares and orients the mother toward a parenting response because the "knows" what to expect from the child. For example, maternal decoding of anger in a facial expression may lead to the inference of hostile intentions, orienting the mother toward a defensive reaction (such as coercion).

This study tested three sets of hypotheses concerning relations between the mother's interpretations of child emotion cues and her pattern of coercive discipline toward the child. The first set of hypotheses focused on types of child emotion cues that elicit negativistic interpretations from more coercive mothers. An "ambiguity" hypothesis predicted that negative interpretations of the child's *ambiguous* emotional reactions to control attempts would be positively correlated with coercive parenting patterns. In other words, it was posited that mothers who resolve uncertainty by assuming the worst from the child will also engage in a pattern of adversarial parenting responses. This hypothesis served as both a conceptual replication of prior research on the relation between maternal attributions for ambiguously intended misbehavior and coercive parenting (e.g., Dix & Lochman, 1990; Strassberg, 1997), and as a unique test of the specific effects of emotional ambiguity on maternal interpretations. A "dysphoria intolerance" hypothesis predicted that negative interpretations for *angry* and *sad* child responses to maternal control attempts would be positively correlated with coercive parenting. This hypothesis posited that the more coercive mothers find negative emotions aversive in general. Anger was selected as a prototypical antagonistic response. Conversely, the sad emotion condition was selected because of its normative signal value for eliciting sympathetic parenting reactions; thus, interpretation of sadness as indicative of hostility would suggest that the more coercive mothers present an atypically pessimistic and particularly pernicious child-schema. Other dysphoric reactions do not provide the dramatic signal contrast to anger as that afforded by sadness (for example, fear might imply a defensive reaction), but because we focused on only two types of dysphoric expressions, the present study should be taken as a limited test of generalization across negative emotion cues.

The second set of hypotheses concerned the primacy of the variables in the dual-component model for predicting maternal coercion. An important question for the study of attributions is whether they represent a primary maladaptive interpretation of child behavior cues, or are secondary to a more fundamental processing bias or deficit that can not only account for the attributions in question but also for the relation between the attributions and a behavior outcome variable. For example, aggressive and rejected children not only attribute hostile intentions to peers, but also display encoding biases that theoretically precede attributions (Dodge, McClaskey, & Feldman, 1984). If (a) decoding child emotion cues as those of anger, and (b) attributing defiant intent to the child were correlated and proved to be redundant predictors of maternal coercion, then parsimony would dictate an emphasis on decoding as the primary information processing variable (because it theoretically would account for attributions and the attribution-coercion relation). Conversely, attributing defiance to the child may account for the hypothesized relation between emotion (anger) decoding and coercion, and provide additional prediction of coercion beyond that provided by decoding. If so, the mother's attributions would act as a mediator of the decoding-coercion relation, and

therefore as a primary interpretation variable. The primacy of child-oriented decoding (as anger) versus the primacy of attributions (of defiant intent) in predicting mothers' coercion practices were tested as alternative hypotheses.

The final hypothesis for this study concerned the relative independence of maternal interpretation patterns from the child's level of behavioral difficulty in predicting coercive parenting. Theoretically, the mother's interpretations of child behavior cues both reflects the child's level of difficulty and contributes to it by stimulating ineffective caretaking. In fact, by the middle childhood years, negative attributions for misbehavior and noncompliance are correlated with both the child's general level of behavior problems and with coercive parenting (e.g., Dix & Lochman, 1990; Gretarsson & Gelfand, 1988; Strassberg, 1995). Whereas child behavior and maternal cognition are conceptually distinct components of the parent-child system, the strongest case for naturalistic cognitions contributing to our understanding of coercive parenting is argued empirically, by independent prediction to coercive parenting. In a rare test for such incremental validity, MacKinnon-Lewis et al. (1994) found that maternal attributions during the middle-childhood years did *not* increment beyond child behavior problems in the prediction of future coercion toward the child. However, the present study utilizes young children (from 10–34 months of age). The study of such young ages suggests the opportunity to examine maternal cognitions before the confounding effects of child behavior and relationship history accumulate (although child and relationship history surely exert influence on maternal cognitions from the birth of the child onward). It was therefore hypothesized that maternal interpretations of child emotion cues would provide an independent increment beyond child difficulty in the prediction of maternal coercion practices.

In summary, this study extended the general interpretation-coercion model to a sample of adolescent mothers and their children to test (a) the "ambiguity" and "dysphoria intolerance" hypotheses of the relations between maternal interpretations of child emotion cues and coercion toward the child; (b) alternative hypotheses concerning the primacy of anger decoding versus the attribution of defiance to the child in predicting maternal coercion; and (c) the incremental validity of maternal interpretations in predicting coercion toward the child, beyond prediction afforded by the child's level of difficulty.

