Mothers' Dependent and Self-Critical Depressive Experience is Related to Speech Content with Infants

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The relationships among maternal depressive experience, maternal speech content, and infant gaze at 4 months were examined in a community, non-clinical sample of 87 mother-infant dyads at 4 months postpartum. Depression was assessed using the Center for Epidemiologic Studies-Depression Scale (CES-D), which taps depressive symptoms, and the Depressive Experiences Questionnaire (DEQ), which assesses vulnerability to dependent and self-critical depressive experience. Maternal speech was related to DEQ dependent and self-critical depressive experiences but not to CES-D depressive symptoms. When infant gaze was controlled, dependent mothers used a greater amount of infant-focused speech and self-critical mothers used a greater amount of critical and less positive speech. When the DEQ variables were used in interaction with infant gaze, dependent and self-critical mothers verbally acknowledged infant Agency/Action more under the stress of interacting with a less visually available infant, suggesting difficulty in supporting infant exploration and agency separate from mother. Maternal speech content to infants is affected by dependent and self-critical depressive experiences.

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Maternal depression is associated with negative consequences for mother-infant interaction and infant development regardless of whether depression is defined by clinician-based diagnosis or by self-report (Gitlin & Pasnau, 1989; Murray & Cooper, 1997). Depressed mothers are more withdrawn, less contingent on infant behavior, more intrusive, less playful, and more negative than non-depressed mothers. Infants of depressed mothers are less positive, more distressed, less active, and more gaze averted (see for example Cohn, Campbell, Matias, & Hopkins, 1990; Cohn & Tronick, 1989; Field, 1995; Murray, Kempton, Woolgar, & Hooper, 1993).

However, depression is not a unitary phenomenon. Two important profiles of maternal interactive disturbance have been identified: (a) "disengaged," characterized by low levels of interaction and positive behavior, and associated with more infant protest; and (b) "intrusive," characterized by high levels of rough, angry behaviors and low levels of positive behavior, and associated with more infant gaze aversion (Cohn & Tronick, 1989; Field, 1995). Disengaged mothers improve after training in attention-getting techniques, while intrusive mothers do so after learning imitation strategies (Malphurs et al., 1996).

Most of the above work measured depression with a symptom approach based on self-report, clinical diagnostic interviews, or both. In this study, a different approach to measuring depression and its subtypes is utilized. A well-developed adult literature on personality characteristics mediating depression and interactive difficulties has remained separate from that on maternal depression and mother-infant interaction (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982). This study applies Blatt's assessment of depression and compares it to a self-report symptom approach, the Center for Epidemiological Studies-Depression Scale (CES-D), in examining the impact of maternal depression on mother-infant interaction.

The Depressive Experiences Questionnaire (DEQ), a reliable, well-validated instrument (Blatt, D'Afflitti, & Quinlan, 1979; Blatt et al., 1982), measures two configurations of vulnerability to depressive experience: (a) Dependency, excessive concern with maintenance of interpersonal relatedness; and (b) Self-Criticism, excessive concern with achievement of self-defining goals. The two personality configurations are distinct in terms of triggering events, the nature of depressive experience, and associated interpersonal behavior (Alden & Bieling, 1996; Blaney & Kutcher, 1991; Coyne & Whiffen, 1995).

The excessive focus of dependent individuals on relatedness results in a selective vulnerability to depressive experience in response to ruptures in important relationships. Dependent individuals are less psychologically reflective and are likely to express dysphoria in somatic complaints. They avoid offending others for fear of losing support and their sense of well being. When separated from significant others they are more likely to experience distress; when challenged with the task of regulating negative affect they are less likely to spend time

alone (Blatt, Hart, Quinlan, Leadbeater, & Auerbach, 1992; Blatt & Zuroff, 1992; Fichman, Koestner, Zuroff, & Gordon, 1999; Mongrain & Zuroff, 1989).

The excessive focus of self-critical individuals on self-definition results in a selective vulnerability to depressive experience in response to achievement failures. Self-critical individuals exhibit excessive personal demands for accomplishment and control and experience relentless self-criticism and inferiority when depressed. They exhibit more negative reactions during conflict resolution and tend toward a hostile, controlling interpersonal style and harsh criticism of others. They are less likely to turn to others for emotional support (Aube & Whiffen, 1996; Blatt & Zuroff, 1992; Mongrain & Zuroff, 1989; Zuroff & Fitzpatrick, 1995).

This approach, that links personality, depression, and adult-adult interaction, is likely to be useful in differentiating depressed mothers' interactive difficulties with their infants. According to Blatt and colleagues (1976), difficulty in maintaining a balance between pursuit of relational and self-defining goals is the vulnerability predisposing an individual to depressive experiences and interactive difficulty. Providing care for an infant presents many challenges to maintaining the balance between protecting and nurturing an infant, and pursuing other roles such as wife, employee, and friend. For mothers with difficulty balancing relational and self-defining goals, depressive affect may be triggered and interactive difficulties with the infant may emerge. Although parenting has been shown to be affected by excessive concerns with relatedness and self-definition in studies of parental attitudes and behavior with adolescents (Thompson & Zuroff, 1999), and the capacity of new mothers to obtain social support (Priel & Besser, 2000; Thompson & Zuroff, 1998), to date no study has examined mothers' Dependency and Self-Criticism in relation to mother-infant interaction.

