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**Prenatal Representations of Baby and Self as Mother: Accessible Content
and Its Influence on Maternal Perceptions, Feelings, and Behavior
Postpartum**

**by
Suzanne Laycock Fares**

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Psychology

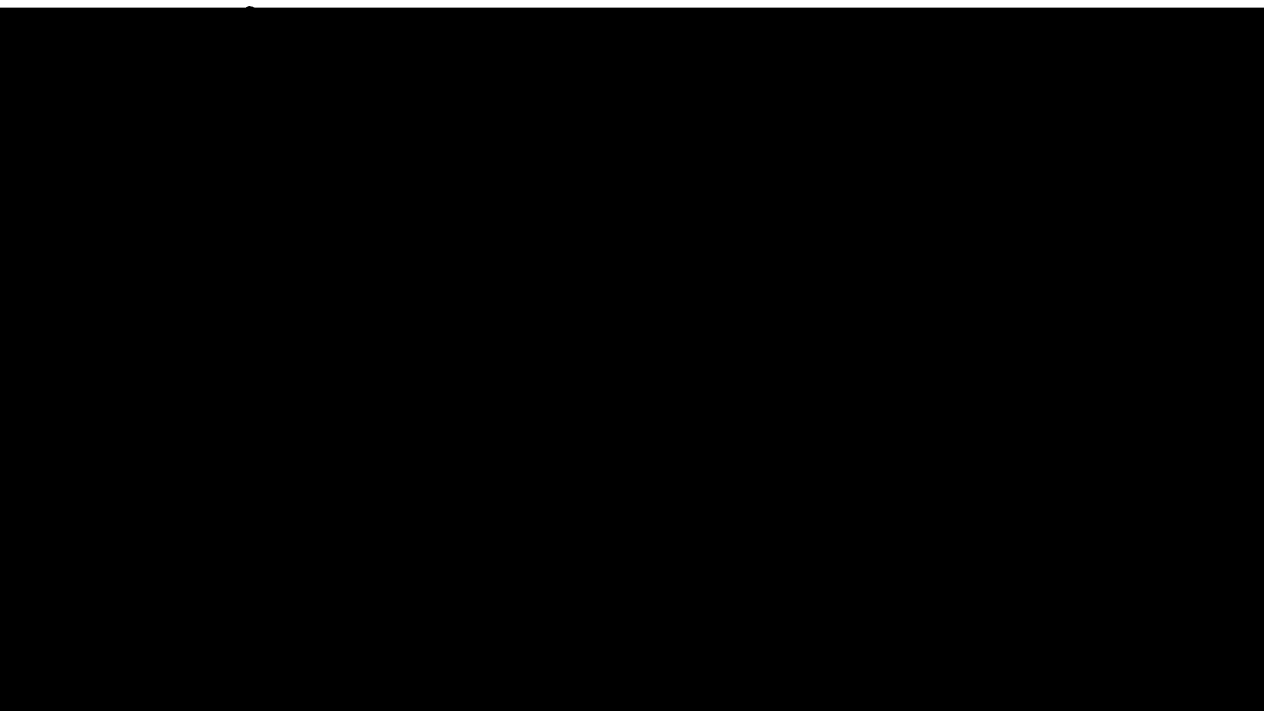
in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA

San Francisco



For Mr. Wooly and the Four Famous Fares Brothers.

I couldn't have done it without you.

**PRENATAL REPRESENTATIONS OF BABY AND SELF AS MOTHER:
ACCESSIBLE CONTENT AND ITS INFLUENCE ON
MATERNAL PERCEPTIONS, FEELINGS, AND BEHAVIOR POSTPARTUM**

Suzanne Laycock Fares

ABSTRACT

This research evaluated a model of how the cognitive information and affect that women readily retrieve from memory about their babies and themselves as mothers during pregnancy guide their perceptions, feelings, and behavior toward their infants. In doing so, this research laid important empirical groundwork for current representation-based theories of parent-infant relationships, which propose that parents have mental models of their children and themselves as parents, that these models are in place in rudimentary form during pregnancy, and that the content of these models guide parents' responses to their children.

Subjects for this research were 59 married women recruited in their third month of pregnancy from an obstetrics practice in a suburban community. Thirty-one women were expecting a first child, and 28 a second child. The research followed the women from 14 weeks gestation through 4 months postpartum. Women's representations of their babies and themselves as mothers were assessed via interview at 14 and 34 weeks gestation. At six weeks postpartum, women's perceptions of their infants and postpartum mood were assessed via questionnaire. At four months postpartum, a final interview assessed women's behavior toward their infant, including decisions about breastfeeding and returning to work.

This research replicated earlier findings that the cognitive content of parents' prenatal representations of their baby predicts their perceptions of the baby postpartum. It showed for the first time that the cognitive content of self representations predicts perceptions of the baby, and so does the affective content of parents' representations of baby and self. It showed for the first time that parents' prenatal cognitive content and affect about baby and self predict their behavior toward their infants, accounting for 25 to 30 percent of the sample variance in behavior outcomes. The research failed to show that the content of parents' representations of baby and

self predicts their feelings toward their child. A differential-engaging hypothesis was proposed to explain how parents' cognitive-affective representational systems work, with cognitive content, affect, or both driving different parent-child outcomes. Implications for social cognition theory were discussed, especially construct accessibility theory and the effect of chronically accessible information on social perception and behavior.

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BACKGROUND AND SIGNIFICANCE

More and more, psychologists interested in social behavior have come to explain how people perceive and interact with one another in terms of their capacity to construct and manipulate mental representations of their physical and social world (Markus & Zajonc, 1985; Schneider, 1991; Levine, Resnick, & Higgins, 1993). An important postulate among social cognition theorists is that people's representations of themselves and others guide perception, feelings, and behavior in social situations (Kelly, 1955; Bruner, 1957; Sorrentino & Higgins, 1986; Higgins & Bargh, 1987; Markus & Wurf, 1987; Sherman, Judd, & Park, 1989; Fiske, 1993; Hazan & Shaver, 1994). Recently, this postulate has been applied to understanding parent-child relationships (Stern, 1985; Zeanah & Anders, 1987; Sroufe & Fleeson, 1988; Caspi & Elder, 1988; Belsky & Pensky, 1988; Stern-Bruschweiler & Stern, 1989; Cicchetti, 1990; Dix, 1991; Main, 1991; Stern, 1991; Levine & Tuber, 1993). An influential example is Bretherton's explanation of the socioemotional bond that an infant forms with a parent, and especially how that bond is expressed in attachment, or proximity-seeking, behavior on the part of the infant (Bretherton 1985, 1990, 1991). Elaborating Bowlby's seminal work (Bowlby, 1969/1982), Bretherton views the bond or attachment that an infant develops for a parent in terms of the formation and operation of mental representations, or "internal working models," of the physical and social world. Prominent among these models are models of the parent and of the self in relation to her or him. These models of self and parent, which contain cognitive and affective components, jointly direct infant behavior aimed at obtaining or maintaining contact with the parent. A complementary system of representations exist in the parent, chief among which are models of the infant and the self as parent, that regulate the parent's perceptions of the infant, feelings toward the infant, and caregiving behavior. Bretherton and others explain that parents' models of self and child are rooted in childhood experiences with their own parents or primary caregivers, are in place in rudimentary form during pregnancy, and determine from the start how secure the relationship will be between infant and parent (Bretherton, 1985, 1987; Zeanah & Barton, 1989).

Research concerning parents, children, and representations mainly has concentrated on how adults remember childhood relationships with their parents and how these memories, or representations, affect current relationships with their own children or with peers and romantic partners (Ricks, 1985; Main, Kaplan, & Cassidy, 1985; Benoit, Zeanah, & Barton, 1987; Zeanah, Benoit, Barton, Regan, Hirshberg, & Lipsitt, 1993; Haft & Slade, 1987; Grossmann, Fremmer-Bombik, Rudolph, & Grossmann, 1988; Crowell & Feldman, 1988; Main & Solomon 1990; Fonagy, Steele, & Steele, 1991; Hazan & Shaver, 1987; Kobak & Sceery, 1988; Collins & Read, 1990; Bartholomew & Horowitz, 1991; Kobak, Cole, Ferenz-Gillies, & Fleming, 1993; Mikulincer, Florian, & Weller, 1994; Patrick, Hobson, Castle, Howard, & Maughan, 1994; Pearson, Cohn, Cowan, & Cowan, 1994). Using new methodological tools, researchers also are studying links between how infants and young children mentally represent themselves and others and the quality of their relationship with parents (for a brief review, see Pipp, Easterbrooks, and Harmon, 1992; see also Cicchetti, 1990). Surprisingly little attention has been paid to parents' representations, or working models, of their child and of themselves as parents. If Bretherton and others are correct (Bretherton, 1990; George & Solomon, 1987; Sroufe & Fleeson, 1988), these representations may be key to a secure relationship between parent and child, leading to enhanced social, emotional, and cognitive outcomes for the child (Arend, Gove, & Sroufe, 1979; Sroufe, 1983; Bowlby, 1988; Cicchetti, 1990). They may also be a chief pathway to therapeutic change in cases of disturbed parent-child relationships (Stern-Bruschweiler & Stern, 1989; Lieberman, Weston, & Pawl, 1991).

Parents' Representations of Child and Self: What Do We Know?

What we know about parents' representations of their children and of themselves as parents comes from several studies by attachment researchers and from researchers interested in pregnancy. Bretherton, Biringen, Ridgeway, Maslin, and Sherman (1989) studied representations of child and "self as parent" in mothers of two-year-olds and related these representations to their child's security of attachment. In an interview, mothers were asked to describe and discuss the birth of their child, what their child is like, what their own behavior and

the child's behavior is like in emotional situations and in those involving separation or autonomy, and what they think about their future relationship with the child. From responses to the entire interview, each mother was assigned a score denoting her insight into the child's and her own personality and her sensitivity and appropriateness in responding to her child's communications. These scores were significantly related to four out of five measures of how securely attached children were to their mothers, with correlations ranging from .38 to .60.

George and Solomon (1989) also used an interview to study women's representations of themselves as mothers and of their kindergarten child and how these representations related to attachment and to mothers' behavior in the home. Mothers were asked to describe themselves as parents and to describe affective and attachment-relevant aspects of their relationship with their child. Responses to the entire interview were given two ratings: (1) a secure base rating, which evaluated the degree to which a mother described herself as willing and able to respond to her child with effective care, and (2) a competence rating, which evaluated the degree to which a mother thought of her child as an initiating, capable individual and of herself as a teacher and facilitator. The two ratings were significantly related to how securely children behaved (i.e., how relaxed, confident, and willing to interact with the mother) in a laboratory setting, with a correlation of .82 for the secure base rating and .76 for the competence rating. The two ratings showed little relation, however, to maternal behavior as observed in the home. Biringen (1990) was able to demonstrate links between maternal behavior at home and mothers' representations of their infant, and especially mothers' perceptions of how responsive the infant is to them. These perceptions were significantly related to observers' ratings of maternal sensitivity ($r = .56$), dyadic physical avoidance ($r = -.61$), and dyadic harmony ($r = .47$). Mothers' self esteem, however, was not related to any measure of maternal behavior.

Much of the literature on the psychology of pregnancy presumes that a woman's thought processes undergo a dramatic shift during pregnancy and that mental representations or fantasies of herself and of the unborn child during pregnancy contribute to how a woman will feel about and behave toward her baby once it is born (Benedek, 1952; Bibring, Dwyer, Huntington, &

Valenstein, 1961; Rubin, 1970; Colman & Colman, 1974; Leifer, 1977; Tilden, 1980; Osofsky & Osofsky, 1983). Rich clinical data are offered to support this presumption, but empirical evidence is limited.

In a qualitative study of how women describe the fetus during early, mid-, and late pregnancy, Lumley (1982) found that women's descriptions became more accurate and realistic over time. Most women had difficulty believing the fetus existed early in pregnancy, but some claimed to have formed a relationship with the baby by 12 weeks gestation. Research using infant temperament inventories administered pre- and postnatally suggests that mothers and fathers have representations of their baby's personality during pregnancy and that these representations show some stability from early in pregnancy to at least six months after the birth, with correlations mostly from .30 to .40 and as high as .65 for multiparous parents (Zeanah, Keener, Stewart, & Anders, 1985; Zeanah & Anders, 1987; Mebert & Kalinowsky, 1986). Ruble and her colleagues have developed new scales to study how women define themselves before, during, and after pregnancy (Ruble, Brooks-Gunn, Fleming, Fitzmaurice, Stangor, & Deutsch, 1990). Women defined themselves as more involved and protective toward their babies 3 months postpartum as compared with late in pregnancy. Women's self-definitions as fun, traditional, or knowledgeable mothers did not change from before to after birth.

These studies demonstrate that parents have representations of their children and of themselves as parents during pregnancy. The representations remain stable in some respects and change in others following birth and into early infancy. During infancy, the representations are associated with the security of the relationship between parent and child and, at least for representations of the child, with how the mother and infant interact at home. However, little is known about the content of parents' representations of their children and of themselves as parents or about how these representations, in place during pregnancy, might guide the incipient relationship between parent and newborn. With respect to content, interview methods used so far to measure parents' representations of their children and themselves as parents reduce an entire interview to one or two scores; the specific cognitive and affective content of the

representations captured by these interviews remains to be codified. Scales that have been used to measure parents' representations assess a limited number of dimensions that may or may not tap what is most salient to parents about themselves and their children. With respect to the guiding influence of parents' representations, the links that have been demonstrated so far between parents' representations of their child and themselves and parent-child outcomes are only correlational: they allow no conclusions about whether these representations influence or are merely products of the parent-child relationship. Only by prospective research beginning in pregnancy can we learn how the relationship between parent and child is directed from the beginning by what parents know about their child and themselves as parents. Finally, no studies have examined how first- and second-time parents might differ in their representations of their children and themselves as parents.

Contents of Person Representations: Gaining Access to Personal Information

Two lines of basic research in social cognition tell us something about how to study the contents of parents' representations of child and self as these contents might guide their perceptions, feelings, and behavior toward their child. The first is a line of research that employs open-ended person descriptions to study the contents of children's and adults' knowledge representations about themselves and others (Beach & Wertheimer, 1961; Yarrow & Campbell, 1963; Scarlett, Press, & Crockett, 1971; Livesley & Bromley, 1973; McGuire & Padawer-Singer, 1976; Fiske & Cox, 1979; Cantor, Mischel & Schwartz, 1982; Park, 1986; Prentice, 1990). This research demonstrates that when called upon to describe themselves or others freely and spontaneously, people commonly produce certain kinds of information, including information about the described person's **physical characteristics**; **observable behavior**; **internal dispositions**, including traits, attitudes, and beliefs; **social relationships**, and **typical physical contexts**, including locations the person may be found, possessions, and material resources. These categories of person knowledge receive independent support from Bower and Morrow (1990), who found similar kinds of information in reader's representations of characters in a story.

From person description research, we also know that the amount and kind of content represented in memory about a person varies with how familiar the describer is with that person, and it varies idiosyncratically from describer to describer. With respect to familiarity, people produce less information about strangers than about familiar others, and the information about strangers concentrates on observables, such as appearance and behavior. For a familiar other (including the self), the information concentrates on psychological characteristics of the person, such as traits, beliefs, and attitudes, and on social relationships (Yarrow & Campbell, 1963; Scarlett, Press, & Crockett, 1971; Fiske & Cox, 1979; Prentice, 1990; Bretherton, 1990). With respect to idiosyncratic describer differences, we know that people favor certain kinds of content in their descriptions of people, regardless of who is being described (Dornbusch, Hastorf, Richardson, Muzzy, & Vreeland, 1965; Oyserman & Markus, 1990; Stromquist & Strauman, 1991). For example, McGuire and McGuire (1986) found that girls describe themselves more as socially interacting than as physically acting, and boys do the opposite. Cross-cultural research shows that Americans refer more often to personality traits when describing people than do East Indians, and East Indians refer more often to observable behaviors and relational information than do Americans (Shweder & Bourne, 1984; Miller, 1987).

A second line of research allows us to understand representational content and variation in its usage in terms of the accessibility of information stored in memory. Higgins and his colleagues have used Kelly's (1955) and Bruner's (1957) notions about personal biases in social perception to devise a model of construct accessibility (Higgins & King, 1981; Higgins, Bargh, & Lombardi, 1985; Higgins & Wells, 1986; for a recent review, see Sedikides & Skowronski, 1990). This model addresses how readily individuals retrieve pieces of social information, or constructs, from memory and use them to process and act upon social stimuli. A construct must be stored in memory -- that is, it must be available -- before it can be retrieved, or accessed. Once a construct is available, a variety of factors influence how readily it will be accessed in a given social situation, including an individual's beliefs about how often instances of the construct occur in the social environment, current goals and needs, recency and frequency of construct use, how

distinctive and vivid the features of the construct are in memory, and how strongly the construct is associated with other accessible constructs (Higgins & Wells, 1986). Frequency of use has the most potent enduring effect on construct accessibility: the more frequently a construct is accessed, the more permanently accessible it becomes (Higgins, King, & Mavin, 1982; Bargh, Bond, Lombardi, & Tota, 1986). Owing to long-term differences in socialization experiences (such as with family of origin, peers, romantic partners), individuals will vary as to which constructs are most accessible; that is, each will have a different set of chronically accessible constructs about themselves and others. These chronically accessible constructs are activated preconsciously across social contexts, can automatically determine perception and evaluation, and may have a powerful influence on people's behavior toward others (Fazio, 1986; Bargh & Pratto, 1986; Higgins & Bargh, 1987; Sherman, Judd, & Park, 1989; Bargh, Litt, Pratto, & Spielman, 1989; Norris & Devine, 1992; Doll & Ajzen, 1992). An individual's accessible constructs are operationalized in research settings by free response procedures, such as open-ended person descriptions (Higgins, King, & Mavin, 1982; Bargh, Bond, Lombardi, & Tota, 1986; Norris & Devine, 1992).