Method

Overview

Mothers were enrolled in alternative high school and community service programs for pregnant and parenting adolescents. Data collection took place in two phases. The first phase was a group administration to 60 mothers of a questionnaire battery that included reports on the demographic information and child characteristics reported below. The second phase, which was conducted with a subsample of the program populations who were available for assessment (per their schedules), was a private interview composed of a social information processing assessment and reports of coercion toward the child. Program child care workers also reported on child characteristics. Child care worker reports were of special significance for tests including relations between maternal emotion cue interpretations and child behavior. That is, a mother's interpretations of her child's emotion cues and her reports of child difficulty may both be seen as different aspects of the same underlying variable, maternal perceptions of

the child. Independent ratings of child behavior (e.g., as provided by the child care workers) are thus important sources of data to complement maternal report in tests involving the dependence/independence of mothers' interpretations of specific child cues and her general reports of child difficulty.

Participants

Participants were 43 adolescent mothers and their children. Participant mothers had a mean age of 17.7 years (s.d. = 1.76; range = 13–19 years); 25 (58%) lived with their family and 8 (16%) with their partners; mothers were all low-income, with 26% receiving Aid to Families with Dependent Children [AFDC]). The age range for children was 10–34 months, with a mean age of 19.1 months (s.d. = 7.78). Male children comprised 55% of the sample, and females 45%. Eight mothers (16%) also had other children, ranging from two months through seven years of age.[1] The sample was 38% Caucasian, 27% African-American, 18% Hispanic, and 14% of mixed ethnicity. Ethnicity information was not available for one subject.

Maternal Coercion and Child Difficulty Measures

Maternal coercion. Measures of maternal coercion toward the child were derived from a previously modified version of the Conflict Tactics Scale (CTS; Straus, 1979; 1987; modified version, Strassberg, 1997), and collected following the attribution interview. A primary advantage of a self-report measure such as the CTS is that it provides access to infrequent and difficult-to-observe events. A limitation is the potential for a social desirability bias to reduce reported frequencies among the more coercive mothers. A consequence of such under-reporting would be that tests of individual differences in coercion in relation to other variables would become more conservative.

A global Coercion scale was composed of the following behaviors: Threaten, yell, restrain, spank (mild), and spank (strong). Mothers reported on the weekly rates of their own behavior toward the child during the past two months, ranging from 0 times per week through 2–3 times per day (calculated as 17.5 times per week) per scale item. Cronbach's alpha reliability coefficient for the Coercion scale was .74 ($p < .01$). For the sample, individual item scores ranged from 0 (never) through 17.5 (2–3 times per day), and the total scale rates ranged from 0 through 35 acts per week. The mean weekly coercion scale rate was 16.77 acts (s.d. = 7.89).

The CTS coercion items did not fall within the conventional definitions of abuse. However, the generally young age of the children in the sample raised the possibility of child abuse reporting issues, especially for the youngest children. No mothers disclosed information concerning infliction of child injury to the research team, nor were any such indications witnessed. However, the first author apprised program administrators of mothers who reported particularly high levels of coercion or used physical punishment with the younger children, for purposes of monitoring those dyads.

Child difficulty. The measure of child difficulty used for this study was an adaptation of the Child Behavior Checklist (CBCL) 2–3 year-old Version (Achenbach, 1993). Whereas the notion of clinically significant externalizing problems among young children (especially younger than age two) is a controversial one, such a concern does not preclude the occurrence of difficult behaviors or their correlation with

other factors within the parent-child system. We believed that we could adapt a meaningful behavior-based measure of child difficulty that was both developmentally sensitive and closely paralleled measures of problem behavior used in studies with older children (given a concern with testing the robustness of cognitive versus child effects in a manner that mirrored as closely as possible such tests with older children).

First, we selected those CBCL items with face validity as potentially presenting interpersonal difficulties for caretakers (which were scored according to the conventional scale of 0 [not at all or rarely true], 1 [somewhat or sometimes true], or 2 [very or often true]). These 20 items came primarily from the Aggressive Behavior scale, and were as follows: 13. Cries a lot; 15. Defiant; 16. Demands must be met immediately; 17. Destroys own things; 18. Destroys others' things; 20. Disobedient; 29. Easily frustrated; 40. Hits others; 44. Angry moods; 53. Physically attacks people; 58. Punishment doesn't change behavior; 64. Resists going to bed; 66. Screams a lot; 81. Stubborn, sullen, or irritable; 82. Sudden changes in mood or feelings; 83. Sulks a lot; 85. Temper tantrums or hot temper; 88. Uncooperative; 91. Unusually loud; and 97. Whining. It was expected that the scale structure (i.e., specific items) would vary with child age, with items culled for the younger-aged children.