Mother-infant play was chosen for study because it is the social conversational context for the infant, and 4-month-olds are capable of robust participation (Jaffe, Beebe, Feldstein, Crown, & Jasnow, 2001; Stern, 1985; Tronick, 1989). Depression is known to disturb mother-infant play, with consequences for infant development (Field, 1995; Murray & Cooper, 1997). Furthermore, this face-to-face context is analogous to situations used in DEQ studies on depression and adult-adult interaction. Additionally, face-to-face play with the infant in a laboratory setting is likely to trigger interactive difficulties for mothers focused excessively on either relational or self-defining goals. Infant gaze aversion, a frequent occurrence for all infants during face-to-face play, would likely be experienced by dependent mothers as an instance of relational loss, and by self-critical mothers as an instance of failure in mastery of the mothering role.

A modified version of Murray, Kempton, Woolgar and Hooper's (1993) maternal speech content coding system was used to measure maternal interaction with the infant. This system assesses three aspects of maternal speech: (a) Focus: concern with experience of the mother, the child, or another person; (b) Affect:

negative vs. positive; and (c) Recognition of Agency: verbal acknowledgment of ongoing infant activity. These features of speech tap the types of interpersonal difficulties associated with Dependency and Self-Criticism. Murray et al. showed that the speech of postpartum depressed mothers was more negative, somewhat less likely to include acknowledgment of infant agency, and, with male infants, less likely to include infant-focused utterances. Furthermore, mothers' greater use of infant-focused speech predicted better child cognitive performance at 18 months (Murray et al.). In a later study, Murray, Fiori-Cowley, Hooper, and Cooper (1996) reported that these speech patterns of depressed mothers are associated with an immediate increase in the rate of infant "breaks in ongoing activity," in which infants suddenly interrupt their ongoing behavior.

Assessing Maternal Speech Content: Predictions for Maternal Dependency, Self-Criticism and Depressive Symptoms

Hypothesis 1. Dependency

Hypothesis 1a: Increased maternal dependency is associated with higher levels of speech focused on infant experience, and lower levels focused on the mother's own experience. Rationale: Dependent individuals focus excessively on partners. Hypothesis 1b: Increased maternal dependency is associated with higher levels of positive/complimentary speech, and lower levels of negative/critical speech. Rationale: Dependent individuals avoid angering others for fear of loss of contact. Hypothesis 1c: Increased dependency is associated with increased recognition of infant physiological and emotional states (requiring maternal caretaking and interaction), and decreased recognition of intentional infant actions (which highlight the infant's emerging capacities for separateness). Rationale: Dependent individuals have difficulty with establishing a separate identity; increased dependency compromises the mother's ability to show recognition of her infant as a separate person by acknowledging infant agency.

Hypothesis 2. Self-Criticism

Hypothesis 2a: Increased maternal Self-Criticism is associated with more speech focused on the mother's own experience, and less focused on the infant's experience. Rationale: Self-critical individuals are overly invested in their own accomplishments and control. Hypothesis 2b: Increased maternal Self-Criticism is associated with more negative/critical speech and less positive/complimentary speech. Rationale: Self-critical individuals tend toward a hostile, controlling interpersonal style. Hypothesis 2c: Increased maternal Self-Criticism is associated with increased recognition of infant intentional actions, representing first steps toward independent functioning, and decreased recognition of infant phys-

iological and emotional states, which call for greater maternal intimacy. Rationale: Self-critical individuals are invested in establishing competence and gaining respect, and they have lowered tolerance for intimacy.

Hypothesis 3. Depressive Symptoms

Hypothesis 3a: Increased depressive symptoms (CES-D) are associated with more speech focused on maternal experience and less on infant experience. Rationale: Depression is associated with high levels of self-focused attention (Ingram, 1990), and in mothers, with increased intrusiveness and a decreased tendency to use speech focused on the infant (Cohn & Tronick, 1989; Field, 1995; Murray et al., 1993). Hypothesis 3b: Increased depressive symptoms are associated with more negative/critical maternal speech, and less positive/complimentary speech. Rationale: Maternal depressive symptoms are associated with increased anger, negative behaviors, tone of voice, and speech; and decreased positive affect, play, compliments, and empathic responses (Cohn et al., 1990; Cohn & Tronick, 1989; Field, 1995; Murray et al., 1993, 1996). Hypothesis 3c: Higher depressive symptoms are associated with a decreased ability to recognize infant agency. Rationale: Maternal depression is associated with a decreased tendency to recognize infant intentional behavior (Feldman & Reznick, 1996) and to acknowledge infant agency verbally (Murray et al., 1993).