Putting these two lines of research together, people's representations of themselves and others vary in the amount of accessible information they contain, with a robust familiarity effect: the better people know someone, the more information they can retrieve about him or her. These representations also differ in the kinds of accessible information they contain, with some containing the more concrete and observable information typical of descriptions of strangers, and some the more psychological and social relationship information typical of descriptions of familiar persons. Idiosyncratic differences in the use of one kind of content over another can be viewed as chronic differences in the accessibility of different kinds of content. In this context, then, parents' representations of their child and themselves in relation to him or her can be understood in terms of how much information parents readily access about their baby and themselves as parents, how much of it is observable, and how much is psychological and relational, suggesting how comfortably familiar they are with each of these representational targets.

This conceptual framework for studying the content of parents' representations fits well with current thinking about how representations determine parents' sensitivity to infant signals and empathic responding -- thinking which emphasizes the importance of parents having access to enough information of the right kind. According to Bretherton (1990), parents who do not have easy access to internal working models of themselves and their infant will not be able to interpret the infant's signals appropriately. Parents must have access to fairly accurate information about the baby's physical states and behaviors and what these mean to the baby: they must be "ready to take the baby's perspective, to notice what the baby's goals are, and to respond to them empathically" (Bretherton, 1990, p.76). Fonagy and his coworkers (Fonagy, Steele, Steele, Higgitt, & Target, 1994; Fonagy, Steele, & Steele, 1991) have distinguished a "reflective-self function," which has to do with a person's capacity to represent self and others in psychological ways -- in terms of mental states, intentions, feelings, beliefs -- and not just in physical or observable ways. They propose that this capacity to access psychological information determines how sensitively parents respond to their infants and so determines the security of infant attachment. Dix (1992) proposes a model of parental sensitivity and empathic responding that depends on parents having access to information about their children's wants, motives, and emotional states and the capacity to understand this information in terms of mutual relationship goals.

In short, parents must have mental access to sufficient amounts and kinds of knowledge about the child and about their own role in relation to him or her before they can accurately interpret the child's needs and act appropriately. Sensitive and empathic responding presumes the ability to enter into the mind of the other, to infer internal, psychological states as well as observe external ones, and to think relationally. Inaccessible information, owing to lack of knowledge or defensive exclusion of threatening thoughts, figures prominently in representation-based theories of what can go wrong in parent-child relationships (Lieberman, 1985; Bretherton, 1990; Bowlby, 1980). For some parents, access to information about their child and themselves as parents may be chronically limited from the beginning -- even before the child is born -- and

this limited access may predict the kind of start parents and children get during the early weeks and months when their relationship is forming.

Accessible Affect: Extending the Model

Using what we know, then, about construct accessibility and the contents of person representations, we can construct the following model of parents' representations of their children and themselves as parents and how the content of these representations relates to relationship outcomes:

Parents' representations of their children and themselves as parents contain varying amounts and kinds of accessible information. One combination of information -- greater amounts of information and much of it psychological and relational -- suggests that the representational target (child or self as parent) is familiar to the parent. Another combination -- smaller amounts of information and much of it observable information -- suggests that the representational target is more strange or unfamiliar. Parents' representations guide their responses to their child, and so differences in accessible representational content should correspond to differences in parents' responses to their child. Content that is chronically accessible -- that is, content that is readily accessible over months or years -- should relate more strongly to parents' responses to their child than content that is not chronically accessible.

So far, the model does not include emotion. Studies about parents' representations and person description studies have paid little attention to affect (Levine & Tuber, 1993), and only recently have researchers begun to ask about the accessibility of remembered emotion (Fazio, 1986; Bargh, Litt, Pratto, & Spellman, 1989; Bargh, Chaiken, Gvender, & Pratto, 1992; Fiske, 1993). Representation-based theories of parent-child relationships assert, nonetheless, that affect is a key part of a memory system that includes representations of child and self and that guides parents' responses to their child (Bowlby, 1980; Bretherton, 1985; Dix, 1991). Clinical and research findings furnish evidence that affect is indeed a crucial mediator between an infant's behavior and the parent's response (Fraiberg, 1980; Lieberman, Weston, & Pawl, 1991).

Including affect in a representation-based model of how parents' respond to their child fits with the what we know generally about represented affect as a part of human memory (Bower, 1981; Izard, 1984; Fiske & Pavelchek, 1986; Tucker, Vannatta, & Rothlind, 1990; Isen, 1990) and about the influence of readily accessible affect on perception, evaluative judgments, and social behavior (Andersen, Spielman, & Bargh, 1992; Fazio, 1986; Millar & Tesser, 1986; Isen, 1987; and Stromquist & Strauman, 1991).

We can introduce affect into our model by revising it in this way:

Parents' representations of their children and themselves as parents contain varying amounts and kinds of accessible cognitive information. One combination of information -- greater amounts of information and much of it psychological and relational -- suggests that the representational target (child or self as parent) is familiar to the parent. Another combination -- smaller amounts of information and much of it observable information -- suggests that the representational target is more strange or unfamiliar. Parents' representations guide their responses to their child, and so differences in accessible cognitive content should correspond to differences in parents' responses to their child. Parent's representations of their children and themselves as parents also contain accessible affective information. As with cognitive content, differences in accessible affective content should correspond to differences in parents' responses to their child. Cognitive or affective content that is chronically accessible -- that is, content that is readily accessible over months or years -- should relate more strongly to parents' responses to their child than content that is not chronically accessible.

This gives us a rudimentary statement of how the information parents' readily access from memory about their child and themselves as parents -- cognitive and affective -- might influence their responses to their child.

Aims of the Present Research

The chief aim of this research is to learn how well the elements of this model describe the content of pregnant women's representations of their babies and themselves as mothers and the

relationship of this content to women's perceptions of their infant, their feelings, and their behavior toward the infant postpartum. The **primary hypothesis** for this research is that the content women readily access about their babies and themselves as mothers during pregnancy -- both cognitive and affective -- influences how they perceive, feel, and behave toward their infants postpartum. Specific research questions, derived from the model, are:

1. What do the amount and kinds of information that pregnant women readily access when they describe their babies and themselves as mothers tell us about their apparent familiarity with each, and does familiarity grow from early to late in pregnancy?
2. How does ready access to observable content about baby and self as mother during pregnancy differ in its effects on postpartum outcomes from ready access to psychological or relational content?
3. Is the content of women's representations of baby and self equally accessible during pregnancy, and so does the content of both predict postpartum outcomes equally strongly?
4. Does representational content that has been chronically, or consistently, accessible over pregnancy predict postpartum outcomes more strongly than content that has been less so?
5. Are accessible cognitive content and accessible affect strongly linked, so that they do not make unique contributions to postpartum outcomes, or are they more independent, making separate contributions?

Demonstrating links between women's prenatal representations and how they respond to their infants postpartum would support the existence of a memory system made up of self and other representations that guides, and not merely grows out of, mothers' responses to their babies. Further, it would suggest that this system is in place before the child is born -- that the roots of a woman's relationship with her child are present in a meaningful way, as part of her memory, during pregnancy. If links were found for both cognitive and affective representational content, we would know that both kinds of content have a determining influence on mothers'

responses to their infants, as theory suggests. If only cognitive content or only affect were related to postpartum outcomes, or if neither was related, we would have reason to qualify or question the notion that the early relationship between mother and infant is measurably influenced by what women think and feel about their babies and themselves as mothers during pregnancy. Throughout the research, attention is paid to differences between first- and second-time mothers. It may be that prenatal representations of baby and self as mother are fundamentally different for women who already have a child, and the representations will not relate to postpartum outcomes in that same way as for women who have yet to become mothers.

The model described here is tested in two phases. The aim of the first phase is to:

Describe the cognitive and affective content of women's representations of their babies and themselves as mothers as it develops from early to late in pregnancy, assessing the chronic accessibility of both types of content and how they relate to one another. The results of this preliminary, descriptive research task guide data reduction decisions for the second, hypothesis-testing phase of the research.

With respect to cognitive content, women's representations of the fetus, of the baby after birth, and of themselves as mothers are evaluated for (1) amount of content produced for each representational target; (2) kind of content, including observable, psychological, and relational; and (3) the chronic accessibility of amount and kind over time. From what we know about the effect of familiarity on content, we might expect to see change over pregnancy from less to more familiar: representations may become longer and their content less observable, more psychological, and more relational. Representations of self as mother may contain more information than representations of the baby, since they are an aspect of the self and the self is such a rich representational structure (Prentice, 1990). If content about baby and self is tied to women's personal histories, and not merely to immediate circumstances, against this background of change we also can expect to see some stability in content over time; that is, amount and kind of content should be chronically accessible to some extent. With respect to parity, we might expect to see more information and more stable content for second-time mothers as compared

with first: second-time mothers' representations of baby and self may be more well-developed and more fixed because of their experience with a first child.

There is little empirical basis from which to predict the affective content women will readily access about their babies and themselves and how it will relate to cognitive content. As women become more familiar over pregnancy with the notion of their babies and themselves as mothers, there may be a general increase in positive feeling, and that positive feeling may be associated with psychological and relational content, which also attends increasing familiarity. By late in pregnancy, viability of the child is no longer a concern, and so anxiety about the child's wellbeing ought to decline. As the birth approaches, however, anxiety about being a parent may rise for some, perhaps more so for first-time as compared with second-time mothers. As with cognitive content, if the affective content of women's representations is rooted in their personal histories, we can expect it to be somewhat stable, or chronically accessible. Whichever content is chronically accessible -- cognitive, affective, or both -- ought to influence postpartum outcomes the most. This brings us to the second phase of the research.

The aim of the second phase is to test the primary research hypothesis:

Representational content that women readily access about their babies and themselves as mothers by late pregnancy will influence how they perceive, feel, and behave toward their babies postpartum.

Three more specific hypotheses also are tested for cognitive content and for affect:

1. The content that women access late in pregnancy when they describe their babies and themselves as mothers -- both total amount (or for affect, total intensity) and kinds of content -- will influence their perceptions, feelings, and behavior toward their infants postpartum.
2. Representational content -- both total amount (or for affect, total intensity) and kinds of content -- that has been more consistently accessible over pregnancy will predict postpartum outcomes more strongly than content that has been less consistently accessible.
3. By late in pregnancy, if total accessible content is greater for one representational target than for the other (baby vs. self as mother), content variables for the more

accessible target will be stronger predictors of postpartum outcomes than those for the less accessible target. This hypothesis depends upon descriptive findings from Phase 1: If neither target's content is more accessible than the other's in this sample, the hypothesis cannot be tested.

The three specific hypotheses are considered more heuristic than the primary hypothesis. The primary hypothesis is broad and basic: it has to do with whether or not links exist between the content women readily access about their babies and themselves as mothers during pregnancy and their responses to their infants postpartum. Demonstrating these links is fundamental to validating current representation-based theories of parent-child relationships, which say that the content of parents' representations about baby and self guide their perceptions, feelings, and behavior toward their children. The three specific hypotheses are more fine-grained. They are based upon what we know about the content of person descriptions and about information that is most readily accessed from memory -- gleaned from research with non-obstetric populations. Using this knowledge, the specific hypotheses propose particular kinds of links between prenatal representational content and women's responses to their infants postpartum. These specific hypotheses are first steps in thinking about how prenatal representational content about baby and self might relate to maternal outcomes, and tests of these hypotheses are meant to generate fruitful hypotheses for future research.

In addition to testing a representation-based model of how parents' respond to their infants during early infancy, this research can contribute more generally to our knowledge of social cognition in three ways:

1. **Accessible content and social outcomes.** This research can tell us whether the amount and kinds of information people readily access about themselves and others influence their perceptions, feelings, and behavior in important relationships. With respect to amount of accessible information, some suggest that our behavior in social relationships is determined by how much information we readily access about others and about ourselves in relation to them (Markus & Kitayama, 1991), but this link has not been demonstrated. This

research tests whether the amount of information women readily access about their child and themselves in relation to him or her influences relationship outcomes, including behavior. If Markus and Kitayama (1991) are correct, we might expect to see perceptions, feelings, and behavior toward infants vary according to how much women have to say about the self-in-relation-to-other, or the self as mother.

With respect to kinds of accessible information, so far studies linking accessible self and other content with social outcomes have concentrated on single kinds of content, rather than on the relative effects of different kinds. Some researchers have demonstrated that the accessibility of psychological information -- especially trait adjectives such as "intelligent" or "kind" -- influences social perception (Markus & Smith, 1981; Higgins, King & Mavin, 1982; Wyer, & Srull, 1986; Bargh, Bond, Lombardi, Tota, 1986; Park, 1986; Bargh, Litt, Pratto, & Spielman, 1989; Prentice, 1990), behavior (Kelley, 1950; Yarrow & Campbell, 1963; Swann & Read, 1981; Ruvalo & Markus, 1992), and affect regulation (Higgins, 1987; Bargh, Litt, Pratto, and Spielman, 1989). Others have found relationships between accessible relational information and similar social outcomes (Scarlett, Press, & Crockett, 1971; George & Solomon, 1989; Stromquist & Strauman, 1991; Bartholomew & Horowitz, 1991; Kobak & Hazan, 1991; Markus & Kitayama, 1991). As yet, no research has asked how the accessibility of one kind of content as compared with another influences outcomes in social relationships. This research compares the accessibility of three kinds of cognitive content -- observable, psychological, and relational -- in representations of self and an important other and assesses the relative contribution of each to relationship outcomes.

2. Accessible affect and its relation to cognitive content. Researchers interested in person representations have not examined the relationship between affect and cognitive content in people's spontaneous descriptions of themselves and others. A few studies have looked at the affective content of self or other representations by itself and how it influences perception and behavior (Oyserman & Markus, 1990; Bartholomew & Horowitz, 1991; Hadley, Holloway, & Mallinckrodt, 1993). Others have looked at how affective and cognitive content each influences

social outcomes, but without asking how the two might relate to one another (Yarrow & Campbell, 1963; Stromquist & Strauman, 1991). We know that affect and cognition are in some respects interdependent and so can influence one another (Lazarus, 1990; Isen, 1990; Tucker, Vannatta, & Rothlind, 1990). We also know that the two can appear to be fairly independent (Zajonc, 1980; Swann, Griffin, Predmore, & Gaines, 1987; Heller, 1990), and depending on which is more active or accessible -- affect or cognition -- can produce different effects (Millar & Tesser, 1986). The present research asks about the relationship between represented affect and cognition in an important social context -- that of parent and child. In particular, it enables us to observe the extent to which represented affect and cognition are interdependent (accessing one means accessing the other) and the extent to which the two are interdependent or independent in their influence on postpartum outcomes.

3. Persistent Influence of chronically accessible personal information.

Researchers interested in accessibility claim that chronically accessible information about self and others is resistant to change and continues to influence perception, feelings, and behavior across time (Bargh, Bond, Lombardi, & Tota, 1986; Bargh, Litt, Pratto, & Spielman, 1989; Stromquist & Strauman, 1991). Studies that examine how accessible personal information influences social outcomes have not looked at how persistent that influence might be across dramatic shifts in personal circumstances, available information, or relationship context. This research investigates this question in two ways. First, it asks whether the content of women's representations of baby and self as mother is stable, or chronically accessible, from early to late in pregnancy. Stable content will suggest that people's knowledge of themselves and an important other can remain chronically accessible even in the face of physical and psychosocial events that perceptibly alter the self, available information about the other, and the relationship context, such as occur during pregnancy. Second, the research asks whether the accessible content of women's representations of baby and self -- and especially content that has been consistently accessible from early to late in pregnancy -- continues to influence relationship outcomes across the dramatic informational and contextual shifts that occur with the child's birth.

Demonstrations of links between prenatal representations and postpartum outcomes would suggest that accessible content can have a chronic influence on social outcomes that persists across major life changes. Failure to find stable content over pregnancy and influences that persist after birth would suggest that situational changes can be more important in determining accessible content and its effects than a person's chronic tendencies to access certain amounts or kinds of information about self and others.

RESEARCH DESIGN AND METHODS

Table 1 outlines the longitudinal design of the study and lists the chief research variables. The research followed women from 14 weeks gestation through 4 months postpartum and included two prenatal and two postpartum assessments.

Subjects

Subjects were 59 married women aged 24 to 34 years recruited in their third month of pregnancy from a private obstetrics practice in a suburban community. Thirty-one women were expecting a first child, and 28 women were expecting a second child. The sample is Caucasian, English-speaking, and of middle to upper middle income, reflecting the patient population served by the obstetrics practice. Women experiencing serious complications of pregnancy were not recruited. The sample poses problems of generalizability, but the homogeneity allows for a clearer test of relationships within this narrow sample.

Initially, 67 women were recruited for the longitudinal study. Eight of the 67 women were lost to follow-up, including four first- and four second-time mothers:

Withdrew from the study without explanation	1
Moved to another state	2
Excluded for medical reasons	
Twins	2
Severe fetal anomaly	1
Preterm birth	1
Medical/psychological	1
Total	8

The remaining 59 women comprise the sample for this research. Of these women, all delivered full term, 43 vaginally and 16 by Caesarean section. All the infants were healthy. Thirty-one were male, and 28 were female.

Table 1

Longitudinal Research Design and Research Variables

Assessment	Timing of Assessment	Research Variables	Measure
Prenatal Assessments			
1	14 weeks gestation	Representations of fetus, baby after birth, and self as mother	Responses to open-ended interview questions coded for cognitive and affective content
2	36 weeks gestation	Representations of fetus, baby after birth, and self as mother	Responses to open-ended interview questions coded for cognitive and affective content
Postpartum Assessments			
3	6 weeks postpartum	Perceptions of infant	Infant Behavior Questionnaire (IBQ)
		Postpartum mood	Profile of Mood States (POMS)
4	4 months postpartum	Behavior toward infant, breast-feeding	Interview responses scored as number of weeks infant was breastfed through 16 weeks postpartum
		Behavior toward infant, returning to work	Interview responses scored as number of weeks woman was home with baby through 20 weeks postpartum

Procedures

Women received a letter from their obstetrician during their tenth week of pregnancy explaining the study. Those who were interested in participating returned a postcard and were contacted for an interview. In all, 155 letters were sent. All the women who returned a postcard participated in the study except one who had a miscarriage after returning the card. A week before the first assessment, which occurred between 14 and 16 weeks gestation, each subject received a packet in the mail with questionnaires to be completed at home and brought to the interview. These questionnaires assessed sociodemographic characteristics, medical and reproductive history, and variables used in a preliminary study of women's representations in early pregnancy, which is described elsewhere (Fares & Adler, in preparation). Interviews were conducted by the proposal author in the physicians' offices and lasted about an hour. Interviews assessed the women's representations of their babies and themselves as mothers and furnished additional data about their experience, plans, and expectations concerning pregnancy and motherhood. Each interview was audiotaped. Subjects were not compensated for their participation in the research.