Scale construction was conducted independently for three age spans, using the initial pool of 60 participants. Age groups (with *n*'s for maternal/child care worker reports) were 6–12 months (36/25), 13–24 months (17/12), and 25–34 months (7/7). For maternal report, eliminating one item that did not intercorrelate well with the other items ("demands must be met immediately"), Cronbach's alpha reliability coefficients for each age group was .90 or greater (all $p < .001$). It was somewhat surprising that the psychometric structure of the scale was equivalent across ages; in fact, we expected to use a greatly reduced scale for the younger children. However, consistency in structure across the age groups may represent psychological adjustments by the mothers to report on age-appropriate interpretations of the items (e.g., for 6–12 month olds, hitting may mean flailing at her when angry, and property destruction may mean pulling things off tables). Child care workers also reported via the CBCL on 42 of the children (two workers per child). The structure of the adapted "child difficulty" scale was equivalent to that for mother-report, with Cronbach's alphas of .88 or greater ($p < .001$) for each reporter at each of the three child-age periods. Scale scores correlated .71 ($p < .001$) across child care workers, and were averaged to form a "worker-report child difficulty" variable. Maternal report comprised a "mother-report child difficulty" variable.

Mean "difficulty" scores (summing raw scores for the 19 items) for each age group and reporter were as follows: Mothers: 6–12 months, M = 6.50 (s.d. = 7.41), range = 0–33; 13–24 months, M = 9.35 (s.d. = 7.56), range = 0–24; and 25–34 months, M = 11.71 (s.d. = 8.64), range = 3–29. Daycare workers; 6–12 months, M = 3.60 (s.d. = 4.90), range = 0–19; 13–24 months, M = 6.17 (s.d. = 6.81), range = 0–26; and 25–34 months, M = 12.25 (s.d. = 6.34), range = 5–20.

Scale scores for the "mother-report child difficulty" and "worker-report child difficulty" scales were standardized (z-scores) within the three child age groups, to control for differing behavioral norms across ages. This standardization procedure was analogous to the norming procedure used by Achenbach in scale development for the CBCL, in generating age-cohort-referenced scores. Granting that the absolute mean levels of child behavior and the relative standing of subjects within age-groups may

not generalize beyond our sample, our z-scored scale provided a measure of relative child difficulty that was useful for the present study.

The correlation between the two child difficulty variables was modest, $r = .31$, $p < .05$ (n = 32, for those children with both mother and child care worker reports). However, using median splits on distributions for each rating source, those children rated as low-difficulty and those rated as high-difficulty by mothers were also quite likely to be rated similarly by child care workers (14/20 low-difficulty [70%], 9/12 high-difficulty [75%], $\chi^2[1] = 6.10$, $p < .02$). Thus, although specific rank orderings of difficulty scores varied somewhat across reporters, there was agreement across reporters as to the child's general level of difficulty.

Emotion Cue Interpretation Interview

Stimulus materials. Control-oriented caretaking vignettes were presented verbally, and culminated with illustrated depictions of the child's emotional reaction to the mother. Vignette stems consisted of the child engaged in a play activity, followed by a maternal attempt to influence the child's behavior. Activities/directives were (a) playing with noisy toy/try to get her/him to play quieter; (b) making too much mess/try to get her/him to play with something else; (c) showing how to build blocks but child interested in other toy/try to get her/him to use blocks; and (d) child playing/try to get her/him to clean up.[2] Following the directive, the child was depicted in one of four ways: With an ambiguous, or a mildly-to-moderately angry, sad, or happy facial expression. The happy expression was included as a manipulation check to test for subjects' attention to- and discrimination between- emotion stimuli. There were four gender-ambiguous stimulus "children", each of whom was depicted producing each of the four emotions, for a total of 16 emotion stimulus cards. Illustrations were used as stimuli to both maximize control over the emotion expressions features, and to minimize the chances for differential similarities to one's own child across subjects.

Undergraduate and graduate psychology students (n = 8) were employed as raters to evaluate the fidelity of the emotion stimuli. Raters viewed the stimulus cards for up to one second (to parallel the experimental procedure, as described later) and categorized them via free-response with regard to the predominant emotion in each one (prior pilot testing enabled stimulus modifications to provide "pure" emotion cues). Raters' coding categories were compared with the authors' a priori classifications. There was 100% agreement for the "happy", "mad", and "sad" expressions, and 88% (7/8) for the "ambiguous" expression (typical rater reactions to the ambiguous stimuli were those such as "Well, it could be . . . I'm not sure", and "It's hard to tell"). All stimuli were rated in the mild-moderate range of intensity (choices included "neutral-to-mild", "mild-to-moderate", and "moderate-strong" intensity; pilot testing enabled stimulus modifications toward universal agreement on final reliability ratings).