The Infant's Interactive Contribution: Decreased Infant Visual Engagement

We anticipated that the influence of maternal depressive experience on maternal speech would be intensified under the stressful interactive condition of decreased infant visual availability. Infant gaze aversion might represent an unwanted loss of contact by dependent mothers, who are vulnerable to depression with disruptions in important relationships; or a failure to perform by self-critical mothers, who are vulnerable to disruptions in the achievement of important goals (Blatt & Zuroff, 1992). Lowered infant visual engagement is expected to intensify speech patterns characteristic of mothers high on depressive symptoms (CES-D) (Murray et al., 1996).

Based on the above, the following hypotheses were developed. Hypothesis 1d: Under high stress conditions of decreasing Infant Gaze, more dependent mothers will show increased Infant-Focused, Positive, and Agency/State speech, and decreased Mother-Centered, Negative, and Agency/Action speech. Hypothesis 2d: Under high stress conditions of decreasing Infant Gaze, more self-critical mothers will show increased Mother-Focused, Negative, and Agency/Action speech, and decreased Infant-Focused, Positive, and Agency/State speech. Hypothesis 3d: Under high stress conditions of decreasing

Infant Gaze, mothers with higher CES-D sores will show increased Mother-Focused and Negative Speech; and decreased Infant-Focused, Positive, Agency/State and Agency/Action Speech.

Method

This study is part of a larger project on maternal depression and mother-infant interaction in a community, non-clinical sample of 132 new mothers and their first-born infants.

Participants

Primiparous women delivering full-term, healthy, singleton infants without major complications, who had a telephone in the home, were at least 18 years old, and were married or living with a partner, were included in the sample. Mothers were asked to participate in a study of infant social development involving periodic phone calls and a lab filming session at 4 months postpartum. Subjects were included only if the videotape sound quality allowed transcription of maternal speech, resulting in 87 dyads with adequate sound. Of those 87, CES-D data were available for 86 dyads, and DEQ data were available for 77 dyads. The first 2.5 minutes of uninterrupted play was coded from the videotape. For a substantial number of the dyads (n = 45), some portion of the maternal speech was not sufficiently clear to code the verbal content. For example, the speech might be garbled, there might be interference, and there were some failures of the vocal channel. Rather than use a portion of what the mother said, dyads were only used if the entire 2.5 minutes was codable. To ensure that this did not skew the data, the samples with and without adequate sound were compared. There were no significant differences in the CES-D, DEQ Dependency, and DEQ Self-Criticism scores between the 87 participants (86 for CES-D, 77 for DEQ) and the 45 non-participants. Demographic data were available for 78 of the 87 dyads. Mean maternal age was 29.37 years (SD = 6.63). The highest level of maternal education included: 6.4% grade school, 7.7% high school, 24.4% some college, 30.8% completed college, and 30.8% graduate education. Maternal ethnicity data were available for 84 mothers: 54.8% White, 19.0% Black, and 26.2% Latina. Infant gender data were available for 86 dyads: 51 male and 35 female.

Procedure

At 4 months postpartum, dyads came to the laboratory for a 10-min video-recording of mother-infant face-to-face play. Mothers were instructed to play with their infants as they would at home. After filming, mothers completed the CES-D and the DEQ scales and provided demographic information.

Measures of maternal depression. The CES-D (Radloff, 1977) is a 20-item, 4-point scale used to assess depressive symptoms in the general population (Husaini, Neff, & Hurrington, 1980; Radloff). Inquiring about symptoms experienced in the previous week, the CES-D identifies current rather than chronic depression. Internal consistency is high, with alpha of 0.84 for the general population and split-half reliability coefficients ranging from 0.77 to 0.92 (Corcoran & Fisher, 1987). Convergent validity and sensitivity are also high (Gotlib & Cane, 1990).

The DEQ (Blatt et al., 1979) is a 66-item, 7-point scale that does not assess the primary symptoms of depression (Blatt et al., 1976, 1982), but rather taps vulnerability to two types of depressive experience, Dependency and Self-Criticism. Factor loadings reported in Blatt et al. (1976) for the female sample were used. Test-retest reliabilities for Dependency range from .89 (5 weeks) to .81 (13 weeks); and for Self-Criticism from .83 (5 weeks) to .75 (13 weeks) (Zuroff, Moskowitz, Wielgus, Powers, & Franko, 1983). Internal consistency (coefficient alpha) is .81 for Dependency and .80 for Self-Criticism (Blatt et al., 1982). Regarding construct validity, in clinical populations, Dependency and Self-Criticism are related to scores on the Beck Depression Inventory. In college populations, Dependency and Self-Criticism are associated with depressive affect (Zuroff & Mongrain, 1987). Dependency and Self-Criticism are also related in theoretically expected ways to self-concept, self-esteem, interpersonal behavior, descriptions of parents, and dysfunctional attitudes (Blatt et al., 1976, 1982; Mongrain & Zuroff, 1989; Zuroff et al.).