The women were recontacted at three additional points. In the third trimester, at 34 weeks gestation, they were reinterviewed regarding their mental representations of the baby and the self as mother. At six weeks postpartum, women were mailed questionnaires to gather information about their labor and delivery and to assess their perceptions of their infants and their postpartum mood. The questionnaires were returned to the proposal author in a self-addressed, stamped envelope provided with the questionnaire packet. At four months postpartum women were interviewed a final time to assess decisions about breastfeeding and returning to work. (During the final interview, representations of baby and self were measured again and a free-play session between mothers and infants was videotaped for possible use in future research concerning the relationship between representations and the quality of women's interactions with their infants.)

Research Variables and Instruments

Representations of Baby and Self as Mother

Cognitive Content of Women's Representations

The cognitive measure of women's representations comprised three open-ended interview questions and a coding scheme to evaluate the cognitive content of women's responses. Two questions assessed representations of the baby: (1) "Tell me as much as you can about what you think the baby is like right now" and (2) "Tell me as much as you can about what you think the baby will be like after it is born." A third question assessed women's representations of themselves as mothers to the expected child: (3) "Tell me as much as you can about what you think you'll be like as a mother to this child." The subject responded to each question without interruption from the interviewer and then was given one prompt asking if she had anything more to say.

Subjects' responses were transcribed from audiotape and coded. The coding plan was based on a content analysis scheme devised by Fiske and Cox (1979) (for details, see Fares, 1989). The responses were scored for the extent to which they contained five different categories of information about the representational target in question. Table 2 lists the five categories and gives examples for each. Responses to each question were subdivided into complete thoughts, which in conversational oral production can be a sentence, a phrase, or a single word. Each of the five content categories was scored "present" (score of 1) or "absent" (score of 0) for each thought, and the scores were summed over all the thoughts in a response. This yielded five scores for each target (fetus, baby after birth, and self as mother).

One-quarter of the transcripts were selected at random and scored by an independent coder to assess interrater reliability. Using the Kappa coefficient of agreement (Cohen, 1960), reliabilities were calculated for the extent to which the two raters agreed that a complete thought was codeable. (Because of the nature of oral responses, some complete thoughts do not describe or pertain directly to the target in question, and so contain no codeable information.) Then, for those complete thoughts agreed upon as codeable, Kappa values were be calculated

Table 2

Cognitive Content Categories

Category	Description	Examples
Appearance/physical characteristics	Includes information about how the target looks and his or her physical parts, state, or aptitudes.	He's about 3 inches long. She'll be so cute. It has a heart that's beating. He'll be hungry a lot.
Behavior	Includes potentially observable actions, the target's occupation, avocations, and typical behavioral roles.	It'll sleep most of the time. I'll play with the baby. She's a real kicker. I'll still work as a pharmacist.
Physical context/environment	Includes information about the target's location, its position with respect to elements or objects in the physical environment, and his or her material possessions/resources.	It's in a safe place right now. It'll spend a lot of time in the car seat. I'll be home most of the week. I won't have as much time for myself.
Social relationships	Includes the target's social roles, social network, and experiences with others.	He'll be part of a loving family. It knows Bill's voice already. My mother is thrilled about her.
Internal properties	Includes information about the target's personality or traits; emotional or mental states; and his or her beliefs, values, attitudes, and desires.	It think it's happy. It will be an easy baby. I'll worry all the time. I want nothing but the very best for my baby.

for the extent to which the two raters made the same judgment about the presence or absence of information pertaining to each category. Separate sets of reliabilities were calculated for each of the two assessments -- Time 1 (T1) at 14 weeks gestation and Time 2 (T2) at 36 weeks gestation -- and within each assessment, for each of the three representational targets.

For the fetus target, the coefficient of agreement for codeability of complete thoughts was .81 and .95 for T1 and T2, respectively. Coefficients of agreement for T1 category judgments ranged from .87 for behavior to .93 for context and properties; for T2 judgments, they ranged from .89 for appearance to .98 for properties. For the baby after birth, codeability agreement was .91 for T1 and .93 for T2. T1 category agreement ranged from .81 for properties and relationships to .95 for behavior; T2 category agreement ranged from .87 for properties to .98 for appearance. For self as mother, codeability agreement was .87 for T1 and .91 for T2. T1 category agreement ranged from .83 for relationships to .98 for appearance and context; T2 category agreement ranged from .84 for properties to .95 for appearance.

Affective Content of Women's Representations

Subjects' responses -- that is, their descriptions of their babies (fetus and baby after birth) and themselves as mothers -- were rated for affective content by a research psychologist (JG) with clinical experience and expertise in socioemotional development. Each response was rated using the following four-point scales:

1. A **positive affect** scale, which rated the extent to which the subject expressed positive feelings toward each representational target (fetus, baby after birth, and self as mother).
2. An **overt anxiety** scale, which rated how much anxiety a subject expressed as she describes each target.
3. A **hostility** scale, which rated how angry, hostile, or denigrating the subject was as she described each target.
4. An **emotional avoidance** scale, which rated the degree to which a subject avoided the task of describing each target.

These dimensions were selected because studies show that they are especially salient indicators

of the socioemotional quality of close relationships in children and adults (Bartholomew & Horowitz, 1991; Simpson, 1990; Kobak & Sceery, 1988; Campos, Barrett, Lamb, Goldsmith, & Stenberg, 1983). Four-point scales were chosen on the basis of work with transcripts from subjects not included in the sample. For all the scales, a rating of "0" indicated the affect was not found in the response, and a rating of "3" indicated the affect was highly present. (For details about how scale points were discriminated for each affect, see Fares & Genevro, 1993).

JG also used an exploratory fifth scale to rate **emotional integration**, or how easily the subject acknowledges any negative feelings about the target and how consistently she integrates them with her positive feelings. The aim of this scale was to capture the affective aspect of what Main refers to as "coherence" in her own scheme for evaluating an adult's working model of childhood relationships with parents (Main, Kaplan, & Cassidy, 1985; Main, 1991). In coherent responses, subjects readily integrate positive and negative aspects of expression and feeling. Incoherent responses include those that are internally inconsistent or contradictory or that oscillate between positive and negative expressions without acknowledging the two as part of a coherent whole. Emotional integration ratings were done for women's descriptions of themselves as mothers only, and the ratings were used in only a subsidiary way in the data analyses.

To assess interrater reliability for the affect scales, the author rated one-quarter of the transcripts, selected at random. Reliabilities were calculated for each of the five scales using intraclass correlation coefficients (ICCs) (two-way ANOVA, mixed model) (Tinsley & Weiss, 1975). Separate coefficients were calculated for each of the two assessments (T1 and T2) and, within each assessment, for each of the three representational targets. For descriptions of the fetus, T1 ICCs ranged from .92 for positivity to .98 for anxiety; T2 ICCs ranged from .78 for avoidance to .97 for positivity. For descriptions of the baby after birth, T1 ICCs ranged from .81 for avoidance to .97 for anxiety; T2 ICCs ranged from .90 for anxiety to .98 for avoidance. For descriptions of self as mother, T1 ICCs ranged from .82 for hostility to .97 for positivity; T2 ICCs ranged from .89 for hostility to .98 for emotional integration.

Women's Perceptions of Their Infants

Women's perceptions of their infants were measured via Rothbart's Infant Behavior Questionnaire (IBQ), a parent-rated infant temperament scale (Rothbart 1981, 1986). Research consistently shows that mothers' ratings of infant temperament contain objective and subjective components, and the size of the subjective component remains about the same (regardless of how apparently objective or subjective the particular temperament instrument (for reviews, see Bates, 1980; Mebert, 1991). Bates and Bayles (1984) studied the amount of variance accounted for by objective and subjective components using a battery of four parent-report temperament scales, observer ratings of temperament, and maternal personality inventories. On average, observer ratings (objective component) accounted for 11 percent of the variance in mothers' ratings of infant temperament, and maternal personality (subjective component) accounted for an additional 8.5 percent. Mebert suggests that subjectivity in parents' ratings proceeds from parents' representations, or working models, of their child and themselves as parents.

The Rothbart IBQ was chosen for the research because it has been adapted and validated for young infants with good reliability (Worobey, 1986). With the IBQ, women report how often their babies have engaged in 54 different behaviors during the past week using a 7-point scale ranging from "never (1)" to "always (7)." Sample items include: "During sleep, how often did the baby toss about in the crib?", "When put into the bath water, how often did the baby splash or kick?", and "How often during the last week did the baby cry after startling?" The 54 items yield four subscales scores assessing temperament dimensions appropriate to very young infants: (1) activity level, (2) distress to limitations, (3) distress to sudden/novel stimuli, and (4) soothability. Reported reliabilities (Cronbach's alpha) for young infants are .73 for activity level, .84 for distress to limitations, .80 for distress to sudden/novel stimuli, and .84 for soothability (Rothbart, 1981). Reliabilities calculated for the present sample were .79 for activity level, .80 for distress to limitations, .37 for distress to sudden/novel stimuli, and .79 for soothability. The sample reliability for distress to sudden/novel stimuli was not adequate, and so scores for that subscale were not used in the research.

Postpartum Mood. Women's postpartum mood was assessed via the Profile of Mood States (POMS), a 65-item adjective rating scale (McNair, Lorr, & Droppleman, 1981). Subjects are asked to rate the degree to which each adjective describes how they have been feeling during the past week on a five-point scale from "not at all (0)" to "extremely (4)." Three POMS subscales were selected to assess women's postpartum mood: (1) tension-anxiety, (2) depression-dejection, and (3) anger-hostility. As suggested earlier, anxiety and anger are salient indicators of the socioemotional quality of close relationships, and maternal depression has been linked to the security of the mother-infant relationship (Gaensbauer, Harmon, Cytryn, & McKnew, 1984; Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985). Reported reliabilities for each of the three subscales exceed .90 ($K-R_{20}$) (McNair, Lorr, & Droppleman, 1981). Reliabilities calculated for the present sample all exceeded .85 (Cronbach's alpha).

Decisions About Breastfeeding and Returning to Work. Decisions about breastfeeding and returning to work were chosen as outcomes to test links between representations during pregnancy and postpartum behavior because each represents a definite, centrally important action a mother must take concerning the care of her infant, each is salient to the mother during pregnancy, and each can be accurately measured by self-report. In addition, both variables are empirically and theoretically important. Breastfeeding has important health advantages for young infants and so can be considered an aspect of women's health behaviors with respect to their child, which were found to be related to women's representations of their babies and themselves as mothers in preliminary research using early pregnancy data from the present sample (Fares & Adler, in preparation). Women's decisions about returning to work following childbirth have received prominent attention recently, especially in terms of their influence the mother-infant relationship (for reviews, see Clarke-Stewart, 1989, and Lamb, Sternberg, & Prodromidis, 1992). Work decisions raise issues of separation from the infant versus maintaining proximity and close contact with it -- issues presumed to be principal activators of representation-based maternal behavior (Bowlby, 1969/1982; Bretherton, Biringen, Ridgeway, Maslin, & Sherman, 1989).

Decisions about breastfeeding and about returning to work were assessed from transcripts of interviews conducted during the fourth postpartum month. The breastfeeding variable was scored as number of weeks the infant was breastfed during the first 20 weeks postpartum, and the work variable as number of weeks the mother was at home full time with the infant during the same period.

Statistical Methods

All data were analyzed in this research using SPSS Release 4.0 for IBM VM/CMS. Phase 1 research questions, which have to do with describing the content of women's prenatal representations, were assessed via repeated measures MANOVA and principal components analysis (PCA). Phase 2 research questions, which ask whether the content of women's prenatal representations predicts maternal outcomes, were assessed via multiple regression/correlation analysis (MRC). The details of these analyses are described in the Phase 1 and Phase 2 results sections that follow.

RESULTS AND DISCUSSION FOR PHASE 1

In Phase 1 of the data analysis, the chief task was to describe the cognitive and affective content of women's representations of their babies and themselves as mothers as it develops from early to late in pregnancy, assessing the chronic accessibility of both types of content and how the two kinds of content relate to one another. Two kinds of analyses were done to accomplish this task: (1) repeated measures MANOVAs, conducted separately for cognitive and affective content; and (2) principal components analyses, conducted separately for cognitive and affective content and then for the two together. The results of each are presented below and then are discussed in terms of what they say, when taken together, about the accessible content of women's representations of their babies and themselves as mothers during pregnancy. The discussion also considers what the Phase 1 results suggest about data reduction for Phase 2 hypothesis testing.

As part of a strategy to minimize Type I error, the descriptive analyses associated with Phase 1 are considered exploratory and preliminary to the tests of theory associated with Phase 2. The tests of hypotheses about how prenatal representations relate to postpartum outcomes are considered critical among the multiple tests conducted during the data analyses.

Repeated Measures MANOVAs

Two series of repeated measures MANOVAs were performed, one examining the accessible cognitive content of women's representations of baby and self -- especially, the amount and kinds of content that predominate and how that content changes over time -- and the other examining the affective content. The MANOVA approach to repeated measures analysis was selected because of its advantages over the traditional ANOVA approach in terms of freedom from sphericity assumptions, control of Type I error rates, and statistical power (Fiske & Cox, 1979; O'Brien & Kaiser, 1985). To minimize Type I error, tests of univariate contrasts were not interpreted for an effect unless the multivariate F test was significant ($p < .05$) for that effect.

Cognitive Content

For the cognitive content MANOVAs, dependent variables were the content category scores (see Table 2 in **Research Design and Methods**) from early and late in pregnancy for each of the three representational targets -- fetus, baby after birth, and self as mother. The early and late scores were taken to be repeated measures on the same subject. The three within-subjects factors for the dependent variables were TIME, representational TARGET, and content CATEGORY. TARGET was nested within TIME, and CATEGORY was nested within TARGET. One analysis was performed without a between-subjects factor to characterize the cognitive content of women's prenatal representations for the entire sample, and then in a second analysis, parity was entered as a between-subjects factor to test for differences between first- and second-time mothers.

In the cognitive MANOVA analyses, the following effects were tested:

- o TARGET effects, which assess differences in the amount of accessible content produced for any one representational target -- fetus, baby after birth, or self as mother -- summing across kinds of content
- o CATEGORY effects, which assess differences in the accessibility of any one category of content -- appearance/physical characteristics, behavior, physical context/location, social relationships, or internal properties -- summing across targets
- o TARGET x CATEGORY effects, which assess differences in the accessibility of one kind of content for a specific target
- o TIME effects (including interactions with each of the foregoing), which assess chronic accessibility -- that is, stability versus change in amount or kind of cognitive content from early to late in pregnancy

Cognitive Content Results for the Entire Sample

Table 3 summarizes the mean amounts of information produced by the women in the sample for each representational target early and late in pregnancy. Table 4 lists the multivariate F values and their significance levels for the cognitive MANOVA with the entire sample.

Table 3

Mean Amount of Information by Content Category for Entire Sample Early and Late in Pregnancy

Content Category	Representational Target, <i>M.</i> (<i>SD</i>)						Mean Amount	
	Fetus		Baby After Birth		Self as Mother		Across Targets	
	T1	T2	T1	T2	T1	T2	T1	T2
Appearance	6.1(3.4)	4.6(3.3)	3.9(2.9)	3.2(2.9)	0.1(0.2)	0.2(0.5)	3.4	2.7
Behavior	1.9(1.7)	1.9(1.7)	1.4(1.8)	1.4(1.5)	3.8(3.3)	3.4(2.6)	2.4	2.2
Physical context	0.8(1.2)	1.1(1.2)	0.4(1.1)	0.4(0.8)	0.5(1.0)	0.3(0.6)	0.6	0.6
Social relationships	0.7(0.8)	0.8(1.0)	2.4(2.2)	1.5(1.9)	5.0(2.8)	4.3(2.7)	2.7	2.2
Internal properties	0.9(1.6)	2.1(2.3)	3.1(2.4)	2.8(1.9)	4.8(2.8)	4.6(3.2)	2.9	3.2
Mean amount across categories	2.1	2.1	2.2	1.9	2.8	2.6		

Note. *n*=59.

^aMean values for early in pregnancy are designated T1 (14 weeks gestation); late pregnancy values are designated T2 (36 weeks gestation) ^bAmount of information is expressed as number of complete thoughts containing particular kind of content.

Table 4

**Multivariate F Values from Repeated
Measures MANOVA for Entire Sample.
Cognitive Content**

Effect	Multivariate F Values, E(df)
Target	7.06(2,57)**
Category	108.52(4,55)***
Time	4.82(1,58)*
Target x category	60.14(8,51)***
Target x time	2.62(2,57)
Category x time	60.14(4,55)***
Target x category x time	4.14(8,51)**

Note. $n = 59$.

*** $p < .05$ ** $p < .01$ *** $p < .001$**

Six of the seven effects tested were significant. As Table 4 shows, the main effect for target was significant: the women produced more information about themselves as mothers than about the fetus or the baby after birth (for both univariate comparisons, $p < .001$). The main effect for category also was significant: summing across targets, women accessed appearance and properties information most, followed by behavior and relationship information, and context information least of all (for all comparisons, $p < .03$).

Taking each target separately, a more specific picture of category usage emerges. The highly significant target $\times$ category interaction indicates that the accessibility of one content category over another depended upon the target that was being described. In descriptions of the fetus, women concentrated more upon the fetus's appearance than upon any other category of information (for all comparisons, $p < .001$). Next, women concentrated upon the fetus's internal properties and behavior, which were emphasized fairly equally. Women attended to social relationships or physical context least of all (for relationships vs. properties and vs. behavior, $p < .002$; for context vs. properties and vs. behavior, $p < .001$). In descriptions of the baby after birth, women concentrated most upon the baby's appearance and internal properties, giving equal attention to each. Next, women attended to the baby's relationships with others (for appearance vs. relationships, $p < .001$), and then to the baby's behavior (for relationships vs. behavior, $p < .04$). Information about the baby's location or physical context was emphasized least of all (for all comparisons, $p < .01$). In describing themselves as mothers, women concentrated most upon their own internal properties and their social relationships, and next upon their behavior as a mother (for behavior vs. both properties and vs. relationships, $p < .003$). They rarely used physical context and appearance categories to describe themselves as mothers (for all comparisons, $p < .001$).