Stimulus presentations were prepared individually for each subject mother prior to her interview. Each presentation was composed of a sequence of the four vignette stems, with each of the four emotion expressions presented as trials within vignette. Each emotion expression was depicted by a different "child" per trial within each vignette, and a different version of each expression was presented across vignettes (for a total of 16 trials, each with a different combination of child-by-version of emotion expression). Order of vignette, order of emotion expression, and child-by-version of emotion expression were all randomized within and across subjects.

Procedure

Data collection was conducted in a private interview room in the program center. Interview instructions to the mothers were as follows: "We know from talking with many mothers that children respond in different ways when the mother tells them what to do, and that some kinds of child behaviors are more stressful than others. We want to learn more about how mothers know what their child is thinking and feeling at these times. Following are some situations in which you will imagine that you are telling your child what to do, and then he or she (author's note; gender cited as appropriate) reacts toward you in various ways. I will ask you for your opinion about what your child was probably thinking and feeling in each situation. One thing I'll ask you about is if s/he was mad, and another is if s/he was being defiant. What does the word 'defiant' mean to you? (all mothers were able to provide an appropriate synonym; then for standardization purposes, the experimenter replied . . .) That's right, defiance means that the child is trying to go against what you want. But remember, there are no right or wrong answers, and that just because we ask about certain things doesn't mean that's what your child was really thinking or feeling. You're the expert, so we want to know what you really think". (School-related time constraints on the mothers' availability led us to focus specifically on the negative cognitive dimensions central to the cognition-coercion model, rather than taking a broader approach; thus, the latter set of instructions was aimed toward relieving any experimental demands to endorse child anger or defiance. As described in "dependent variables" below, this precaution appeared to be successful).

The emotion cue cards were each presented for up to approximately one second, to simulate the processing demands of in vivo interactions (i.e., we were interested in the mother's relatively spontaneous processing of the child's initial reaction to her). As a manipulation check, on the first trial mothers were asked to identify the child in the emotion cue card, and every mother endorsed the child as her own. Following each expression trial, the mother was asked for her (a) decoding of the child's emotion, as "How angry was he/she toward you?"; and (b) attribution of intention to the child, as "How defiant was she/he thinking about being?". The dependent measures were collected on a 4-point Likert scale. Scale points and labels were: 1 (not at all), 2 (sort of), 3 (pretty much), and 4 (very much). Scale points were represented visually in ascending order, with accompanying histographic bars that began with zero elevation for "not at all" and increased in elevation with numerical increases in scale points.

Dependent Variables

Cronbach's alpha reliability coefficients were computed for the four trials of each of the two interpretation variables within each of the four types of emotion expression. All reliability coefficients were greater than .75 ($p < .001$). Therefore, anger decoding and the attribution of defiance scores were each aggregated across the four trials within each type of expression. Thus, subjects had an "anger decoding" and an "attribution of defiance" score in response to each type of emotion cue. As reported in Table 1, there were main effects of emotion cue condition for the decoding and attribution variables. Post-hoc analyses indicated that for both variables maternal negativity was least in the "happy" condition, and greatest in the "mad" condition. The ambiguous and sad condition scores fell in-between, were equivalent to each other,

Table 1. Mean Interpretation Scores Across Emotion Cue Conditions (n = 43)

| Interpretation Variables | Emotion Cue Condition | | | | F(3,40) | p < | Post-hoc[1] (p < .05) |
	Happy	Amb.[2]	Sad	Mad			
Anger Decoding	1.19	2.16	1.99	3.34	238.35	.001	H < (A&S) < M[3,4]
	(.22)	(.62)	(.62)	(.54)			
Attribution of Defiance	1.58	2.08	2.13	2.94	31.18	.001	H < (A&S) < M
	(.66)	(.67)	(.83)	(.77)			

Notes.
1   Newman-Keuls.
2   Amb. is the Ambiguous condition.
3   H = Happy, A = Ambiguous, S = Sad, M = Mad.
4   (A&S) represents A and S conditions as equivalent and both greater or lesser than the H and M conditions, respectively.

and were significantly different from the "happy" and "mad" condition scores. Thus, mothers discriminated among types of emotion cues in their interpretations, indicating that they were reacting to the cues themselves, rather than responding in a "knee-jerk" manner reflecting either inattention to the stimuli or potential demand characteristics related to the fixed-choice format of this study.

Results

Preliminary Analyses

Maternal demographic characteristics (age, residency status, economic status) were not correlated with the maternal interpretation and coercion scores (all $r < .25$, $p > .20$). Thus, hypothesis tests were conducted without regard to maternal life circumstances.