Videotape coding of maternal speech content and infant gaze. For each dyad, the first 2.5 minutes of uninterrupted play was coded for infant gaze and maternal speech. Coders were blind to maternal depression status. Infant gaze was coded second-by-second "on" and "off" mother's face (timing rules from Tronick & Weinberg, 1990). Kappas ranged from .68 - .97; mean kappa .83. A per dyad score of percentage infant gaze time on mother's face was created.

Transcripts were coded using a revised version of Murray et al.'s (1993) system, the Maternal Utterance Measure (MUM; see Table 1), differentiating Agency speech into Agency/Action-Acknowledging and Agency/State-Acknowledging. To improve reliability, several minor changes were made to streamline the measure, a coding manual was developed (Kaminer, 1999), and chance-corrected reliability estimates provided.

The MUM has five exhaustive and mutually exclusive primary categories, defined in the Appendix: (a) Infant-Focused speech, (b) Mother-Focused speech, (c) Other-Focused speech, (d) Contentless/Affective/ Verse-Song/Game, and (e) Greet/Call for Attention. Infant-Focused speech is further divided into: (a) No Agency, (b) Agency/Action-Acknowledging, and (c) Agency/State-Acknow ledging. Mother-Focused speech is further divided into: (a) Self-Referential/ Neutral-Positive, (b) Negative (Corrections, Criticisms, and Self-Referential/

Table 1

Schematic Summary of Maternal Utterance Measure (MUM) Coding System

Infant-Focused[a]			Mother-Focused			Other-Focused	Contentless /Affective/ Verse-Song/ Game	Greet/Call for Attention
No Agency	Agency		Self-Referential/ Neutral-Positive	Negative (=Corrections+Criticisms & Self-Referential/Critical)	Directive(=Directives, Prompt Qs, &Self-Referential/ Demanding)			
	Action	State						
Positive								

[a]see Appendix for definitions.

Critical), and (c) Directive (Directives, Prompt Questions, and Self-Referential/Demand for Attention). A secondary category, Positive speech, can be assigned to the primary category whenever relevant. The Appendix presents the coding system. Six MUM speech categories were analyzed: (a) Infant-Focused, (b) Mother-Focused, (c) Negative, (d) Positive, (e) Agency/Action-Acknowledging, and (f) Agency/State-Acknowledging.

Maternal speech was transcribed verbatim from videotape and coded utterance-by-utterance. Utterance boundaries were defined by pauses, intonation, and syntax. Occasional reference to videotape clips was required to clarify affective tone and ambiguous utterances. Reliability was established on 12 dyads not included in data analysis. To prevent coding drift, a second reliability check on five additional dyads was conducted. A total of 17 reliability dyads were used, representing 20% of the sample. Because some speech categories did not occur within all reliability dyads, several reliability calculations were based on fewer

than 17 reliability dyads. For Infant-Focused speech, the initial Cohen's kappa was .80 (the second .90); Mother-Focused speech .82 (.86); Positive speech, .94 (1.00); Negative speech .86 (.95); Agency/Action-Acknowledging speech .89 (.88); and Agency/State-Acknowledging speech .91 (.85).

Statistical Analyses

Multiple regression analyses were used to examine the effects of maternal DEQ Dependency, DEQ Self-Criticism, and CES-D on maternal speech. Because of demographic heterogeneity, three maternal covariates were included in all analyses: ethnicity, education, and age. The two infant covariates included were gender and percentage of gaze time on mother.

To examine the role of infant gaze in interaction with maternal depression, a second multiple regression model examined the influence of Maternal Dependency X Infant Gaze; Self-Criticism X Infant Gaze; and CES-D X Infant Gaze on maternal speech, with three maternal covariates (i.e., ethnicity, education, age), and the infant covariate of gender. Alpha was set at .05. Since specific hypotheses were tested, significant individual variables are reported, even when the whole set may not be significant.

Since it was unexpected that the interaction of Dependency with Infant Gaze on Agency/Action speech would be similar to the interaction predicted for Self-Criticism with Infant Gaze, post-hoc qualitative analyses were conducted to answer the question: "Why do high Dependency and high Self-Criticism mothers use more action speech with low gaze infants?" To accomplish this task, transcripts and videotape clips of Agency/Action speech patterns were explored to identify differences between high Dependency and high Self-Criticism mothers, compared to low Dependency and low Self-Criticism mothers. Nine types of dyads were established using equal terciles (i.e., low-, mid-, and high-scoring) of DEQ mothers cross-referenced with equal terciles of infant gaze. The groupings of interest included: (a) low DEQ and low infant gaze, (b) low DEQ and high infant gaze, (c) high DEQ and low infant gaze, and (d) high DEQ and high infant gaze. The goal was to determine whether or not high Dependency mothers adjusted their use of Agency/Action speech in response to infant gaze levels for different reasons than did high Self-Criticism mothers. The adjustments in use of Agency/Action speech among low Dependency and low Self-Criticism mothers were also examined, as a standard against which to compare the Agency/Action speech usage of the high Dependency and high Self-Criticism mothers.