These results tell us that for women in the sample, information about their babies was not as accessible during pregnancy as information about themselves as mothers. Women tended to access more information throughout their pregnancies about themselves as mothers than about either baby target (fetus or baby after birth), and they accessed information fairly equally for both

baby targets. Women also accessed different kinds of information depending on which target they were describing. They tended to access observable information when describing the fetus (appearance), a mix of observable, psychological, and relational information when describing the baby after birth (appearance, internal properties, social relationships), and psychological and relational information when describing themselves as mothers to the child (properties, social relationships). Applying what we know about accessibility and familiarity, these results suggest that women in the sample were most familiar with the notion of themselves as mothers, since they accessed more content about self as mother and most of it was psychological and relational. Women were next most familiar with their baby as they imagined it would be after birth: they accessed about the same amount of information about the baby after birth as about the fetus, but for the baby after birth, psychological information was as readily accessed as observable information. The fetus appeared to be the least familiar for the women. For the fetus only, women accessed observable information more readily than psychological or relational information.

Significant time effects tell us something about how consistently, or stably, women accessed information about their babies and themselves as mothers over the course of pregnancy. The main effect for time was significant: summing across targets, the total amount of information accessed declined slightly over time [2.37 complete thoughts early in pregnancy (T1) vs. 2.16 late in pregnancy (T2)]. This slight decline may reflect an actual change that occurs in women's representations, or it may be due to a repetition effect: the description task was not novel the second time around. When the three targets -- fetus, baby after birth, and self as mother -- are considered separately, the time effect attenuates. As Table 3 shows the amount of information appeared to decline slightly for baby after birth and self as mother descriptions, as compared with fetus descriptions, which contained the same amount of information early and late in pregnancy. The slight declines for baby after birth and self as mother were not of sufficient magnitude to yield a significant multivariate F for the time x target interaction, suggesting that the baby after birth and self as mother descriptions did not decline significantly in total amount of

information from early to late in pregnancy.

The time x category effect was significant showing that there was some change over time in the degree to which women accessed one kind of information as compared with another. The significant time x target x category interaction indicated that this change was target-specific. Univariate tests revealed that women increased over time in the amount of internal properties information they accessed about the fetus ($p < .001$), and they decreased over time in the amount of appearance information they accessed ($p < .002$), although appearance information continued to dominate descriptions of the fetus throughout pregnancy. Women's use of the other three categories -- behavior, physical context, and social relationships -- remained fairly stable over time for the fetus target. In their descriptions of the baby after birth, women accessed less relationship information over time ($p < .008$), while their use of the four other content categories remained fairly stable. No significant changes were observed over time in the kinds of information women used to describe themselves as mothers.

These time effects results show that, on average, the cognitive content of the women's representations of baby and self as mother was fairly stable, or consistently accessible, over the course of pregnancy in terms of both the amount of accessible information they contained and the kinds of accessible information. Evidence for growing familiarity was not strong: descriptions of baby and self did not become longer over time, as would be expected if women were becoming more familiar with each of the representational targets over time. Only descriptions of the fetus showed significant content changes consistent with growing familiarity: they decreased in observable content and increased in psychological content over time. Descriptions of the baby after birth declined in relational content, a finding inconsistent with growing familiarity, and their content remained stable in all other respects. Descriptions of self as mother were the most stable, with no significant time effects in terms of both amount and kind.

Cognitive Content Results Comparing First- and Second-Time Mothers

Table 5 lists the multivariate F values for the second cognitive MANOVA with parity added as a between-subjects factor. As the table shows, only two of the seven effects were

Table 5

Multivariate F Values from Repeated Measures MANOVA
Comparing First- and Second-Time Mothers. Cognitive Content

Interaction Effect	Parity, F (df)
Group x target	0.33(2,56)
Group x category	6.00(4,54)***
Group x time	0.30(1,57)
Group x target x category	2.22(8,50)
Group x target x time	0.29(2,56)
Group x category x time	0.51(4,54)
Group x target x category x time	0.95(8,50)

Note. Results for effects summing across the two parity groups are reported in Table 4.

* $p < .05$ ** $p < .01$ *** $p < .001$

significant. The parity x target interaction was not significant: first- and second-time mothers did not differ in the amount of information they produced for each representational target. Univariate tests associated with the two significant effects -- parity x category and parity x target x category -- showed that second-time mothers accessed more information about social relationships throughout their pregnancies than did first-time mothers ($p < .03$), but this occurred only when they were describing the baby after birth ($p < .01$). No other differences were observed between first- and second-time mothers in the kinds of information they used to describe the baby after birth, and they did not differ from one another in the kinds of information used to describe the other two representational targets (fetus and self as mother). No significant time effects were observed: in their descriptions of their babies and themselves as mothers, first- and second-time mothers did not differ in the amount and kinds of information that were chronically accessible from early to late in pregnancy.

In terms of familiarity, then, second-time mothers in the sample were not more familiar than first time mothers with the three representational targets -- their fetus, the baby as they imagined it after birth, or themselves as mothers to the expected child. As compared with first-time mothers, they accessed about the same amount of information about all three, they accessed about as much psychological information, and they accessed more relational information only for the baby after birth. This last finding may have less to do with how familiar second-time mothers are with a second child per se, and more to do with concerns they have about the relational task that faces them -- the task of making room for the new baby in a maternal world that already includes a loved first child. Further, women's experience with a first child did not result in more fixed or consistently accessible content about their second child or about themselves as mothers. These results suggest that cognitive representational content about baby and self as mother is formed in a new way with each pregnancy, rather than accumulated from pregnancy to pregnancy. They also tell us that women having a first child can have as accessible and as familiar notions about their baby and themselves in relation to it as women who have had a child before.

Affective Content

In the main repeated measures MANOVAs for affect, dependent variables were the affect ratings for positivity, anxiety, hostility, and avoidance from early and late in pregnancy for each of the three representational targets -- fetus, baby after birth, and self as mother. (Subsidiary MANOVA analyses were performed using early and late emotional integration ratings as dependent variables. Results of these analyses follow main analyses results.) The four early scores and the four late scores were taken to be repeated measures on the same subject. As with the cognitive MANOVAs, the three within-subjects factors for the dependent variables were TIME, representational TARGET, and AFFECT TYPE: TARGET was nested within TIME, and AFFECT TYPE was nested within TARGET. One analysis was performed without a between-subjects factor to characterize the prenatal representations for the entire sample, and then in a second analysis, parity was entered as a between-subjects factor to test for differences between first- and second-time mothers.

The following effects were tested:

- o TARGET effects, which assess differences in the strength or intensity of accessible affect for any one representational target, summing across kinds of affect
- o AFFECT TYPE effects, which assess differences in the accessibility of any one affect -- positivity, anxiety, hostility, or avoidance -- summing across targets
- o TARGET x AFFECT TYPE effects, which assess differences in the accessibility of one kind of affect for a specific target
- o TIME effects (including interactions with each of the foregoing), which assess chronic accessibility -- that is, stability versus change in the strength or kind of affect from early to late in pregnancy

Affective Content Results for the Entire Sample

Table 6 summarizes the mean affect scores for women in the sample early and late in pregnancy for each representational target. Table 7 lists the multivariate F values and their significance levels for the affect MANOVA with the entire sample.

Table 6

Mean Affect Scores for Entire Sample Early and Late in Pregnancy^{a,b}

Affect Type	Representational Target, <i>M</i> (<i>SD</i>)						Mean Across	
	Fetus		Baby After Birth		Self as Mother		Targets	
	T1	T2	T1	T2	T1	T2	T1	T2
Positivity	0.76(0.97)	0.93(0.81)	1.49(1.02)	1.27(1.00)	1.71(0.77)	1.73(0.74)	1.32	1.31
Anxiety	0.66(0.98)	0.61(0.89)	1.00(0.91)	1.17(1.10)	1.58(1.02)	1.48(1.09)	1.08	1.09
Hostility	0.81(1.03)	0.49(0.75)	0.69(0.82)	0.81(0.88)	0.63(0.81)	0.63(0.76)	0.71	0.64
Emotional								
avoidance	0.75(1.08)	0.97(1.05)	1.00(1.17)	1.37(1.17)	0.88(0.91)	1.07(1.14)	0.88	1.14
Emotional								
integration ^c	---	---	---	---	2.42(0.81)	2.12(0.89)	---	---
Mean across								
affects	0.76	0.75	1.05	1.16	1.20 ^d	1.23 ^d		

Note. *n* = 59.

^aMean values for early in pregnancy are designated T1 (14 weeks gestation); late pregnancy values are designated T2 (36 weeks gestation). ^bExcept for emotional integration, all scores are four-point scale ratings, with 0 "none" and 3

"high." Emotional integration scores are four-point scale ratings, with 1 "little integration" and 4 "high integration."

^cEmotional integration was rated for self as mother target only. ^dDoes not include emotional integration scores.

Table 7

**Multivariate F Values from Repeated Measures MANOVA
for Entire Sample, Affective Content**

Effect	Multivariate F Values, F (df)
Target	33.20(2,57)***
Affect type	17.49 (3,56)***
Time	1.24 (1,58)
Target x affect type	4.99(6,53)***
Target x time	1.03 (2,57)
Affect type x time	1.97 (3,56)
Target x affect type x time	1.90 (6,53)

Note. n = 59

*p<.05 **p<.01 ***p<.001

Three of the seven effects tested were significant. As Table 7 shows, the main effect for target was significant: the overall intensity of affect, without reference to kind, was less for the fetus than for either the baby after birth or self as mother (for both comparisons, $p < .001$). The main effect for affect type also was significant, indicating that certain affects were more accessible than others. In particular, positivity was significantly more accessible than hostility, averaging across the three representational targets ($p < .001$).

The highly significant target x affect type interaction indicates that, taking the three targets separately, the accessibility of certain affects varied by target. Univariate tests showed that women's positivity scores were highest when describing themselves as mothers, next highest when describing the baby after birth, and least when describing the fetus (for all comparisons, $p < .005$). Anxiety scores showed the same relationships: women were most anxious when describing themselves as mothers, next most anxious when describing the baby after birth, and least anxious when describing the fetus (for all comparisons, $p < .002$). Hostility and avoidance scores were similar across all three representational targets.

None of the four time effects was significant, suggesting that women accessed affect about their babies and themselves as mothers fairly consistently over the course of pregnancy. No significant changes were observed from early to late in pregnancy in total intensity of affect, summing across kinds of affect, or in the accessibility of individual affects, either summing across targets or taking each target separately.

These results tell us that, as with cognitive content, the strength and kinds of affect that women accessed when they described their babies and themselves as mothers varied in target-specific ways according to how familiar women were with the representational target. Women accessed affect least strongly when describing the fetus -- the least familiar of the three targets -- as compared with the baby as they imagined it would be after birth or themselves as mothers, and they were least positive and least anxious about the fetus. The women were most positive and most anxious about themselves as mothers -- the most familiar of the three targets. Women accessed hostility and displayed avoidance in less target-specific fashion: hostility and avoidance

scores were similar across all three representational targets, and for all three targets women were far less likely to be hostile than positive. As with cognitive content, the affective content of the women's representations of baby and self was fairly stable over the course of the pregnancy. These results do not fit with the speculation that positivity would increase over pregnancy as women became more familiar with the notion of their babies and themselves as mothers. Rather, they fit more with cognitive content results, which showed content changes consistent with growing familiarity for the fetus only and so offered only partial evidence that women become more familiar with their baby as pregnancy progresses.

Affective Content Results Comparing First- and Second-Time Mothers

Table 8 lists the multivariate F values for the second affect MANOVA with parity added as a between-subjects factor. As the table shows, only one out of seven effects tested was significant. The parity x target interaction was not significant: first- and second-time mothers did not differ in how strongly they accessed affect for each of the three representational targets. The parity x affect type interaction was of borderline significance ($p=.050$), indicating that first- and second-time mothers likely accessed different kinds of affects in their descriptions of their babies and themselves as mothers. Univariate tests showed that second-time mothers were less hostile than first-time mothers, summing across all three representational targets ($p<.04$). First- and second-time mothers also differed in the relative prominence of the four affects, again summing across the three targets. First-time mothers were equally positive, anxious, and avoidant; second-time mothers were more positive than they were anxious or avoidant (for positivity vs. anxiety, $p<.002$; vs. avoidance, $p<.006$). Both groups of women were more positive than they were hostile. The parity x target x affect type interaction was not significant: women in the two parity groups did not differ in the kinds of affect they accessed when each target was considered separately. As with cognitive content, no significant time effects were found: first- and second-time mothers did not differ from one another in how consistently, or chronically, they accessed affect over time, either in terms of the total intensity or the kinds of affect.

Table 8

Multivariate F Values for Repeated Measures MANOVA

Comparing First- and Second-Time Mothers. Affective Content

Interaction Effect	Parity, F (df)
Group x target	0.33(2,56)
Group x affect type	2.77(3,55) ^a
Group x time	0.28(1,57)
Group x target x affect type	0.17(6,52)
Group x target x time	1.23(2,56)
Group x affect type x time	0.42(3,55)
Group x target x affect type x time	1.96(6,52)

Note. Results for effects summing across the two parity groups are reported in Table 4.

^a
p = .050

These results for first- and second-time mothers suggest that, as with cognitive content, the accessibility of affect in pregnant women's representations of their babies and themselves as mothers is not much influenced by whether or not they have had a first child. The significant univariate findings tells us that second-time mothers may access less hostility on average toward their babies and themselves than do first-time mothers, and unlike first-time mothers, they may be more positive about the baby and themselves than they are anxious or avoidant. These findings make some sense. Perhaps women who have been through a successful pregnancy before and who have already become mothers are less ambivalent -- that is, they are more able to be positive instead of negative -- about the whole process of having a baby and becoming a mother than are women going through pregnancy for the first time. These findings must be interpreted with caution, however, since they are associated with a sole, borderline-significant result out of seven multivariate effects tested.

Subsidiary MANOVA Analyses with Emotional Integration Scores

Repeated measures MANOVAs were performed using women's emotional integration ratings from early and late in pregnancy as dependent variables. Emotional integration was scored from women's descriptions of the self as mother target only, and so TARGET was not a within-subjects factor for these analyses. TIME was the single within-subjects factor for emotional integration. As with the main analyses, one MANOVA was performed without a between-subjects factor to assess emotional integration for the entire sample, and then parity was entered as a between-subjects factor to test for differences between first- and second-time mothers.

Emotional Integration Results for the Entire Sample. Early in pregnancy, the mean emotional integration score for women in the sample was 2.42 on a 4-point scale, with 1 meaning "little integration" and 4 "high integration." Late in pregnancy, the mean score was 2.12. This difference between early- and late-pregnancy scores was significant ($F=4.52$; $df=1,58$; $p<.04$): women's emotional integration, as assessed from their descriptions of themselves as mothers, declined slightly over time. This finding suggests that, late in pregnancy, women may be

somewhat less able than they were early in pregnancy to acknowledge negative feelings they may have about their baby and themselves as mothers and to fit these negative feelings with positive feelings. If this finding is real, it may reflect what Stern (1991) describes as a kind of general "dissolution" of women's representations -- of her baby, of her husband, of her own mother -- that may occur late in pregnancy.

Emotional Integration Results Comparing First- and Second-Time Mothers. First- and second-time mothers did not differ in how well-integrated positive and negative emotions were in their representations of their babies and themselves as mothers or in how emotional integration changed from early to late in pregnancy. Early in pregnancy, the mean emotional integration score was 2.36 for first-time mothers and 2.50 for second-time mothers. Late in pregnancy, the mean scores were 2.16 for first-time mothers and 2.07 for second-time mothers. Neither the main effect for parity nor the parity x time effect was significant (respectively, $F=0.03$, $df=1,57$; $F=0.66$, $df=1,57$).

Principal Components Analyses

Principal components analyses (PCAs) were performed to (1) confirm and elaborate findings from the repeated measures MANOVAs, (2) understand the relationship between accessible cognitive content and affect in women's representations of their babies and themselves as mothers, and (3) guide data reduction decisions for Phase 2 hypothesis testing.

Preliminary Correlation Analyses

As a precursor to the PCAs, the correlation matrices (see Appendix A) were examined to assess the number and strength of bivariate relationships among the cognitive and affect variables and, especially, to answer three questions germane to the PCAs:

1. **Do women access cognitive information and affect similarly across the three targets or are they accessed differently for each target, warranting separate PCAs for the fetus, the baby after birth, and the self as mother?**

Correlations confirmed the MANOVA findings that women in the sample accessed information from the five cognitive content categories in target-specific ways (see Tables A-1 and

A-2). This conclusion is drawn from the number and size of cross-target, same-category correlations in the matrix. For the early pregnancy variables, only 4 out of 15 cross-target, same-category correlations were significant, and these were only moderate in size, ranging from .30 to .47. For the late pregnancy variables, only 1 out of 15 cross-target, same-category correlations was significant. These findings indicate that the PCAs should be performed by target for the cognitive content variables.

MANOVA findings about target-specific affect also were confirmed (see Tables A-3 and A-4). For the four affects that are shared by all three targets (emotional integration was scored for the self as mother target only), only 2 out of 12 cross-target, same-affect correlations were significant (mean $r = .36$) for early pregnancy scores. For late pregnancy scores, 5 out of the 12 cross-target, same-affect correlations were significant, but they were modest in size, ranging from .28 to .42. These findings indicate that, as for cognitive content, the PCAs should be performed by target for the affect variables. They also qualify one of the MANOVA findings. MANOVA results showed that hostility and avoidance were accessed more evenly across the three representational targets than were positive affect and anxiety. The absence of any large cross-target, same-affect correlations suggests, however, that none of the affect scores reflects a pervasive mood that colored women's responses regardless of the target.

2. Are cognitive and affect variables sufficiently stable, or chronically accessible enough, from early to late in pregnancy to justify summing each variable across the two assessments in order to produce a single, more reliable variable?