Sex of child was not correlated with maternal coercion ($r = -.09$, n.s.) or decoding or attribution scores (r's $= -.10$ and $-.12$, respectively, n.s.) (all point-biserial correlations). There was a significant correlation between child age and maternal coercion ($r = .38$, $p < .02$), indicating that coercion was used more frequently toward older children. Correlations between child age and anger decoding scores in each condition were as follows: Happy, $r = .39$, $p < .02$; Ambiguous, $r = .20$, $p < .22$; Sad $r = .34$, $p < .03$ and Mad, $r = .00$, n.s. Correlations between child age and defiance attribution scores in each condition were as follows: Happy, $r = .38$, $p < .02$; Ambiguous, $r = .35$, $p < .02$; Sad $r = .29$, $p < .06$; and Mad, $r = .08$, n.s. Thus, overall, mothers appeared to be sensitive to child development in their willingness to ascribe the psychological experiences of anger and defiant intentions to the child, with at least marginally significant effects present for the majority of emotion cue conditions. The interactions of child age and sex of child with interpretation scores did not provide an increment in the prediction of coercion beyond the interpretation scores alone (each RsqChange, $< .02$, n.s.). Therefore, hypotheses were tested treating child subjects as a single cohort, but partialing out age effects on the relations between maternal interpretations and coercion toward the child.

Table 2. Correlations Between Maternal Attributions for Child Emotion Expressions and Weekly Rates of Coercive Parenting (n = 43)[1,2]

Interpretation Variables	Emotion Cue Condition				
	Happy	Amb.[3]	Sad	Mad	Aggregate[4]
Anger Decoding	.22	.31*	.45**	.31*	.47**
Attribution of Defiance	.24	.48**	.53**	.44**	.57**

Notes.
1 Coefficients are partial correlations between interpretations scores for a particular type of emotion cue and the global maternal coercion score, controlling for age effects.
2 $*p < .05$ $**p < .01$.
3 Amb. is the Ambiguous condition.
4 Aggregated across the Ambiguous, Sad, and Mad conditions.

Interpretation of Emotion Cues

Table 2 depicts bivariate correlations between maternal interpretation and coercion scores. The ambiguity hypothesis was supported by significant positive correlations between maternal coercion and both interpretation scores in the ambiguous expression condition. The dysphoria intolerance hypothesis was also supported, by positive correlations between maternal coercion and interpretation scores in the sad and angry expression conditions. There were not significant correlations between maternal coercion and interpretations in response to the child's happy expression. Findings for the happy condition were consistent with participant mothers assigning the lowest mean levels of anger and defiance to the happy expression. In sum, these findings indicate that on the whole mothers discriminate pleasant affect from other expressions, but that expressions that are ambiguous or negative in valence elicit negativistic responses from the more coercive mothers. Interpretations provided the strongest prediction of maternal coercion scores (in absolute magnitude) when aggregated across the ambiguous, sad, and mad stimulus conditions (Table 2, far right).

*Dual-Component Model and the Primacy of Decoding Versus Attributions*

The decoding and attribution scores were significantly positively correlated within each of the four emotion cue conditions (all $r > .48$, $p < .05$), as were the aggregated scores ($r = .71$, $p < .01$). Findings were therefore consistent with the proposed dual-component model. At this point, it was thus necessary to conduct further tests to determine (a) whether the relation between maternal attributions and coercion toward the child could be accounted for (i.e., were mediated) by a more basic emotion decoding phenomenon, and/or (b) whether the relation between maternal decoding and coercion toward the child could be accounted for (i.e., were mediated) by the inferential process of attributions for the child's expressions. Baron & Kenny (1986) suggest the following as criteria for establishing mediation: That there are significant bivariate correlations between the primary predictor and the hypothesized mediating variable; between the hypothesized mediating variable and the outcome variable; and that a previously significant path between the predictor and outcome variables becomes nonsignificant

when controlling for the predictor-hypothesized mediator and hypothesized mediator-outcome correlations. In other words, variance associated with the hypothesized mediator has indeed accounted for the predictor-outcome relation. Tests of (a) and (b), above, were conducted according to these criteria, also controlling for age effects in each path.

As depicted in Figure 1(A), the correlation between attributions of defiance and maternal coercion remained significant and substantial when controlling for variance accounted for by decoding scores. However, as depicted in Figure 1(B), the correlation between maternal decoding and coercion dropped to a nonsignificant level when controlling for the variance accounted for by attribution scores. Thus, whereas emotion decoding predicts attributions of defiance and maternal coercion, it is the attribution of defiance that mediates the decoding effect and most directly accounts for maternal coercion patterns.