Results

Descriptive statistics and the relationships of Dependency and Self-Criticism to current depressive symptoms (CES-D) are first reported. We then evaluate the

effects of the DEQ and CES-D scales on maternal speech. Each depression scale is evaluated to determine whether it accounts for maternal speech patterns independently, or in interaction with level of infant visual engagement. We predict that decreased infant gaze intensifies maternal depression effects on maternal speech.

Descriptive Statistics

The CES-D mean was 9.01 (*SD* = 9.10); DEQ Dependency mean was -0.89 (*SD* = 0.83); DEQ Self-Criticism mean was -0.77 (*SD* = 1.09). Unlike the CES-D, the DEQ has not been normed on a large representative sample. Dependency and Self-Criticism scales were moderately correlated ($r = .30$, $p < .01$). The CES-D was moderately correlated with Dependency ($r = .25$, $p < .05$) but highly correlated with Self-Criticism ($r = .71$, $p < .01$) (see Goodman, 1999).

Main Effects of Maternal Depression on Maternal Speech

The first stage of analyses examined the effects of each depression scale on maternal speech, with three maternal covariates (i.e., ethnicity, education, age) and two infant covariates (i.e., gender, percentage of gaze time on the mother). Findings are summarized in Table 2.

Effects of maternal dependency. For hypothesis 1 on the effects of maternal Dependency, only Hypothesis 1a was partially upheld. Increased Dependency was associated with increased Infant-focused speech ($p = .05$, in a positive direction, *pr* (partial correlation) = .25, ß = .26[1]). There was no association with Mother-focused speech.

Effects of maternal self-criticism. For Hypothesis 2 on the effects of maternal Self-Criticism, only Hypothesis 2b was upheld. Higher Self-Criticism was associated with increased maternal Negative speech ($p = .018$, in a positive direction, $pr = .30$, ß = .28[2]) and decreased Positive speech ($p = .05$, in a negative direction, $pr = -.25$, ß = -.24[3]).

Effects of depressive symptoms. Maternal CES-D scores were not related to any of the maternal speech categories (i.e., Hypotheses 3a-c).

[1]The total predictor set of maternal Dependency, three maternal covariates, and two infant covariates was not related to Infant-Focused speech ($p = .26$).

[2] The total predictor set of maternal Self-Criticism, three maternal covariates, and two infant covariates was related to Negative speech, $p < .01$.

[3] The total predictor set of maternal Self-Criticism, three maternal covariates, and two infant covariates was not related to Positive speech, $p = .06$.

Table 2
Summary of Hypotheses and Findings

	Focus	Affect	Agency
	Self vs. Other	Positive vs. Critical	Action vs. State
Dependency			
Hypotheses 1a, 1b, & 1c	Other	Positive	State
Result	Other*	NS	NS
Self-Critical			
Hypotheses 2a, 2b, & 2c	Self	Critical	Action
Result	NS	Critical*	NS
CES-D			
Hypotheses 3a, 3b, & 3c	Self	Critical	Less Agency
Result	NS	NS	NS
Under High Stress Conditions - Decreased Infant Gaze			
Dependency			
Hypotheses 1d	Other	Positive	State
Result	NS	NS	NS
Self-Critical			
Hypotheses 2d	Self	Critical	Action
Result	NS	NS	Action*
CES-D			
Hypotheses 3d	Self	Critical	Action
Result	NS	NS	NS

Note. * = Significant, NS = Not significant

Interaction Effects of Maternal Depression and Infant Gaze on Maternal Speech

In the second stage of analyses, instead of controlling for infant gaze, we used it as a predictor variable that may interact with maternal depression in predicting maternal speech. None of the predicted relationships of Hypothesis 1d were found for dependent mothers. Instead, Agency/Action speech was related to the Dependency X Infant Gaze variable in a negative direction, opposite that pre-

dicted (p = .014, pr = -.32, ß = -.69[4]). As Dependency scores increased, mothers became increasingly likely to use Agency/Action speech in response to lower gaze infants and vice-versa.

One of the predicted relationships of Hypothesis 2d for maternal Self-Criticism was upheld. The percentage of Agency/Action speech was significantly related to the Self-Criticism X Infant gaze variable (p = .032, in a negative direction, pr = -.30, ß = -.72[5]). As Self-Criticism increased, mothers became increasingly likely to use Agency/Action speech in response to lower gaze infants and vice-versa. None of the predicted relationships of Hypothesis 3d were supported for mothers with more depressive symptoms (CES-D). The CES-D X Infant Gaze variable was not related to any of the maternal speech categories (Hypothesis 3d).