Correlations show that there is some stability in cognitive content and in affect from early to late in pregnancy (see Tables A-5 and A-6). For each target, 3 out of 5 cognitive variables showed significant, though not large, correlations between T1 and T2 values: for the fetus target, significant correlations ranged from .40 to .54; for the baby after birth, they ranged from .34 to .43; and for the self as mother, from .33 to .51. For each target, the affect variables also showed significant correlations between T1 and T2, but none exceeded .43: for the fetus target, 2 out of 4 correlations were significant (.40 and .43); for the baby after birth, all 4 correlations were

significant, ranging from .27 to .40; and for the self as mother, 2 out of 5 correlations were significant (.29 and .41; for the self as mother target, emotional integration scores are included along with the other four affects). For both cognitive and affect variables, the strongest correlations from T1 to T2 were only moderate in size and so do not justify the use of variables summed across the two assessments in the PCAs.

3. Is there sufficient correlation between cognitive and affect variables to warrant PCA examining covariation between the two sets of measures?

Correlations show that there are some significant relationships between cognitive content and affect variables, as measured late in pregnancy (see Table A-7). For the fetus target, 5 out of 20 correlations were significant, ranging from .26 to .61; for the baby after birth, 3 out of 20 were significant, ranging from .33 to .42; and for the self as mother, 6 out of 25 were significant, ranging from .29 to .45. The relationship between the two sets of variables is not especially strong, but there is enough relation between them to permit exploratory PCA examining covariation between the two sets.

PCAs with Cognitive Content Variables

Principal components analyses, with varimax rotation, were performed for each representational target on four cognitive content variables from late in pregnancy (T2): appearance, behavior, internal properties, and relationships. (A fifth cognitive content variable -- physical context -- was excluded from the analyses because it was accessed infrequently for all three targets.) Correlation matrices were used as inputs. For all analyses, the ratio of subjects to variables exceeded 10:1. The Kaiser rule (eigenvalues greater than 1.0) was used as the criterion for number of factors extracted, except as specified. The factor loading criterion was .40 or greater for all analyses. The cognitive content PCAs were guided by the question:

Do the cognitive variables separate into two components, one comprising observable information typical of descriptions of strangers (appearance, behavior) and one comprising psychological and relational information typical of descriptions of familiars (internal properties, social relationships)?

The PCA for the fetus target yielded a two-component solution, and together the two components accounted for 61 percent of the total variance. Table 9 lists the rotated component loadings for the four cognitive content scores. As the table shows, three of the variables loaded on the first component -- behavior, properties, and relationships, and appearance/physical characteristics loaded by itself on the second.

The PCA for the baby after birth also yielded a two-component solution, with the two components accounting for 59 percent of the total variance. As Table 9 shows, scores for behavior, properties, and relationships loaded on the first component; behavior also loaded negatively on the second component, along with appearance/physical characteristics.

Two PCAs were performed for the self as mother target. Four variables were used in the first PCA: appearance, behavior, properties, and relationships. The appearance variable was included even though it had a near-degenerate frequency distribution for this target so that the component solution for self as mother could be compared with those for the other two targets. This first analysis yielded a two-component solution, with the two components accounting for 70 percent of the total variance. As Table 9 shows, the component structure was similar to that for the fetus target when the same variables were used: behavior, properties, and relationships loaded on the first component, and appearance/physical characteristics loaded by itself on the second. The second PCA, which excluded the appearance variable, yielded a two-component solution as shown in Table 10. The two components accounting for 85 percent of the total variance. Relationships and properties loaded on the first component, and behavior loaded on the second.

Although the empirical evidence is equivocal (see, for example, Fiske & Cox, 1979), theory stipulates that information about behavior is observable information typical of descriptions of strangers and should be distinguishable from psychological and relational information typical of descriptions of familiars. In PCAs for all three targets, when appearance was included in the analysis, behavior loaded on the same component as properties and relationships: in the self as

Table 9

Rotated Component Loadings for Late-Pregnancy Cognitive Content Variables^a

Cognitive Content Category	Rotated Components					
	Fetus		Baby After Birth		Self as Mother	
	1	2	1	2	1	2
Appearance/physical characteristics	-.05	.96	.11	.88	.08	.96
Behavior	.73	.17	.40	-.55	.55	.24
Internal properties	.61	-.10	.66	.11	.86	-.23
Relationships	.82	-.22	.79	-.19	.83	.21

Note. PCAs for all three targets yielded two-component solutions using the Kaiser rule.

^aThe physical context/location variable was excluded from the PCAs because it was accessed infrequently for all three targets.

Table 10

Rotated Component Loadings for Late-Pregnancy Behavior, Properties, and Relationships Scores

Cognitive Content Category	Rotated Components					
	Fetus		Baby After Birth		Self as Mother	
	1	2	1	2	1	2
Behavior	.93	-.02	.09	.98	.15	.99
Internal properties	.04	.95	.69	.19	.89	.08
Relationships	.65	.52	.82	-.04	.85	.19

Note. PCAs for all three targets specified a two-component solution.

mother PCA, when appearance was excluded, behavior loaded on a separate component from properties and relationships. Two additional PCAs were performed, one for the fetus target and one for the baby after birth, to see if behavior could be distinguished from properties and relationships for these two targets if appearance were excluded from the analysis. The PCA for the fetus specified a two-component solution, which accounted for 82 percent of the total variance (Table 10). Behavior and relationship variables loaded on the first component; relationship also loaded on the second component along with properties. The PCA for the baby after birth also specified a two-component solution, which accounted for 72 percent of the total variance (Table 10). Relationships and properties loaded on the first component, and behavior loaded by itself on the second.

A final set of PCAs was performed to see if a clear, two-component structure could be achieved -- with appearance/physical characteristics (observable) loading on one component and properties and relationships (psychological and relational) loading on the other -- if behavior were excluded from the analyses. As Table 11 shows, this two component structure was achieved for all three targets.

Taken together, the PCAs for the cognitive content variables demonstrate that observable information about appearance/physical characteristics can be distinguished from psychological and relational (properties and relationships) in women's descriptions of their babies and themselves as mothers. Further, psychological and relational information tend to covary in these descriptions. The PCAs also show that, for this sample of women, behavior information did not fall in neatly with appearance as observable information, nor did it line up consistently with psychological and relational information.

PCAs with Affect Variables

PCAs with varimax rotation also were performed for each representational target on affect variables from late in pregnancy (T2). Correlation matrices were used as inputs. For all analyses, the ratio of subjects to variables exceeded 10:1. The Kaiser rule was used as the criterion for number of components extracted, except as specified. The affect PCAs were guided

Table 11

Rotated Component Loadings for Late-Pregnancy Appearance, Properties, and Relationships Scores

		Rotated Components					
		Fetus		Baby After Birth		Self as Mother	
Cognitive Content							
Category		1	2	1	2	1	2
Appearance/physical							
characteristics		-.06	1.0	-.03	.97	.05	.98
Internal properties		.83	-.00	.72	-.23	.85	.29
Relationships		.81	-.10	.80	.15	.90	-.14

Note. PCAs for all three targets specified a two-component solution.

by these questions:

What is the relationship among the three negative affects -- anxiety, hostility, and avoidance -- and are they clearly distinguishable from positive affect? Is overt anxiety distinguishable from emotional avoidance, which is supposed to be a less overt and more defended expression of anxiety?

The PCA for the fetus target was performed on the four affect variables: positivity, anxiety, hostility, and emotional avoidance. The analysis yielded a two-component solution, with the two components accounting for 65 percent of the total variance. Table 12 lists the rotated component loadings for the four affect scores. Using a loading criterion of .40 or greater, three of the affects loaded on the first component -- positivity, anxiety, and avoidance, with avoidance loading negatively. Anxiety also loaded on the second component, along with hostility.

Two PCAs were performed for the baby after birth, using all four affect variable in both. The first PCA yielded a three-component solution that accounted for 90 percent of the total variance. Each of the affects loaded on a separate component except for hostility, which loaded on all three components. The second PCA specified a two-component solution to see if a clearer component structure could be achieved with fewer components. As Table 12 shows, the two-component solution accounted for 64 percent of the total variance with no variable loading on more than one component. In this solution, anxiety and hostility loaded on the first component, and positivity and avoidance loaded on the second, with positivity loading negatively.

The PCA for the self as mother target was performed on five affect variables: the same four as for the other two targets and the emotional integration variable scored for the self as mother target only. The analysis yielded a two-component solution, with the two components accounting for 69 percent of the total variance (Table 12). Three variables loaded on the first component -- positivity, emotional integration, and avoidance, with avoidance loading negatively. Anxiety and hostility loaded on the second component.

Together, the results of the affect PCAs show that the negative affects -- anxiety, hostility, and emotional avoidance -- are mostly distinguishable from positive affect, and overt

Table 12

Rotated Component Loadings for Late-Pregnancy Affect Variables^a

Affect Type	Rotated Components					
	Fetus		Baby After Birth		Self as Mother	
	1	2	1	2	1	2
Positivity	.81	.13	-.15	-.78	.89	-.22
Anxiety	.56	.56	.71	.02	-.07	.80
Hostility	-.08	.82	.87	-.01	.02	.75
Emotional avoidance	-.70	.39	-.15	.80	-.86	.08
Emotional integration ^a	---	---	---	---	.74	.33

Note. PCAs for fetus and self as mother yielded two-component solutions using the Kaiser rule. The PCA for the baby after birth specified a two-component solution.

anxiety is distinguishable from emotional avoidance. In the two-component solutions for the three targets, positivity and avoidance load on a single component in opposite directions: when positivity is high, avoidance is low in women's representations of their babies and themselves as mothers. The self as mother score for emotional integration -- an additional positive, or a healthy, indicator with respect to affect -- loads singly on the same component as positivity. For all three targets, anxiety and hostility share a second component, separate from avoidance and, for the baby after birth and self as mother targets, separate from positivity and emotional integration. Positive and negative affect load in the same direction on the same component only for the fetus target: anxiety loads along with positivity (and with avoidance loading negatively) on the first component, and it loads as well with hostility on the second. Late in pregnancy at least, positive affect toward the fetus is accompanied by open anxiety and by low levels of avoidance, or defended anxiety.

PCAs with Cognitive and Affect Variables

A third set of PCAs with varimax rotation was performed by target on cognitive and affect variables jointly: in all analyses, physical context was excluded from the cognitive content variables because it had a near-degenerate distribution for two of the three targets. Because of conceptual difficulties with the behavior variable (see **PCAs with Cognitive Content Variables**), the cognitive-affect PCAs were performed without behavior scores. As with the other PCAs, correlation matrices containing late-pregnancy variables were used as inputs. Subject-to-variable ratios for individual analyses were 6:1 or 7:1.

The cognitive-affective PCAs were guided by these questions:

Are certain affects systematically linked to certain kinds of cognitive content?

Especially, do certain affects tend to accompany the observable information typical of descriptions of strangers and others the psychological and relational information typical of descriptions of familiars?

A two-component solution was specified to see if separate components would emerge for observable and psycho-relational content, with affect covarying with one or the other.

Table 13 gives the rotated component loadings for the cognitive-affect PCAs. For the fetus target, the two-component solution accounted for 50 percent of the total variance. Psychological and relational information loaded on the first component, along with the positivity score, and observable information (appearance/physical characteristics) loaded on the second, along with avoidance scores (loading negatively) and anxiety scores. Hostility failed to load on either component. For the baby after birth, the two-component solution accounted for 48 percent of the total variance. Inferred (properties) information loaded on the first component, along with positivity and emotional avoidance scores (the latter loading negatively), and observable information (appearance) loaded on the second, along with anxiety and hostility. Relationship scores did not load on either component. For the self as mother target, the two-component solution accounted for 61 percent of the variance; appearance was excluded from the PCA because of its near-degenerate distribution for this target. Inferred and relational information loaded on the first component, along with positivity, emotional integration, and emotional avoidance (the first two loading positively and the last negatively). Anxiety and hostility loaded on the second component.

The conjoint cognitive-affect PCAs confirm what preliminary correlation analyses suggested: cognitive content and affect were mostly independent in women's representations of their babies and themselves as mothers late in pregnancy. Whatever relationships existed between the two, however, fit with a distinction between observable and psycho-relational cognitive content. Positive affect indicators reliably cohered with psychological information for all three targets, and with psychological and relational information for fetus and self as mother targets. That is, women who freely accessed psychological and relational content to describe their babies and themselves as mothers also appear to be more openly positive, less emotionally avoidant, and more emotionally integrated than women who accessed little psychological and relational information. By contrast, some form of openly negative affect -- overt anxiety, hostility, or both -- covaried with observable information (appearance/physical characteristics). Women who freely accessed information about their baby's appearance/physical characteristics also

Table 13

Rotated Component Loadings for Late-Pregnancy Cognitive and Affective Content Without Behavior Variable

Content Variable	Rotated Components					
	Fetus		Baby After Birth		Self as Mother	
	1	2	1	2	1	2
Appearance/physical						
characteristics	-.23	.82	.13	.73	---	---
Relationships	.66	-.21	.24	.08	.60	.31
Internal properties	.82	.06	.82	-.13	.71	.32
Positivity	.85	.16	.66	-.25	.83	-.34
Anxiety	.23	.56	-.10	.50	.01	.79
Hostility	.03	-.07	.07	.81	.06	.69
Emotional avoidance	-.32	-.60	-.75	-.28	-.80	.21
Emotional integration ^b	---	---	---	---	.70	.18

^aThe physical context/location variable was excluded from the PCAs because it was accessed infrequently for all three targets. The appearance variable was excluded for self as mother because its distribution was near-degenerate for that target.

appeared to be more open about any negative affect they might be feeling toward the baby than were women who accessed little appearance information. Emotional avoidance, taken to be a covert expression of anxiety, also tended to be related to the production of observable information, but in a negative direction: women who accessed less information about the baby's appearance were rated more emotionally avoidant toward the baby.

Prenatal Representations: A Picture of Accessible Content

From these descriptive analyses, what picture do we get of women's prenatal representations of their baby and themselves as mothers, especially in terms of accessible content? When taken together, the MANOVA and PCA results tell us that, at least for women in the sample, the accessible content of these representations varies in target-specific ways that broadly conform to what we know about the effect of familiarity on representational content. Beginning with cognitive content, women had more to say about themselves -- the most familiar of the three targets -- as compared with either baby target, and in their self-descriptions, they accessed the psychological and relational information that is typical of descriptions of familiars, mentioning their personality traits, desires, feelings, beliefs, important relationships. When women described the fetus -- the least familiar of the three targets -- they accessed the observable information that is typical of descriptions of strangers, mentioning the baby's health; its size; its head, arms, and legs; its position inside them; its physical movements. When describing the baby after birth, women accessed a mix of observable, psychological, and relational information, suggesting that the baby after birth was less familiar to them than the self and more familiar than the fetus. The notion of the baby after birth may be more familiar than that of the fetus because it fits better with babies women have seen and touched. Parity did not change this familiarity-based picture of accessible cognitive content. Second-time mothers used more relational information than first-time mothers when they described the baby after birth, but this one difference between the two parity groups did not change the balance between observable vs. psychological and relational content for either group.

The strength and kinds of affect also varied in target-specific ways according to the familiarity of the representational target. The women in the sample accessed affect less strongly when describing the fetus -- the least familiar target -- as compared with the baby after birth or themselves as mothers. Among the four individual affects, positive feeling and anxiety were accessed in the most target-specific fashion, again according to the familiarity of the target: women were most positive and anxious about themselves as mothers, next most positive and anxious about the baby after birth, and least positive and anxious about the fetus. As compared with positivity and anxiety, women accessed hostility and displayed emotional avoidance more evenly across the three representational targets. None of the cross-target, same-affect correlations was strong enough, though, to suggest that any of the four affect scores reflected a pervasive mood rather than target-specific emotional content. As with cognitive content, parity did not much influence accessible affect in women's representations of themselves or their babies. The single significant finding for parity suggests that women who have already been through pregnancy and who already have a child are more positive and less ambivalent about their babies and themselves as mothers than women who are experiencing pregnancy and the process of becoming a mother for the first time.

The descriptive analyses also show us that, on average, the content of the representations was chronically accessible from early to late in pregnancy, but only moderately so. Most of the cognitive and affect variables showed significant correlations from early to late in pregnancy -- mostly in the range of .40 to .50 for cognitive variables and .30 to .40 for affect variables. Once again, parity was not an influence: there was no difference between first- and second-time mothers in how consistently, or chronically, they accessed cognitive information or affect about their babies or themselves as mothers over time. From early to late in pregnancy, descriptions of the fetus showed cognitive content changes (but not affect changes) that were consistent with growing familiarity: observable content decreased over time and psychological content increased. Similar changes were not observed for representations of the baby after birth and the self as mother either in cognitive content or in affect, suggesting that women did not

become increasingly familiar with these two targets over time. Together, these findings suggest that, on average, women remain more fluid than fixed in their thoughts and feelings about their babies and themselves as mothers during pregnancy. This could mean that prenatal representational content is not stable enough to influence women's responses to their infants postpartum. Or, perhaps representational content congeals late in pregnancy, and the late pregnancy content scores will predict women's responses to their infants postpartum. It may also be that prenatal representational content about baby and self is more fixed, or consistently accessible, for a subgroup of women, and for these women representational content will predict their responses to their infants postpartum. Phase 2 of this research evaluates these various possibilities.

Findings about the relationship between cognitive content and affect complete the picture of accessible content offered by the descriptive analyses performed in the first phase of the research. Though cognitive content and affect both varied with the familiarity of the target, they did not vary so mutually that the two were strongly linked. For all three targets, cognitive content and affect were mostly independent. The relationships that existed between the two, however, conformed to the cognitive content distinction between observable information that typically describes strangers and psychological and relational information that typically describes familiar others. For the fetus and the self as mother targets, positive affect loaded on the same component with psychological and relational content; for the baby after birth, positive affect loaded on the same component with psychological content only. For the two targets with more than negligible observable content -- the fetus and the baby after birth -- overt negative affects loaded on the same component with observable content.