Incremental Validity of Interpretation

Given the primacy of attributions in the dual-component model, incremental validity tests focused on the attribution of defiance to the child. Analyses were conducted sep-
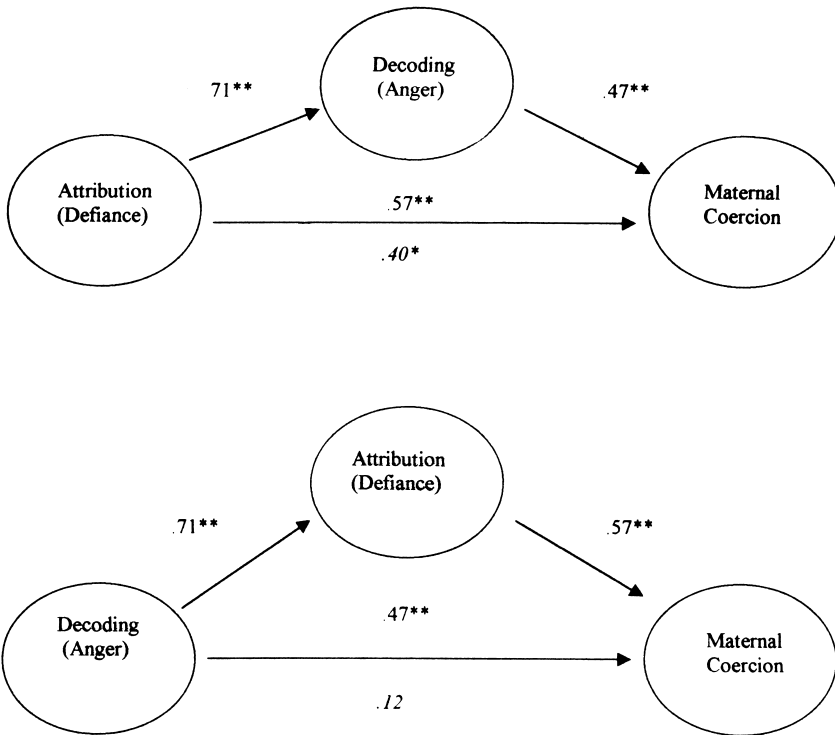
Notes

Partial correlations for age effects only are indicated in standard font; partial correlations controlling for age and the other two paths in the model are indicated in italics.

*p < .05 ** p < .01

Figure 1. Mediational analyses within the dual-component interpretation model.

arately using the mother and daycare-worker reports of child difficulty, in order to test the replicability- and thus robustness- of the findings.

Mother-rated difficulty. Recall that the aggregate attribution of defiance and maternal coercion scores were positively correlated ($r = .61$, $p < .001$). The present analyses found mother-rated child difficulty to be positively correlated with the attribution of defiance ($r = .36$, $p < .05$) and with coercion ($r = .50$, $p < .01$). Thus, there was a system of interrelations among child difficulty, negative attributions, and maternal coercion.

In a heirarchical regression analysis, the attribution of defiance provided a substantial degree of independence in predicting maternal coercion. At the first step in the equation, child difficulty (and age) significantly predicted maternal coercion, $F(2,33) = 10.48$, $p < .01$, $R^2 = .40$. When entered at the second step, the attribution of defiance incremented the prediction of maternal coercion by 11%, Fchange$(2,32) = 2.01$, $p < .05$, R^2change $= .11$. Beta-weights for the full equation were: Child difficulty, .32, $p < .02$; child age, .29, $p < .04$; and attribution of defiance, .38, $p < .01$. These analyses demonstrate incremental validity for the attribution of defiant intent in predicting maternal coercion, beyond prediction afforded by the level of child difficulty.

Daycare-worker-rated difficulty. Daycare-worker reports of child difficulty were also positively correlated with the attribution of defiance ($r = .32$, $p < .05$) and with coercion ($r = .38$, $p < .01$). Again, in a heirarchical regression analysis, the attribution of defiance provided a substantial degree of independence in predicting maternal coercion. At the first step in the equation, child difficulty (and age) significantly predicted maternal coercion, $F(2,33) = 6.51$, $p < .01$, $R^2 = .37$. When entered at the second step, the attribution of defiance incremented the prediction of maternal coercion by 22%, Fchange$(2,32) = 4.09$, $p < .01$, R^2change $= .22$. Beta-weights for the full equation were: Child difficulty, .24, $p < .12$; child age, .32, $p < .04$; and attribution of defiance, .49, $p < .01$. These analyses replicate those using mother-reported child difficulty. Thus, maternal attributions were robust in being relatively independent of child difficulty in predicting the mother's coercive discipline patterns toward the child.