Exploratory Descriptive Analyses

As previously noted, it was unanticipated that the effects of maternal Dependency and Self-Criticism on Agency/Action speech would interact in a similar fashion with Infant Gaze. Transcripts and videotape clips of Agency/Action speech patterns were thus explored. However, all conclusions are highly tentative given the qualitative nature of the review, and small samples in each group.

Under high interactive stress (attempting to engage low gaze infants), statistical analyses (above) documented that both more dependent and self-critical mothers produced increases in Agency/Action speech. The qualitative review indicated that for both types of mothers, these increases reflected increased maternal concern with infant disengagement. For example, a mother might repeatedly ask "What are you looking at?", while her infant looked away. No differences were noted between the two types of mothers.

Under low interactive stress (attempting to engage high gaze infants), statistical analyses showed that both more dependent and self-critical mothers produced decreases in Agency/Action speech. Qualitative review indicated that instead of Agency/Action speech, both types of mothers were likely to mirror infant movements and vocalizations with similar affect and concern; for example, with laughter in response to infant vocalization, and "Are you tired?" as a response to infant stretching. In addition, Agency/Action speech decreased

[4] The total predictor set of maternal Dependency x Infant Gaze, three maternal covariates, and one infant covariate was related to Agency/Action speech, $p < .01$.

[5] The total predictor set of maternal Self-Criticism X Infant Gaze, three maternal covariates, and one infant covariate was related to Agency/Action speech, $p = .01$.

because mothers responded to infant movement and vocalization with criticism, warning, and re-direction, rather than Agency/Action commentary; for example, "You're gonna sit up? No. Why don't you sit back?" The latter pattern was particularly characteristic of self-critical mothers and the only one that distinguished dependent and self-critical mothers.

Mothers scoring low in depressive vulnerability followed different patterns. Under high interactive stress (attempting to engage low gaze infants), both less dependent and self-critical mothers produced decreases in Agency/Action speech (reported above). Qualitative review indicated that these mothers responded to infant gaze aversion with directive speech, rather than Agency/Action commentary, reflecting maternal efforts to convince the infant to display organized, skillful behavior; for example, "Why don't you talk? You talk so nicely at home."

Under low interactive stress (attempting to engage high gaze infants), both less dependent and self-critical mothers produced increases in Agency/Action speech (reported above). Qualitative review indicated that these increases reflected a burst of maternal pride and pleasure in emerging infant motor capacities; for example, "You're clapping," in response to movements bringing the hands together; "Are you bicycling?" in response to leg stretches; and "You're talking," in response to vocalizations. These qualitative assessments are presented as a possible basis for rigorous evaluation in future research.

Discussion

In addition to a standard self-report measure of depressive symptoms (CES-D), empirical tools from the adult personality and depression literature, Dependency and Self-Criticism measures, were used to examine the effects of maternal depressive experiences on maternal speech content in mother-infant interaction. The three measures of maternal depressive experience were related, similar to findings in the adult literature. Self-Criticism had a stronger association with the CES-D than Dependency, also consistent with adult literature (Blatt et al., 1982; Goodman, 1999; Mongrain & Zuroff, 1989). Despite these associations, in our study, the CES-D generated no significant findings, whereas the Dependency and Self-Criticism measures differentiated the Focus and Affect categories of maternal speech in predicted ways. Non-significant findings with the CES-D may be due to the fact that our group was a non-clinical sample. A possible explanation for the limited DEQ results is that prior DEQ studies have tended to examine college populations, whereas 83.8% of the women in this study had college or graduate education.

When the effects of maternal Dependency and Self-Criticism on maternal speech were examined controlling for infant gaze, increased Dependency was associated with increased Child-Centered speech, such as "There you go," "Are you still investigating?" and "You like it here." In contrast, increased Self-

Criticism was associated with fewer positive statements, such as "What's wrong, sweetie?" and "Such a handsome guy" and more negative statements, such as "Put your tongue in your mouth," and "We don't cry." Although these findings fit our predictions, the expected relationships between CES-D or DEQ with the third speech category, Agency, did not emerge. In Agency speech a mother recognizes her infant as an independent actor, with the intention and the capacity to organize behavior. Examples include "What can you see up there?" and "Are you still investigating?"

However, when effects of maternal Dependency and Self-Criticism on maternal speech were re-examined in interaction with the level of infant visual engagement, findings emerged for Agency/Action speech. As hypothesized, under the stress of interacting with a less visually available infant, more self-critical mothers used more Agency/Action speech. We reasoned that because these mothers prioritize achievement and self-control, they are likely to recognize and support their infants' intentional actions, even if the infant action is looking away. Reciprocally, less self-critical mothers used more Agency/Action speech as infant visual engagement increased.

Under the stress of interacting with a less visually available infant, we expected that dependent mothers' tendencies to use Agency/Action speech would decrease. We reasoned that, because these mothers have difficulty tolerating breaks in contact with significant partners, they might ignore their infants' intentional actions, viewing them as first steps toward separateness. Instead, dependent mothers were just like self-critical mothers: As infant visual engagement decreased, dependent mothers produced more Agency/Action speech. Thus, both self-critical and dependent mothers were more likely to comment on infant Agency/Action if their infants looked away more. Less self-critical and dependent mothers were both more likely to comment on infant Agency/Action if their infants looked at them more.