The results of the Phase 1 analyses also tell us something about how well the research operations fit with the constructs they were supposed to measure. With regard to cognitive content, the PCAs confirmed that observable information, as it was measured in this research, could be reliably distinguished from psychological and relational information in women's descriptions of each representational target, but only when appearance/physical characteristics

was the sole observable variable in the analysis. Information about behavior -- presumed to be an observable -- did not fit well with appearance information, nor did it consistently fit with psychological and relational information. Fiske and Cox (1979) had similar difficulties with the behavior variable as measured with the same sort of coding scheme: appearance information characterized descriptions of strangers, but contrary to prediction, behavior did not. Additional research is needed to find out where behavior rightfully fits in the observable versus psycho-relational, stranger versus familiar distinctions that have been applied to the accessible content of self and other representations. With regard to affect, the PCAs showed that the research operations that measured affect were able to reliably distinguish open anxiety from emotional avoidance, taken to be a more defended form of anxiety, as well as negative affect from positive. This permits a real look at how individual affects that women access when they describe their babies and themselves as mothers influence women's responses to their babies postpartum.

Data Reduction Decisions

An important aim of the Phase 1 analyses was to inform data reduction for Phase 2 of the research, which tests hypotheses about how the accessible content of women women's representations of their babies and themselves as mothers late in pregnancy influences how they perceive, feel, and behave toward their babies postpartum. On the basis of the Phase 1 results, three data reduction decisions were made:

1. **For cognitive and affective content, use fetus and self as mother variables as predictors of postpartum outcomes in the main analyses for Phase 2.** Fetus and self as mother variables offer the clearest contrast for testing hypotheses that have to do with accessibility of information and the influence of familiarity on content. The representations of self as mother contain the most information, the kind of information (psychological and relational) suggests that self as mother is the most familiar to the subjects, and affect is the strongest for this target. Representations of the fetus show the opposite pattern of results -- least information, least familiar, weakest affect. Baby after birth variables can be used as predictors in subsidiary analyses to investigate the relative predictive power of fantasies about the expected child (more

in keeping with traditional psychoanalytic models of pregnancy and postpartum outcomes) versus current notions of the fetus.

2. **For cognitive content, do not use the behavior and physical context variables for all three targets and the appearance variable for self as mother in the main analyses for Phase 2.** The behavior variable did not fit with observable information, nor did it neatly fit with psychological and relational information. In addition, physical context was rarely used for any of the three targets, and appearance was almost never used for self as mother. Dropping these variables will leave a clear test of the relative power of observable vs. psychological and relational information to predict postpartum outcomes. The behavior variable can be investigated as an additional predictor in subsidiary analyses.

3. **For cognitive and affective content, use late-pregnancy variables only as predictors of postpartum outcomes.** Correlations between early and late pregnancy variables were only moderate in size -- not high enough to warrant summing the variables to predict postpartum outcomes.

RESULTS AND DISCUSSION FOR PHASE 2

In Phase 2 of the data analysis, the chief task was to test the primary hypothesis of the research:

The representational content women readily access about their babies and themselves as mothers by late pregnancy influences how they perceive, feel, and behave toward their babies postpartum.

Informed by results from Phase 1, the primary hypothesis and the following specific (and more heuristic) hypotheses were tested for cognitive content and for affect:

1. **The content that women access late in pregnancy when they describe their babies and themselves as mothers -- both total amount (or for affect, total intensity) and kinds of content -- will influence postpartum outcomes.** Phase 1 results demonstrated that cognitive content and affect are mostly independent in women's prenatal representations of their babies and themselves as mothers, and so we would expect cognitive content and affect to make separate contributions to postpartum outcomes.
2. **Representational content -- both total amount (or for affect, total intensity) and kinds of content -- that has been consistently accessible over pregnancy will predict postpartum outcomes more strongly than content that has been less consistently accessible.** Phase 1 results showed that, on average, women's representational content was only moderately stable over pregnancy. It might be, however, that content was more consistently accessible for a subgroup of women, and for that subgroup, representational content would predict outcomes more strongly.
3. **By late in pregnancy, if total accessible content is greater for one representational target than for the other (fetus vs. self as mother), content variables for the more accessible target will predict postpartum outcomes more strongly than those for the less accessible target.** Phase 1 results showed that cognitive content and affect were both more accessible for women's self representations than for the fetus, so we would expect self as mother variables to predict outcomes more strongly.

The primary and heuristic hypotheses were tested using hierarchical multiple regression/correlation (MRC) analysis for sets of independent variables (Cohen & Cohen, 1983). In preparation for the MRC analyses, two preliminary analyses were conducted -- one to reduce the number of dependent variables, and so control Type I error by minimizing the number of critical tests, and the second to test the relationship between the dependent variables and three potentially confounding variables: parity, method of delivery, and gender of the infant.

Two assumptions underlie the significance tests for MRC: for one or more independent variables X_i and a dependent variable Y , residuals from the mean value of Y for each value of X_i are assumed to be normally distributed and to have equal variances in the population. MRC is robust to moderate violations of assumptions, but results may be unreliable for more extreme violations. All MRC results will be checked for effects of violation of assumptions by residuals analysis, which uses normal probability plots and standardized scatterplots of residuals to assesses the adequacy of the regression model for describing the data and projecting this description to the population (Cohen & Cohen, 1983). Results of the residuals analyses will be reported separately for each MRC analysis.

Preliminary Analyses with Dependent Variables

Correlations were assessed among the three IBQ subscale scores that measure women's perceptions of their infant to see if any could be consolidated. The infant activity subscale was substantially correlated with the subscale measuring the infant's distress to limits ($r=.56, p<.01$), and so these two subscales were summed to form a single measure. Infant soothability did not strongly correlate with either of the other two scales (with infant activity, $r=-.05$, and with distress to limits, $r=-.27$), nor with the summed activity/distress measure ($r=-.19$). Correlations also were assessed among the three POMS subscale scores that measured women's postpartum mood. These correlations were all uniformly high, ranging from .74 to .81 ($p<.01$). These values suggest that the POMS failed to discriminate specific affects -- anxiety, depression, hostility -- in this sample of postpartum women. The three subscale scores were summed to form a single measure of disturbed mood. The two measures of women's postpartum

behavior -- weeks of breastfeeding and weeks home with their infants -- were not significantly correlated ($r=.24$).

Preliminary Analyses to Identify Confounding Variables

Correlations showed that parity was related to the new, summed IBQ scale measuring infant activity/distress to limits ($r=-.26$, $p<.05$): first-time mothers were somewhat more likely to perceive their babies as active and distressed to limits as compared with second-time mothers. Correlations also showed that method of delivery (vaginal vs. Caesarean section) was related to the IBQ scale score measuring infant soothability ($r=-.39$): women who delivered vaginally were more likely to perceive their infants as soothable as compared with women who delivered surgically. This finding for method of delivery was unexpected. Previous studies using infant temperament scales have not looked at or reported a relationship between method of delivery and mothers' perceptions of their babies as soothable (e.g., Zeanah, Keener, Stewart, & Anders, 1985; Worobey, 1986; Mebert, 1991). The baby's gender was not related to any measure of postpartum outcome (for all outcomes, $r<.23$). From these results, method of delivery was identified as a covariate in MRC analyses predicting women's perceptions of infant soothability. Because parity influences the content of women's prenatal representations (see **Results and Discussion for Phase 1**), it was not identified as a covariate in MRC analyses predicting women's perceptions of infant activity/distress to limits. Instead, parity was entered on a final step to test the extent to which representational content mediated its influence on women's perceptions of infant activity/distress. If parity does not explain additional variance beyond that explained by representational content, we know that representational content mediates the effect of parity on perceived infant activity/distress in this sample.

MRC Analyses: Testing Main and Alternative Models

Two series of MRC analyses were performed using representational content scores from late in pregnancy -- one using cognitive content to predict outcomes and the other using affect. In the cognitive content series, one MRC was performed using total information scores as predictors and another was performed using scores for kinds of content. Similarly, in the affect

series, one MRC was performed using total intensity scores as predictors and another using scores for kinds of affect. Tables 14 and 15 list the predictor sets and variables for each effect in the cognitive and affect MRCs, respectively. Each predictor set was tested for its relationship to five dependent variables:

- o Two dependent variables measuring women's perceptions of their infants -- women's ratings of **Infant activity level/distress to limits** and of **Infant soothability**.
- o One dependent variable measuring their postpartum mood -- women's ratings of their **total mood disturbance**.
- o Two dependent variables measuring women's behavior toward their infant -- **weeks of breastfeeding** and **weeks home full time with the infant**.

The main model tested in Phase 2 used fetus content variables to measure representational content about the baby. An alternative, more exploratory model also was tested using content variables for the baby as women imagined it would be after birth instead of for the fetus. In each analysis, content variables for baby representations and for self as mother representations were entered as a set. For example, total amount of content about the fetus was entered with total amount of content about self as mother to predict each dependent variable. This research assumes that representations of baby and self as mother are complementary: that is, they work together in some way to guide women's responses to their infants. So, in each MRC analysis the critical tests were of the amount of variance accounted for by the predictor **sets** of baby and self as mother content variables. If significant amounts of variance were accounted for by baby and self as mother as a set (that is, if the multivariate F test for the setwise effect was significant), univariate tests for semipartial coefficients were interpreted to learn how individual content variables in the set contributed to the significant multivariate result. The power to detect significant effects was limited by the sample size ($N=59$). To guard against Type II error, setwise F tests that approached significance ($.10 > p > .05$) also were interpreted, but with some caution and with attention to the amount of variance accounted for.

Table 14

Predictor Sets and Variables for Main Model . Cognitive Content MRC Series

Predictor Sets	Variables in the Predictor Set	Hypotheses Tested
Total Information MRC		
Total information	Fetus total information scores Self as mother total information scores	1,3
Total information x consistency	Fetus total information x fetus cognitive consistency score Self as mother total information x self as mother cognitive consistency score	2
Kind of Content MRC		
Kind of content	Fetus appearance scores Fetus psycho-relational scores Self as mother scores	1,3
Kind x consistency	Fetus appearance x fetus cognitive consistency score Fetus psycho-relational x fetus cognitive consistency score Self as mother psycho-relational x self as mother cognitive consistency score	2

Note. Total information and kind of content scores are from late pregnancy. The alternative model substitutes baby after birth variables for fetus variables, and an exploratory model using behavior content adds fetus, baby after birth, and self as mother behavior variables to main and alternative models.

Table 15

Predictor Sets and Variables for Main Model: Affect MRC Series

Predictor Sets	Variables in the Predictor Set	Hypotheses Tested
Total Intensity of Affect MRC		
Total intensity of affect	Fetus total intensity scores Self as mother total intensity scores	1,3
Total intensity x consistency	Fetus total intensity x fetus affect consistency score Self as mother total intensity x self as mother affect consistency score	2
Kind of Affect MRC		
Kind of affect	Fetus, self as mother positive affect scores Fetus, self as mother anxiety scores Fetus, self as mother hostility scores Fetus self as mother avoidance scores	1,3
Kind x consistency	Fetus positive affect x fetus affect consistency score Fetus anxiety x fetus affect consistency score Fetus hostility x fetus affect consistency score Fetus avoidance x fetus affect consistency score Mother positive affect x mother affect consistency score Mother anxiety x mother affect consistency score Mother hostility x mother affect consistency score Mother avoidance x mother affect consistency score	2

Note. Total intensity and kind of affect scores are from late pregnancy. The alternative model substitutes baby after birth variables for fetus variables, and an exploratory model adds emotional integration scores for self as mother to predictor sets.

As Tables 14 and 15 show, predictor sets containing interaction terms were used to test hypothesis 3, which predicts that consistently accessible content will influence postpartum outcomes more strongly than inconsistently accessible content. To create the interaction terms for these predictor sets, consistency scores were calculated for each cognitive content and affect variable by subtracting each subject's late pregnancy score from her early pregnancy score for a given variable and taking the absolute value of the result. The interaction terms for total amount of cognitive content were created by multiplying the total amount score for each target, as measured late in pregnancy, by its respective consistency score. For example, fetus total information scores from late pregnancy were multiplied by the consistency score for fetus total information (FTOTINF2 x FTOTINFC) to create the interaction term. Interaction terms for total intensity of affect were created in the same way.

Interaction terms for kind of cognitive content were created in two steps. First, the consistency scores for each kind of content were summed by target to produce a single score measuring the global consistency of women's representations of baby and self as mother over pregnancy, taking all kinds of content into account. Second, each kind of content score from late pregnancy was multiplied by the global consistency score for its respective target. For example, fetus psycho-relational content scores from late pregnancy were multiplied by the fetus global consistency score for cognitive content (FPSYREL2 x FCCONSIS) to create the interaction term. Interaction terms for kinds of affect were created in the same way.

In the MRCs, the interaction between content and consistency was tested by entering the content scores and the consistency scores first as main effects, and then entering the interaction term set to see if it accounted for additional variance beyond the main effects (Cohen & Cohen, 1983). The main effect for consistency is not of primary interest here: no prediction was made that consistency of representational content, by itself, would predict postpartum outcomes, and so it was not considered a critical test in the MRCs.

The results of the MRC analyses are summarized in Table 16 and are described and discussed below for main and alternative models. For exploratory analyses that use behavior content in cognitive content models, results are reported only if behavior content significantly predicted outcomes. In the text, two kinds of values are reported for the multiple R-squared statistic: the sample R-squared value and, in parentheses, the shrunken R-squared value, which corrects for the number of variables in the regression equation and is a more conservative estimate of the size of the effect in the population (Cohen & Cohen, 1983). Tables report only the sample multiple R-squared values. In text and tables, only sample values are reported for the semipartial r-squared statistic for individual variables in the regression equation. Emotional integration scores (for self as mother only) did not account for significant additional variance in any of the affect MRCs, so results are not reported for that variable. Possible explanations for null findings with emotional integration are considered in the end of the results section. After all the results are presented, they are discussed in terms of how much support they offer, when taken together, for the primary and specific research hypotheses.

MRC Results for Women's Perceptions of Their Infants

Results will be presented first for women's perceptions of infant activity/distress to limits and then for perceptions of infant soothability.

Infant Activity/Distress to Limits

Analysis of residuals did not reveal any violation of normality or equality of variance assumptions for any of the MRC analyses predicting infant activity/distress to limits.

Cognitive Content Predicting Infant Activity/Distress

Table 17 summarizes the results for cognitive content predicting women's perceptions of infant activity/distress to limits. Tests for total information predictor sets were not significant or the main model. Total amount of information about fetus, baby after birth, or self as mother late in pregnancy did not influence women's perceptions of infant activity/distress, either by itself or as a function of consistency of representational content.

Table 16

Summary of MRC Results. Accessible Content of Women's Prenatal Representations Predicting Postpartum Outcomes

Significant Predictor Sets and Variables (% Outcome Variance Explained)*						
Postpartum Outcome	Cognitive Content Sets			Affect Sets		
	Total Information	Kind of Content	Kind x Consistency	Total Intensity	Kind of Affect	Kind x Consistency
Women's Perceptions of Their Infant						
Infant activity/ distress to limits	ns	ns	F/M set (19%) fappstar (11%) mbehstar (9%)*	ns	ns	ns
Infant soothability	ns	ns	B/M set (15%) bpsystar (8%) mpsystar (5%)	F/M set (12%) mtotaff (10%) B/M set (10%) mtotaff (10%)	ns	F/M set (20%)* fposstar (6%) mavostar(5%)* manxstar (4%)*
Women's Postpartum Mood						
Total mood disturbance	ns	ns	ns	ns	ns	ns

Note. See next page (continuation of Table 16) for table notes and glossary of abbreviations.

Women's Behavior Toward Their Infant					
Weeks of breastfeeding	<i>B/M set^b</i> btoinfo	ns	ns	<i>B/M set</i> (25%) mposaff (10%) mavold (11%)	ns baby, mother
Weeks at home with baby	<i>B/M set</i> (9%)* btoinfo (8%)	<i>F/M set</i> (13%) ^c fappea (12%) <i>B/M set</i> (16%) ^c bappea (15%)	<i>F/M set^b</i> fappstar	<i>F/M set</i> (24%)* fanx (8%) manx (6%) mhostil (6%)	ns fetus, baby, mother

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	appearance scores for baby after birth	manxstar	self as mother anxiety scores x affect consistency
bappear	appearance scores for baby after birth	manxstar	self as mother anxiety scores x affect consistency
bposstar	baby after birth psycho-relational scores x cognitive consistency	mavold	emotional avoidance scores for self as mother
btotinfo	total information scores for baby after birth	mavostar	mother emotional avoidance scores x affect consistency
fappear	fetus appearance scores	mhostill	hostility scores for self as mother
fappstar	fetus appearance scores x cognitive consistency	mposaff	positive affect scores for self as mother
fanx	fetus anxiety scores	mpeystar	mother psycho-relational scores x affect consistency
fposstar	fetus positive affect scores x affect consistency	mtotaff	total affect intensity for self as mother
manx	self as mother anxiety scores		

***10 > p > .05.**

Table 17

MRC Results for Cognitive Content Predicting Women's Perceptions of Their Infant's Activity and Distress to Limits. Main Model

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Information MRC			
Total information, fetus			
and self as mother	.01	2,56	0.36
Consistency scores for	.02	4,54	0.27
total information	(.00)	2,56	(0.19)
Total information x	.04	6,52	0.36
consistency	(.02)	2,56	(0.55)
Results for Kind of Content MRC			
Kind of content, fetus			
and self as mother	.10	3,55	2.00
Consistency scores for	.14	5,53	1.78
kind of content	(.04)	2,56	(1.42)
Kind of content x	.27	8,50	2.31**
consistency	(.13) ^b	3,55	(2.88)**

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

^b In alternative model tests, when behavior content variables (fetus and mother) were added to the main model, they accounted for an additional 7 percent variance at this step, giving a cumulative R-squared of .35 (for RSQ schange, E = 2.44, df = 12,46, p < .10).

*p < .10. **p < .05. ***p < .01.

For the main model, the kind x consistency interaction was significant. The full model for fetus and self as mother content, including main and interaction effects, accounted for a significant 27 percent of the variance (shrunken R-square, 15 percent) in women's postpartum perceptions of infant activity/distress to limits. As a set, the three kind x consistency interaction terms accounted for an increment of 13 percent of the variance in women's postpartum perceptions of infant activity/distress (shrunken R-squared, 9 percent). Among the three individual predictors in the set, the interaction term for fetus appearance content uniquely accounted for 11 percent of the variance ($p < .01$). Neither of the two interaction terms for psycho-relational content -- fetus or self as mother -- made an independent contribution to the variance accounted for by the set. These results show that observable content about women's representations of the fetus (and not psychological and relational content) determined women's perceptions of their infant's activity and distress to limits postpartum, but only as a function of how consistently women accessed cognitive content over pregnancy. The effect of parity on women's perceptions of infant activity and distress was mediated by the relationship between the interaction set and perceived infant activity/distress: when parity was entered on the final step, it accounted for an insignificant 2 percent additional variance ($p > .20$), as compared with 7 percent when entered alone ($p < .05$).