Discussion

The present study was successful in applying the interpretation-coercion model to a sample of adolescent mothers and their children. Child emotion cues proved to be salient stimuli to maladaptive interpretations by the more coercive mothers, even though the child had not yet engaged in any form of active resistance toward her. There was a matrix of interrelations among anger decoding, the attribution of defiance to the child, level of child difficulty, and maternal coercion patterns. The attribution of defiance, or the mother's interpretation of the child's motivational state, emerged from this matrix as the most robust predictor of maternal coercion. This is not to suggest that emotion decoding is a trivial variable; indeed, deviant decoding predicted deviant attributions, and may even be a necessary antecedent of attributions for emotion expressions. However, it was the inferences that mothers made about the cause of the emotion in the child's intentions that was the most telling predictor of behavioral parenting dysfunction. In this vein, the independence of the attribution-coercion relation from child age and difficulty suggests the possibility that the mother's inferences about the child's motives are prominent in the early phase of relationship dysfunction, and may serve

as a core factor in the development of a dyad-defeating "processing trap" (Strassberg, 1995; 1997).

The present findings indicate a pervasive negativity in more coercive mothers' psychological orientation toward the child. Ambiguity in social stimuli, as with the ambiguous child emotion cues presented to mothers in this study, facilitates the assessment of an individual's basic assumptions about the stimulus target (i.e., another individual). This is because interpretation of the situation requires the perceiver to rely on a priori knowledge, beliefs, biases, and other relevant cognitive structures, rather than the paucity or conflicting nature of information provided by the other person's cues (Dodge, 1986; Jussim, 1995). In other words, basic assumptions serve the resolution of uncertainty. In this study, as with samples of adult mothers (e.g., Bugental et al., 1990; Dix & Lochman, 1990; Strassberg, 1995), the more coercive mothers' basic assumptions about the child were pessimistic and conflict-oriented.

Support for the dysphoria intolerance hypothesis may initially seem anomolous in the context of (a) the ambiguity resolution argument outlined above, and (b) a previous finding that mothers of middle-childhood aged boys interpret oppositional, angry noncompliance as motivated by defiant intent (Strassberg, 1995). However, the fact that the mothers were presented with the child's initial expression, rather than to a definitively resistant type of child response, suggests an element of ambiguity in the stimuli. Indeed, it appeared that maternal cognition was affected by a combination of such ambiguity and the distinctive information available in the various emotion cues. This notion is supported by the fact that the mean decoding and attribution scores were the greatest for the anger expression, which was the cue most suggestive of impending resistance, and lowest for the happy cue condition, which was the cue most suggestive of cooperation. Thus, although the more coercive mothers evidenced greater negativity, mothers were discriminating between cues and not responding in an indiscriminately negative "knee-jerk" manner. In sum, more coercive mothers are more pessimistic and conflict-oriented in their conceptions of their children than are less coercive mothers. In addition, the magnitude of negativity varies with the distinctive informational value of the different emotion expressions.

The finding that the attribution of defiance was robust in demonstrating prediction of coercion practices independently of child difficulty warrants further discussion. In previous studies using older children (e.g., MacKinnon-Lewis et al., 1994), interrelations among child behavior, maternal cognition, and maternal behavior were sufficiently strong to preclude independent prediction by any variable within the system. However, at the early ages represented in this study, reciprocal and transactional effects have presumably not yet attained full effect; and maternal attributions provided effects on maternal behavior independent of the child's behavior. One possible interpretation of this finding is that of a "mother effect", in which schemas pre-existent to the birth of the child are brought into the relationship and "drive" problematic discipline practices and child difficulty. An alternative interpretation is that of a "child effect", in which the mother's attributions may be relatively accurate representations of a difficult child. However, the independence of attributions from child difficulty in predicting maternal coercion speaks against the basic "child effect" argument. Another possibility is that of a "child-by-mother" effect, in which dyadic dysfunction begins with child difficulty but is exacerbated transactionally as the mother's negativistic attributions and discipline practices are disproportional to the child's actual level of difficulty.

We believed that a reasonable first step in applying the interpretation-coercion

model to an adolescent sample was to test directly the character of maternal interpretations of her own child. However, one methodological approach to partitioning the sources of effects within the dyad is to present mothers with stimuli of unknown children, allowing assessment of whether deviant child-oriented cognitions are generalized beyond a history with a particular child (e.g., Bugental et al., 1990; Dix & Lochman, 1990). Even more comprehensively, by varying the identity (own versus other), familiarity with (known versus unknown), and information about the behavior patterns of the target children (e.g., "easy", "difficult"), one could more comprehensively sort out concurrent "child" versus "mother" versus "child-by-mother" effects. Of course, it is possible that concurrent effects (such as a "mother effect" of generalized negativity across child targets) actually represents the outcome of earlier transactional processes (such as a vulnerability that is only "triggered" when faced with a temperamentally difficult child, i.e., the primary effect is that of a child-by-mother interaction). Definitive conclusions concerning the source(s) of effects require longitudinal investigation of initial conditions and developmental transitions in the relations among child behavior, maternal social information processing, and maternal behavior. In sum, the present findings speak to either a "mother" or "child-by-mother" effect, but not a main effect of child difficulty. These findings are provocative, but require further investigation to clarify the temporal primacy of effects.