A post-hoc qualitative review of transcripts and videotape indicated that both high-scoring dependent and self-critical mothers were sensitive to the loss of infant visual engagement. It was at these moments, when the infants visually disengaged, that mothers commented on the infant's agency, for example, "What do you see?" Thus comments on infant agency were linked to infant visual disengagement. In contrast, less dependent and self-critical mothers acknowledged infant agency as part of the ongoing visual engagement. They commented on infant vocalizations, and trunk or limb movements. For example, when one infant brought her hands together, her mother commented, "Oh, you're clapping."

We speculate that infants of more dependent and self-critical mothers will eventually learn that their agency (as measured by our agency/action code) is interpreted by the mother as separate or away from her. In contrast, infants of less dependent and self-critical mothers will learn that their agency is endorsed by

their mother as part of their ongoing visual engagement. Because these observations are entirely qualitative, they need empirical replication.

The Picture of Dependent Mothers and Their Infants

More dependent mothers, preoccupied with maintaining interpersonal relatedness, stayed more focused on their infants' experience. This focus is likely to support infant development, and it predicts better child cognitive performance at 18 months (Murray et al., 1993). This partner-focused orientation is consistent with previous adult research. For example, in relation to romantic partners, dependent women report greater feelings of love (Zuroff & Fitzpatrick, 1995) and exhibit positive biases during a conflict-resolution task (Mongrain, Vettese, Shuster, & Kendal, 1998). With their adolescent daughters, dependent mothers are supportive (Thompson & Zuroff, 1998).

However, this supportive picture is complicated by the findings of the qualitative review, which suggest that more dependent mothers tend to recognize infant agency/action with nervous concern, when it causes a break in visual contact. In contrast, less dependent mothers tend to respond to a range of infant agency/actions with proud commentary. We speculate that more dependent mothers may not be able to optimally support the infant's efforts to explore, particularly exploration visually separate from mother.

The Picture of Self-Critical Mothers and Their Infants

More self-critical mothers, preoccupied with achievement and self-definition, used more corrections and criticisms, and fewer compliments and terms of endearment, suggesting a tense, controlling relational environment, shown to have a negative impact on infant development (Murray et al., 1996). Our findings are consistent with previous adult DEQ research. For example, self-critical women report less satisfaction and more negative reactions with romantic partners (Zuroff & Duncan, 1999), and they use more commands and negative feedback when coaching adolescent daughters (Thompson & Zuroff, 1998). Similar to dependent mothers, self-critical mothers tend to recognize infant action when it causes breaks in visual contact, suggesting difficulty in supporting infant exploration and agency separate from mother.

Comparison with Murray et al. (1993)

This study partially replicates Murray et al.'s (1993) original study of maternal depression and maternal speech content. Murray et al. and the current study characterized the speech of mothers experiencing depression as more negative and less infant-focused (for male infants only in Murray et al.). Both studies

found that depressed mothers were less likely to acknowledge infant agency through their speech content, but our results are somewhat more complex. The similarities in results were obtained with very different samples and methods of measuring depression. Our community sample was low-risk, and our DEQ measure of depression was self-report, based on personality characteristics rather than symptoms (with 18% of mothers classified in the depressed range of 16+ on the CES-D). The Murray et al. sample was clinical and 49% of the mothers received diagnoses of depression based on self-report as well as a follow-up standardized clinical interview.

In our study, the DEQ detected the effects of maternal depressive experiences on maternal speech and infant gaze, whereas the CES-D did not. Most likely we did not obtain the same associations as Murray et al. between depression and maternal speech content because we did not have a clinical sample. In addition, the DEQ may have been effective because it measures personality-based vulnerability to depressive experience, rather than current depressive symptoms. Thus the DEQ can identify individuals who are vulnerable to depressive experiences but not currently experiencing sufficient symptoms to score high on an instrument like the CES-D (Blatt et al., 1982; Blatt & Zuroff, 1992). Nevertheless, in other analyses of this sample, using other statistical methods, the CES-D was effective in differentiating action patterns (but not speech content) in depressed and nondepressed mothers (Beebe et al., in press).

Conclusion

Perhaps the hypotheses in this study were not more readily supported because depressive experience was assessed in a non-clinical sample with self-report measures. However, maternal postpartum depression is associated with infant difficulties when measured with both self-report and clinical approaches, in both community and high-risk samples (Beck, 1995; Gitlin & Pasnau, 1989; Murray & Cooper, 1997). The fact that a self-report measure of depression was used in a community sample is a potential strength of the study because (a) our study is comparable to the literature, where three-quarters of the studies use self-report measures of maternal depression (Beck, 1995); and (b) community samples are more reflective of difficulties in the general population. The fact that the current community sample turned out to be highly educated, and that this level of education was correlated with older maternal age, may be a limitation of the study. Field et al. (1988), for example, found that maternal depression was associated with younger maternal age. If the current sample had been younger and less educated, we may have found different associations.