According to hypothesis 2, content that is most consistently accessible from early to late in pregnancy ought to predict postpartum outcomes most strongly. Figure 1 illustrates the sort of graph one would expect to see for an effect that confirmed hypothesis 2. The slope of the regression line would be steep for representational content that had been consistently accessible, or fixed, from early to late in pregnancy. The slope of the regression line would be flat for representational content that had been inconsistently accessible, or fluid, from early to late in pregnancy.

Figure 2 illustrates the significant interaction between late-pregnancy fetus appearance scores and consistency of cognitive content as predictors of perceived infant activity/distress to limits. As the figure shows, the results were opposite to the prediction. When cognitive content

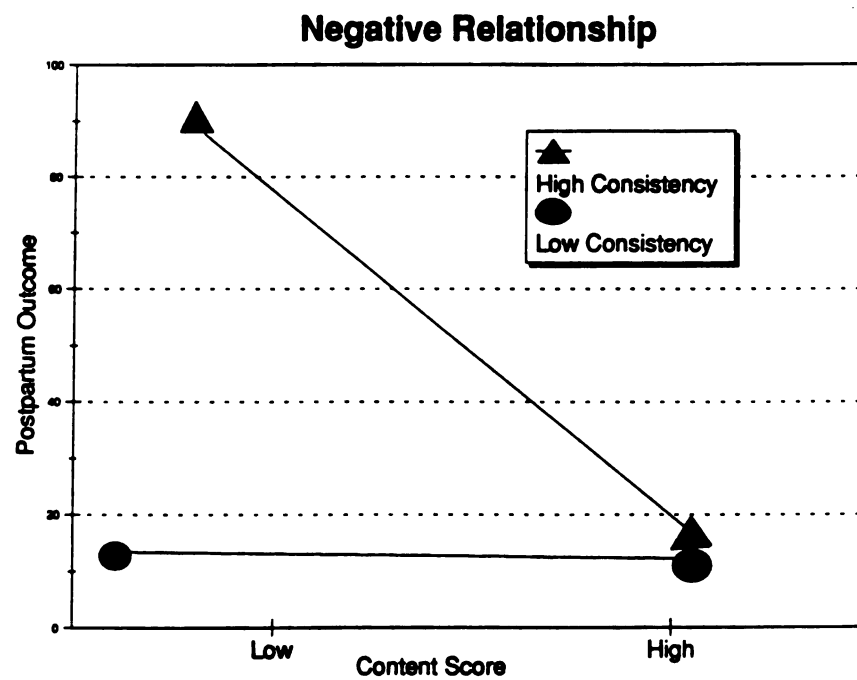
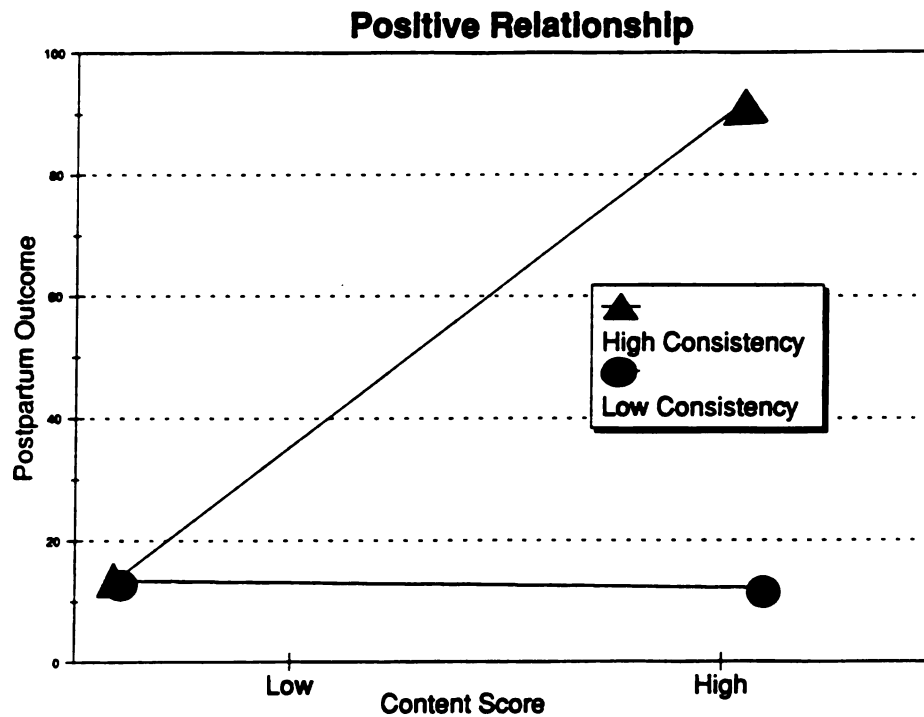


Figure 1. Sample graphs showing positive and negative relationships for highly consistent content and no relationship for inconsistent content.

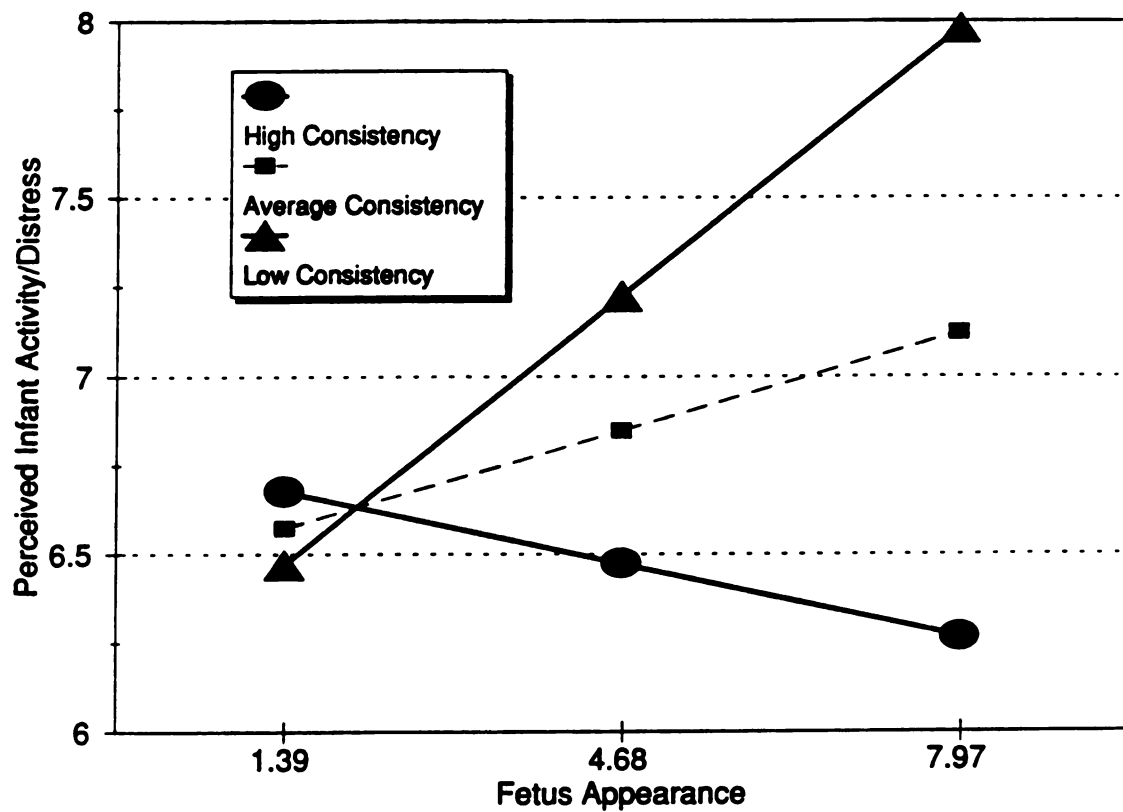


Figure 2. Interaction between late-pregnancy fetus appearance scores and cognitive content consistency scores as predictors of perceived infant activity/distress to limits.

about the fetus was very consistent, or fixed, over pregnancy, fetus appearance content was not related to women's perceptions of infant activity and distress to limits. By contrast, when cognitive content about the fetus was very inconsistent, or fluid, over the course of pregnancy, appearance content was positively related to perceived infant activity/distress to limits. That is, among women whose representational content was fluid, women who accessed more observable information about the fetus late in pregnancy (i.e., information about its appearance, its physical characteristics, its health, its development) perceived their infants to be more active and distressed to limits than women who accessed less observable information.

Exploratory comparison (via repeated-measures MANOVA) of early and late mean content scores for the two consistency groups suggested a partial explanation for this unexpected finding. The high- and low-consistency groups did not significantly differ in early pregnancy content about the fetus. From early to late in pregnancy, however, women in the low consistency group showed changes in cognitive content about the fetus that were strongly consistent with growing familiarity with the fetus: they showed highly significant drops in observable (appearance) content ($F=10.92$, $df=1,57$, $p<.003$) and highly significant increases in psychological (internal properties) content ($F=10.52$, $df=1,57$, $p<.003$). The high consistency group showed no changes that signal growing familiarity. It may be that women whose cognitive content about the fetus changed in the direction of growing familiarity were more sensitive to internal cues from their baby. Perhaps they were coming to know their baby by late in pregnancy, and their knowledge was necessarily physical (appearance content) because it came from physical cues having to do with the fetus's intrauterine activity (e.g., strength and frequency of movement, wake-sleep cycles). After the baby was born, these women perceived accurately what they had come to know about the baby before it was born. So, appearance information from late pregnancy predicted infant activity/distress to limits postpartum for women whose representational content about the fetus had changed (grown more familiar) over pregnancy. It may also be, however, that these women who look like they are coming to know the fetus by late pregnancy are not picking up on cues at all. Rather, they are converging on some preconceived

notion about the fetus that is not especially accurate. After the baby is born, they see in their newborn's physical states something of what they expected to see, accurate or not. The former explanation, which relies on a direct perception mechanism, seems more plausible than the second, which proposes a psychological distortion mechanism. Without data from independent observers about how active infants truly were, we cannot know which of these two competing explanations is correct.

Growing familiarity may begin to explain why inconsistent cognitive content influenced women's perceptions of their infant's activity, but it does not explain why fetus appearance scores that are part of highly consistent cognitive content failed to influence women's perceptions. When behavior variables were added to the model in a secondary analysis, still more questions were raised about the relationship between consistently accessible content and women's perceptions. In this secondary MRC, the set of interaction terms for behavior content accounted for an additional, borderline significant 7 percent of the variance in women's perceptions of infant activity/distress to limits ($p < .10$): for the full model, including main and interaction effects, the cumulative R-squared was a significant 35 percent of the variance (shrunk R-squared, 18 percent) ($p < .05$). Univariate tests showed that the self as mother interaction term for behavior accounted for the additional variance (sr-squared = .07, $p < .035$). Like fetus appearance information, behavior information about self as mother influenced perceived infant activity and distress to limits, but only as a function of how consistently women accessed cognitive content about themselves as mothers over pregnancy.

Figure 3 shows that very consistent cognitive content about self as mother was related to perceived infant activity/distress to limits, but again contrary to prediction, so was very inconsistent content. Late-pregnancy behavior information was related to perceived infant activity/distress in opposite directions for low and high consistency content, and content of average consistency failed to predict women's perceptions. When consistency of self as mother content over pregnancy was high, accessible behavior information was negatively related to how women perceived their infants: the more information women accessed about their own

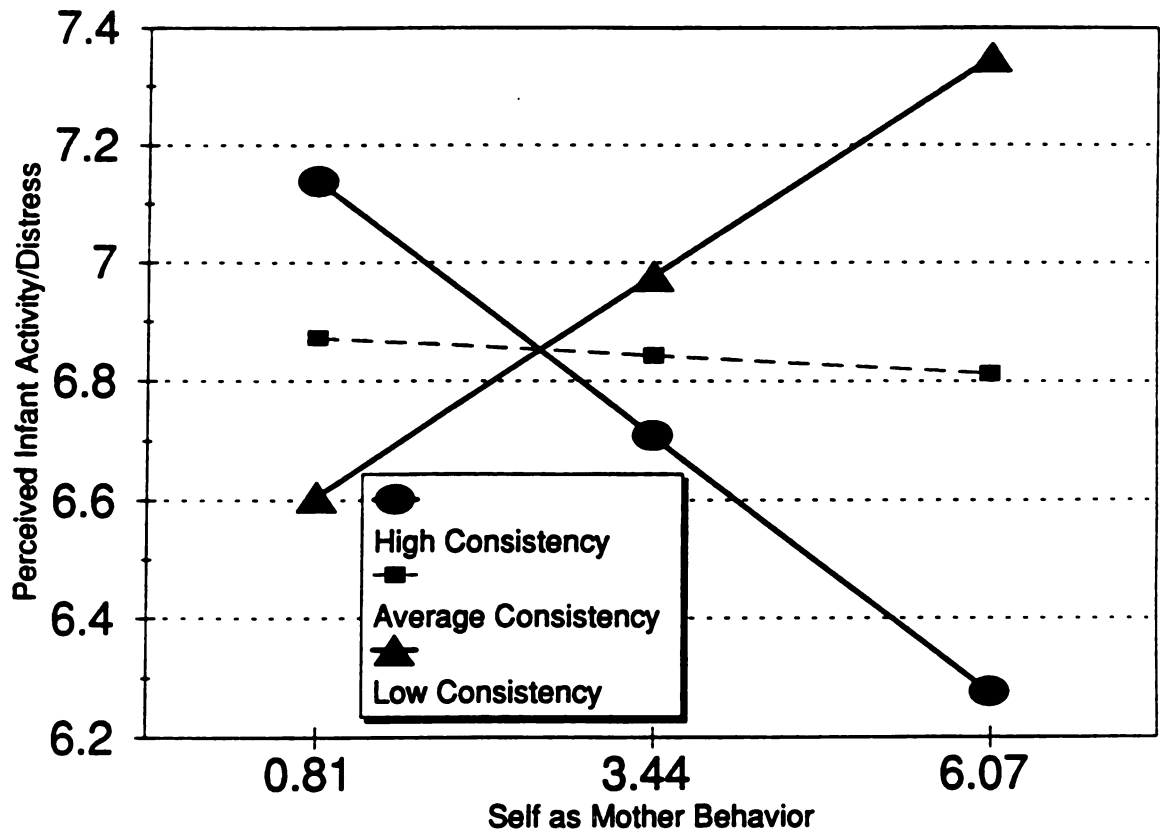


Figure 3. Interaction between late-pregnancy behavior scores for self as mother and cognitive content consistency scores as predictors of perceived infant activity/distress to limits.

behavior as a mother, the less they perceived their infants as active and distressed to limits. By contrast, when consistency of self as mother content was low over pregnancy, accessible behavior information was positively related to how women perceived their infants: the more information women accessed about their behavior as a mother, the more they perceived their infants as active and distressed to limits.

Unlike the finding for fetus content, this unexpected finding for self as mother content cannot be explained in terms of growing familiarity. Like all self representational content (Prentice, 1990), self as mother content in this sample was highly familiar in character for all women from early in pregnancy: people are highly familiar with themselves. One might speculate that less consistent, or fluid, cognitive content is more open to change from new information. Perhaps women with fluid self representations picked up physical cues from their babies over pregnancy, and they altered their notions of themselves as mothers to fit with what they experienced as a more or less active fetus. If they experienced their fetus as active, they came to see themselves doing more (i.e., more active baby, more behavior content about self in relation to baby). Women with more fixed representations of themselves may, instead, have used their solid self representations as a baseline for perceiving their newborn. Perhaps women who consistently described themselves using little behavior information were less active by nature and, using their own activity level as a reference, they may have perceived their newborns as more active. Similarly, women who consistently described themselves using a lot of behavior information perhaps were more active by nature and, using themselves as a reference, they may have perceived their newborns as less active.

Alternatively, one might speculate that this finding has something to do with the dissolution of representational content about the baby that some say occurs at the end of pregnancy, followed by a reelaboration of content about the infant once it is born (Stern, 1991). Women in the low consistency group with low behavior content scores may be a subset of high consistency, high behavior content women who had a temporary disruption of representational content at the end of pregnancy. By six weeks postpartum, they resembled women in the high

consistency, high behavior content group once again. Exploratory comparisons (via repeated measures MANOVA) offer some support for this explanation. Early in pregnancy, women in the low consistency, low behavior content group accessed the same amount of information about themselves as mothers in all content categories as compared with women in the high consistency, high psycho-relational group (for behavior, $p > .90$; for properties, $p > .40$; for relationships, $p > .20$). Late in pregnancy, behavior content dropped for women in the low consistency, low behavior group, so that their behavior content scores were significantly lower than for women in the high consistency, high behavior group (for behavior, $M_{T2} = 2.2$ and 5.2 , respectively; $F = 8.62$, $df = 1, 57$, $p < .009$). Without data from independent observers about how active mothers and infants truly were and without information about the content of women's representations postpartum, we cannot know which of the two speculations has merit.

None of the tests was significant for the alternative model using baby after birth variables instead of fetus variables. Women's perceptions of their infant's activity level and distress to limits were influenced by the information they accessed late in pregnancy about the actual child within, and not by information about what they imagined the baby would be like after birth.

To briefly summarize the cognitive findings for infant activity/distress, the total information that women accessed about the fetus and themselves as mothers late in pregnancy did not predict women's perceptions of how active and distressed to limits their infants were postpartum. The kind of content women accessed about the fetus and self predicted their perceptions of infant activity/distress but only in combination with how consistently they accessed cognitive content over time. Contrary to prediction, observable (appearance) content about the fetus only influenced women's perceptions when it was part of cognitive content that had changed over time in ways that signaled growing familiarity with the fetus. Behavior content about self as mother also influenced women's perceptions of infant activity/distress, but again contrary to prediction, it influenced perceptions just as strongly for women whose cognitive content about self was very inconsistent over pregnancy as for women whose content was very consistent.