There are additional issues to be addressed in future research. One area for focus concerns the relation between deleterious parenting cognitions and ongoing interactional processes, such as that represented by Bugental's elegant program of research (e.g., Bugental et al., 1989; 1990). The present study was concerned with maternal coercion, but not with the unfolding of discipline events. Observations of mother-child interactions can be used to test whether mothers react with inappropriate behavior toward the specific types of emotion cues that elicit negativistic interpretations, the consequences for the course of the exchange, and/or if emotion interpretations are related specifically to coercion or more generally to poor parenting (in addition, subsequent study can expand on the present study through inclusion of a broader array of dysphoric expressions). These types of studies can integrate social cognition with current social learning and social interactional models of parenting dysfunction (e.g., McMahon & Forehand, 1984; Patterson, Reid, & Dishion, 1992; Wahler & Dumas, 1989) and would emphasize the role of emotion cues as stimuli to dysfunctional parenting contingencies, and of maternal cognitions as mediators of those relations. Such investigation will provide a more stringent test the validity of the cognitive model of parenting, as well as elaborating our understanding of the systems of relations among child and parent behavior.

Another avenue for future research regards social information processing models of parenting dysfunction in general. There has been a positive yield from testing hypotheses focused on specific negatively-oriented maternal interpretation variables such as attributions of intentionality, as was the present case. Other studies have emphasized various attribution dimensions besides intentionality, such as child disposition (Gretarsson & Gelfand, 1998; Larrance & Twentyman, 1983) and perceived control (Bugental, Blue, & Cruzcosa, 1989), in predicting harsh discipline and child behavior problems. Future work in this area may do well to emphasize the complexity of attributions, per se, and the possibility of differential relations among attributions dimensions and varieties of parenting mistakes (see Smith & O'Leary, 1995, regarding the latter). Relatedly, we know little of the relations between maternal psychological adjustment factors and their interpretations of child behavior. There

has been speculation that depressed mothers are particularly prone to perceive- or misperceive-misbehavior in their children, but tests have proven equivocal, largely for methodological reasons (Richters, 1992). Contextual factors such as aversive community contacts and a distressed relationship with a marital/partner would theoretically induce or exacerbate pessimistic interpretations of child behavior through the priming effects of stress emotion (Strassberg & Dodge, 1997). Inclusion of maternal life circumstances and the psychological mediators of those circumstances hypothesized to influence parenting cognitions would provide more elaborated, and thus more potentially powerful models of parenting dysfunction.

The directions for future research discussed above are germaine to studies of both adolescent and adult mothers. The present investigation was a "downward" extension to an adolescent sample of the interpretation-coercion model that has previously been utilized with adult mothers (e.g., MacKinnon-Lewis et al., 1994; Strassberg, 1997). It would be logical to feed-back the novel elaborations of the present study, and expand beyond it's limitations, in studies with adult mothers. Indeed, direct contrasts of child-oriented social information processing performance by adolescent versus adult mothers will assist in differentiating phenomena that are common to particular parenting experiences versus those that are a function of the mother's psychosocial developmental status. In this vein, both adolescent and adult mothers can also be included in what may be the most important direction for future research in this area, longitudinal tests of developmental progressions in relations among child and parenting variables (discussed earlier in terms of sources of effects). Regardless of the particular outcomes of such comparisons, including generality of effects across parent cohorts versus distinctions among adult and adolescent mothers and their children, the present and suggested research hold promise for understanding causal pathways for deviations in child, parent, and dyadic adjustment. A consequence of such knowledge will be the opening of new avenues for preventive and early interventions.

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Notes

1. Analyses were conducted both including versus excluding participant mothers with more than one child. Findings were replicated across analyses, indicating that having a child in addition to the focal child of this study did not influence relations between maternal interpretations and coercion practices.

2. The play activities were all appropriate to the ages of the study children. Two directives, to play quieter and to clean-up, were considered most appropriate for the older children. The inclusion of directives that would prove difficult for the younger children was intended to provide an additional test of maternal sensitivity/insensitivity to child age-related competencies. However, the internal consistency and similarities in mean decoding and attribution scores across the four vignettes suggested that mothers found the child's expressions to be the most salient aspect of the vignettes; we thus abandoned the distinctions between levels of directives.