This study is important, despite its mixed results, because the narrative level in mother-infant interaction is rarely explored. Instead, the procedural action dialogue is usually examined. Since we know so little about this aspect of the

mother's functioning, any findings at the narrative level are potentially important. The narrative level rapidly becomes central as the child develops into the second year and will set the stage for the narrative between the mother and child as the child learns language.

The content of maternal speech is important to consider in early intervention, particularly mother-centered vs. infant-centered focus, and positive vs. negative affect. This work retrospectively validates Fraiberg's (1974) awareness of the clinical significance of speech content in baby games. Our findings imply that maternal support for infant exploration and agency, while visually separate from mother, may be important in early intervention efforts.

Further research is needed to explore the utility of the DEQ measures for mother-infant disturbance. Future research should explore whether a younger and less educated community sample might generate different findings. A specific testable hypothesis emerged from our qualitative exploration, that is, maternal acknowledgement of infant agency during infant visual gaze moments is more adaptive than such acknowledgement during infant gaze away moments.

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Appendix

Coding the Maternal Utterance Measure (MUM)

Two coding passes are involved in using the MUM. In the first coding pass, the coder places each utterance in one of the five exhaustive and mutually exclusive primary categories: (a) Infant-Focused speech, (b) Mother-Focused speech, (c) Other-Focused speech, (d) Contentless/Affective/Verse-Song/Game, and (e) Greet/Call for Attention. In the second coding pass, the coder decides which utterances also meet criteria for the Positive speech category.

Because of the design of the coding system, Positive and Negative speech are not the inverse of one another. The Negative speech category is used when the mother's speech conveys criticism. Infant-Focused utterances cannot be coded as Negative because they are, by definition, neutral or positive in affective tone and cannot consist of criticism. Mother-Focused utterances can be coded as Negative because they are, by definition, neutral or negative in affective tone and can consist of criticism.

The Positive speech category is used whenever the mother compliments the infant or expresses affection through a term of endearment. It is assigned as a secondary code whenever these criteria are met, regardless of whether criticism is also conveyed. Thus, it is even possible for an utterance to be coded for both Negative and Positive speech. For example, "That's not a smile, sweetie", meets criteria for Negative speech because it is an example of a criticism, and meets criteria for Positive speech because it ends with a term of endearment.

Five Primary MUM Speech Categories (exhaustive and mutually exclusive)

1. Infant-Focused Speech – acknowledges infant's current state of attention and arousal, and reflects an attempt to engage infant by addressing his/her current experience. Utterances are coded in one of the two Agency sub-categories if the mother makes reference to a specific infant action or state, occurring in the moment.
   a. No Agency: *"There you go."; "You're a beautiful boy."*
   b. Agency/Action-Acknowledging: *"What can you see up there?"; "Are you still investigating?"*
   c. Agency/State-Acknowledging: *"You like it here."; "Are you tired?"*
2. Mother-Focused Speech – content is maternal assessments of her own experience with the infant, and requirements of him/her within the filming situation. Included are self-referential speech, neutral commentary; expressions of dissatisfaction with some aspect of the current situation with the infant, and wishes or intentions to change some aspect of the interaction.
   a. Self Referential/Neutral-Positive: *"My nose hurts too."; "You're my sweet heart."*

b. Negative Speech - all speech in which negative affect is expressed. Comprised of the following four sub-categories:
   (1) Corrections + Criticisms: *"Put your tongue in your mouth."; "Oh no, that's not a smile."*
   (2) Self-Referential/Critical of Infant: *"You're ignoring me again."; "We don't cry."*
   (3) Self-Referential/Critical of Self: *"I'm running out of conversation."*
   (4) Self-Referential/Critical of Other: *"I can't clap for you like I do at home."*

c. Directive Speech - speech in which mother becomes insistent on the infant accommodating her needs.
   (1) Directives: *"Sit up."; "Come on."*
   (2) Prompt Questions: *"You wanna play peek-a-boo?"; "Do you wanna sing?"*
   (3) Self-Referential/Demand for Attention: *"Talk to mommy."; "Can I have a smile?"*

3. Other-Focused Speech – content is objects or persons other than the infant or the mother; or focus is on the infant and/or mother; but removed in time. Examples: *"It's an interesting room."; "What would daddy think about this?"*
4. Contentless/Affective/Verse-Song/Game
5. Greet/Call for Attention – any greeting or calling of the infant's name.

Secondary Speech Category

Positive Speech – all speech in which positive and affectionate affect is expressed; comprised of compliments and terms of endearment. This speech category is distinct in that it is assigned as an additional code whenever relevant, and can be added to any primary code. Examples:
"What's wrong, sweetie?"; "Such a handsome guy."; "You're my sweetheart."; "We can't sing, honey."

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