Affect Predicting Infant Activity/Distress

Table 18 summarizes the results for accessible affect predicting women's perceptions of infant activity/distress to limits. None of the predictor sets accounted for a significant amount of variance in main model or in alternative model tests. The affect women accessed late in pregnancy about their babies and themselves as mothers did not influence their perceptions of how active and distressed to limits their infants were postpartum. This was true for total intensity of affect and for kinds of affect, no matter how consistently women had accessed affect from early to late in pregnancy. These results suggest that women's perceptions of infant activity and distress to limits was influenced only by the cognitive content of women's prenatal representations and not by the affective content.

Infant Soothability

Analysis of residuals did not reveal any violation of normality or equality of variance assumptions for any of the MRC analyses predicting infant soothability.

Cognitive Content Predicting Infant Soothability

Table 19 summarizes the results for cognitive variables as predictors of women's perceptions of infant soothability. As the table shows, method of delivery was entered first as a covariate, and it accounted for a highly significant 15 percent (shrunk R-squared, 14 percent) of the variance in infant soothability. All other tests reported in the table control for method of delivery. None of the predictor sets for the main model (fetus and self as mother content) was significantly related to perceived soothability. Total amount of information about fetus and self as mother and kinds of content, as measured late in pregnancy, did not influence women's perceptions of how soothable their infants were. This was true no matter how consistently they had accessed cognitive content over pregnancy.

When the alternative model was tested using baby after birth variables instead of fetus variables (see Table 19), the kind x consistency interaction was significant ($p < .02$). As a set, the kind x consistency interaction terms for baby after birth and self as mother accounted for an increment of 15 percent (shrunk R-squared, 7 percent) of the variance in women's perceptions

Table 18

MRC Results for Affective Content Predicting Women's Perceptions of Their Infant's Activity and Distress to Limits. Main Model

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Intensity of Affect MRC			
Total intensity, fetus			
and self as mother	.02	2,56	0.63
Consistency scores for	.04	4,54	0.62
total intensity	(.02)	2,56	0.61
Total Intensity x	.12	6,52	1.16
consistency	(.07)	2,56	(2.21)
Results for Kind of Affect MRC			
Kind of affect, fetus and			
self as mother	.08	8,50	0.55
Consistency scores for	.10	10,48	0.52
kind of affect	(.02)	2,56	(0.49)
Kind of affect x	.21	18,40	0.58
consistency	(.11)	8,50	(0.69)

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

Table 19

MRC Results for Cognitive Content Predicting Women's Perceptions of Their Infant's Soothability. Main Model

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Information MRC			
Method of delivery			
(covariate)	.15	1,57	10.22***
Total information, fetus	.17	3,55	3.87**
and self as mother	(.02)	2,56	(0.75)
Consistency scores for	.19	5,53	2.48**
total information	(.02)	2,56	(0.50)
Total information x	.22	7,51	2.02*
consistency	(.03)	2,56	(0.91)
Results for Kind of Content MRC			
Method of delivery			
(covariate)	.15	1,57	10.22***
Kind of content, fetus and	.16	4,54	2.64**
self as mother	(.01)	3,55	(0.25)
Consistency scores for	.25	6,52	2.83**
kind of content	(.08)	2,56	(2.86)*
Kind of content x	.31	9,49	2.42**
consistency	(.06)	3,55	(1.45)^b

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

^b In alternative model tests, when baby after birth variables were used instead of fetus variables, the kind x consistency set accounted for 15 percent of the variance in perceived soothability, for a cumulative R-squared of .33 (for RSQ change, E = 3.77, $p < .02$).

* $p < .10$. ** $p < .05$. *** $p < .01$.

of their infant's soothability. The full MRC model, including main and interaction effects, accounted for a cumulative 18 percent of the variance (shrunk R-squared, 7 percent). Among the three individual predictors in the interaction set, the interaction term for psycho-relational content about baby after birth uniquely accounted for 8 percent of the variance ($\text{sr-squared}=.084$, $p<.02$), and the interaction term for psycho-relational content about self as mother uniquely accounted for 5 percent ($\text{sr-squared}=.052$, $p=.05$). The interaction term for baby after birth appearance content did not make an independent contribution to the variance accounted for by the set. These results suggest that psychological relational content about the baby after birth and self as mother, as measured late in pregnancy, influenced women's perceptions of their infant's soothability postpartum, but only as a function of how consistently the women accessed cognitive content over time.

Figures 4 and 5 illustrate the significant interaction between psycho-relational content and consistency of cognitive content for self as mother and for the baby after birth, respectively. The interaction effect for self as mother content somewhat resembles the predicted relationship (Figure 4). The regression line slope is steepest for highly consistent cognitive content about self as mother. When cognitive content was highly consistent from early to late in pregnancy, late-pregnancy psycho-relational content about self as mother was positively related to perceived infant soothability; that is, the more psychological and relational their content about self as mother, the more soothable women found their infants to be. When cognitive content was less consistent over pregnancy -- either average or low in consistency -- the regression line slope was less steep, showing little relationship between women's psychological and relational content about themselves as mothers and how soothable they perceived their infant to be.

The positive link between soothability and psycho-relational information that is consistently accessible over pregnancy makes conceptual sense. Women who consistently accessed high amounts of psychological and relational information about themselves as mothers may correspond to recent models of sensitive parenting, which say that the capacity to represent self and others in psychological ways and to think relationally determines how sensitively and

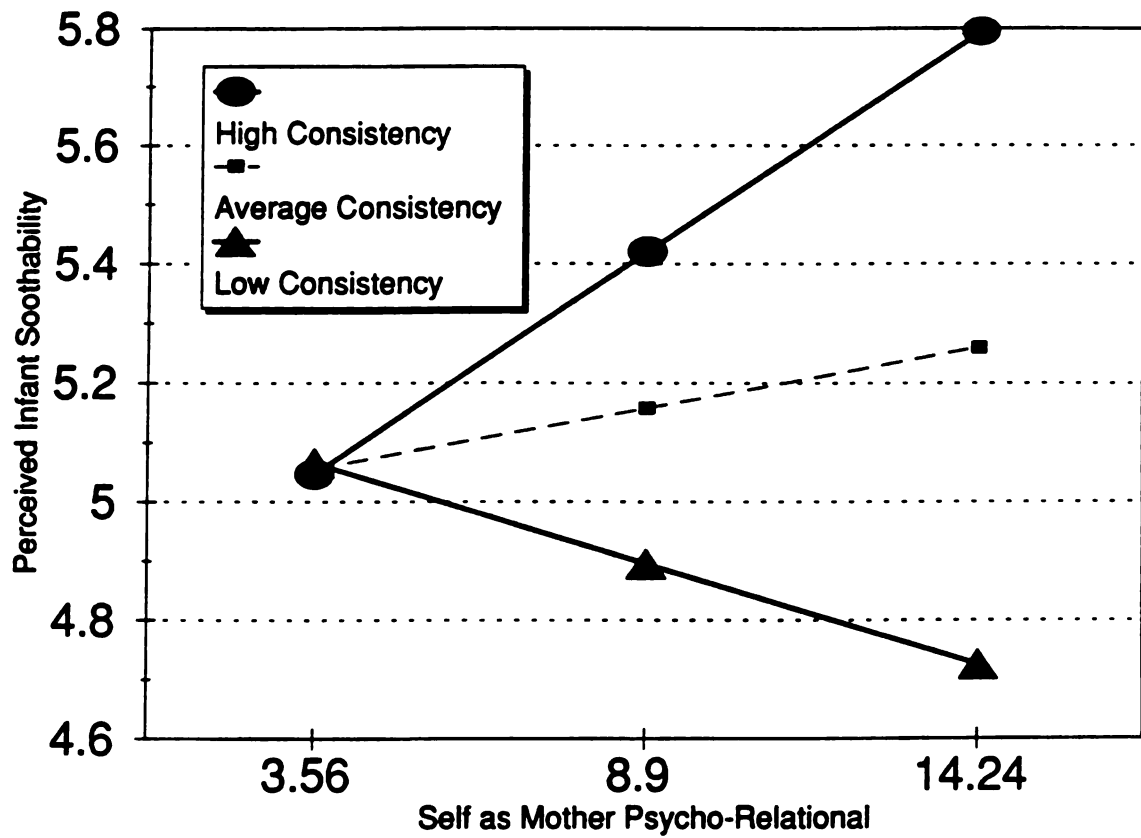


Figure 4. Interaction between late-pregnancy psycho-relational scores for self as mother and cognitive content consistency scores as predictors of perceived infant soothability.

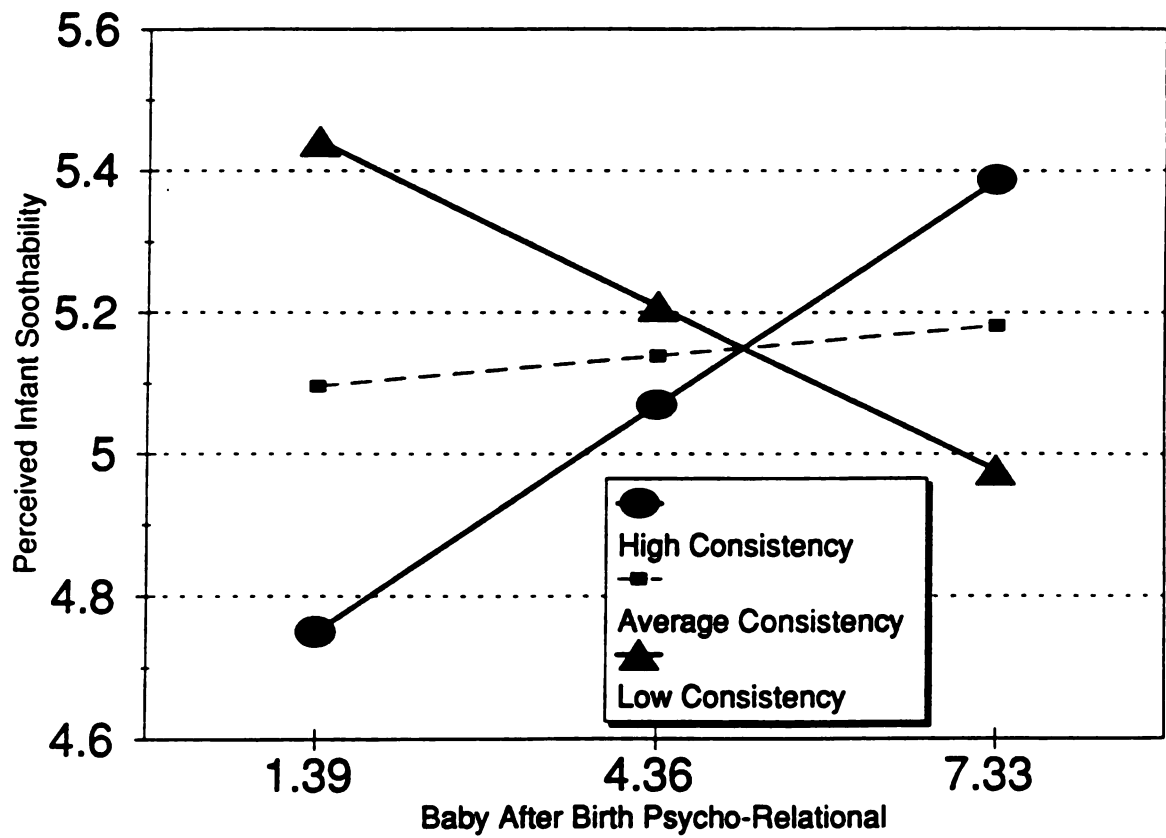


Figure 5. Interaction between late-pregnancy psycho-relational scores for baby after birth and cognitive content consistency scores as predictors of perceived infant soothability.

empathically parents respond to their infants' needs (Fonagy, Steele, Steele, Higgitt, & Target, 1994; Dix, 1992). It may be that the women who thought most consistently in psychological and relational ways over pregnancy responded most sensitively and appropriately to infant distress signals and so had infants who were highly soothable. Judging from Figure 4, women who thought least consistently in psychological and relational ways over pregnancy did not find their babies to be highly soothable, no matter how much psycho-relational content they ended up accessing late in pregnancy. It may be that women who do not think consistently in psycho-relational ways do not respond as sensitively and appropriately to infant distress signals and so their infants are less soothable. Independent measures of infant soothability and measures of sensitive responding to distress would be needed to confirm this interpretation.

As Figure 5 shows, the high consistency finding for psycho-relational content about the baby after birth also fits with the notion that psychological and relational thinking influences how sensitively a parent responds to infant distress signals. For women who were highly consistent in cognitive content over pregnancy, the more psychological and relational information they accessed about their baby late in pregnancy, the more soothable they found their infant to be. The low consistency finding, however, is unexpected. Instead of showing no relationship to soothability, as predicted, low consistency content related to soothability in the opposite direction from high consistency content. For women who were highly inconsistent in cognitive content over pregnancy, the less psycho-relational information they accessed about their baby late in pregnancy, the more soothable they found their infant to be, with women who accessed the least reporting the highest infant soothability as compared with all other groups of women.

Once again, exploratory comparisons (via repeated measures MANOVA) suggest that this finding may have something to do with a dissolution of representational content at the end of pregnancy. Women in the low consistency group with low psycho-relational content scores may be a subset of high consistency, high psycho-relational content women who had a temporary disruption of representational content at the end of pregnancy. Women in the low consistency, low psycho-relational content group accessed the same amount of psychological content about

the baby after birth early in pregnancy as compared with women in the high consistency, high psycho-relational group (for properties, mean scores were 3.1 and 3.3, respectively). Late in pregnancy, psychological content dropped for women in the low consistency, low psycho-relational group, so that their psychological content scores were significantly lower than for women in the high consistency, high psycho-relational group (for properties, $M_{T2}=1.9$ and 3.2, respectively; $E=7.03$, $df=1,57$, $p<.04$). The drop in relational content from early to late in pregnancy was even more dramatic for women in the low consistency, low psycho-relational group. Early in pregnancy, the low consistency, low psych-relational women had somewhat lower relational scores for baby after birth as compared with women in the high consistency, high psycho-relational group (for relationships, $M_{T1}=1.9$ and 3.5, respectively; $E=7.03$, $df=1,57$; $p<.02$). By late pregnancy, however, mean relational content for women in the low consistency, low psycho-relational group, approached zero, while relational content for the high consistency, high psycho-relational group remained stable (for relationships, $M_{T2}=0.3$ and 3.2, respectively; $E=40.54$, $df=1,57$, $p<.001$).

Taken together, these findings for infant soothability suggest that cognitive content about the baby after birth is more influential in determining women's perceptions of their infant's soothability than is content about the fetus: fetus content did not predict infant soothability. Psychological and relational information relates to perceived infant soothability in sensible ways for women who consistently access this information over pregnancy. The low consistency findings for psychological and relational information, however, are surprising. They are part of an emerging pattern of results that suggest that highly consistent access to representational content influences postpartum outcomes, but so does highly inconsistent access.

Affect Predicting Infant Soothability

Table 20 summarizes the results for affect variables as predictors of women's perceptions of their infant's soothability. Once again, method of delivery was entered first as a covariate, and it accounted for a highly significant 15 percent of the variance (shrunken R-squared, 14 percent). All other tests reported in Table 20 control for method of delivery. The test

Table 20

MRC Results for Affective Content Predicting Women's Perceptions of Their Infant's Soothability. Main Model

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Intensity of Affect MRC			
Method of delivery			
(covariate)	.15	1,57	10.22***
Total intensity, fetus	.28	3,55	6.97***
and self as mother	(.12)	2,56	(4.69)**
Consistency scores for	.29	5,53	4.39***
total intensity	(.01)	2,56	(0.65)
Total Intensity x	.31	7,51	3.28***
consistency	(.02)	2,56	(0.64)
Results for Kind of Affect MRC			
Method of delivery			
(covariate)	.15	1,57	10.22***
Kind of affect, fetus and	.31	9,49	2.42**
self as mother	(.16)	8,50	(1.38)
Consistency scores for	.31	11,47	1.92*
kind of affect	(.00)	2,56	(0.09)
Kind of affect x	.51	19,39	2.16**
consistency	(.20)	8,50	(2.03)*

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

* $p < .10$. ** $p < .05$. *** $p < .01$.

for total intensity of affect was significant for the main model ($p < .02$), and the test for kind of affect x consistency approached significance ($p < .07$).

As a set, the total intensity variables for fetus and self as mother accounted for 12 percent (shrunk R-squared, 10 percent) of the variance in women's perceptions of their how soothable their infant was postpartum, controlling for method of delivery. Between the two individual predictors in the set, the self as mother variable uniquely accounted for 10 percent of the variance (sr-squared=.096, $p < .01$). Intensity of affect for the fetus did not make an independent contribution to the variance accounted for by the set. The results for the alternative model using baby after birth variables instead of fetus variables were nearly identical to those for the main model, with total amount of affect for self as mother uniquely accounting for the entire 10 percent of the variance accounted for by the set of baby after birth and self as mother predictors ($p < .02$). These results suggest that, by late in pregnancy, the more strongly women accessed affect about themselves as mothers (summing across kinds), the more soothable they perceived their babies to be.

In the MRC for kind of content, the set of kind x consistency interaction terms accounted for an increment of 20 percent (shrunk R-squared, 14 percent) of the variance in women's postpartum perceptions of their infant's soothability, controlling for method of delivery. The full MRC model, including main and interaction effects, accounted for a cumulative 36 percent of the variance (shrunk R-squared, 14 percent). Among the eight predictors in the interaction set, the interaction term for fetus positive affect uniquely accounted for 6 percent of the variance (sr-squared=.062, $p > .031$). Two other predictors made borderline-significant independent contributions: the emotional avoidance and the anxiety interaction terms for self as mother uniquely accounted for 5 percent ($p < .06$) and 4 percent ($p < .09$) of the variance, respectively. These results suggest that several kinds of affective content -- positive affect about the fetus and emotional avoidance and anxiety about self as mother -- measured late in pregnancy determined women's perceptions of their infant's soothability postpartum, but only as function of how consistently women accessed affective content over pregnancy.

Figures 6 through 8 show that, when the affective content of women's representations was highly consistent from early to late in pregnancy, women who accessed more positive affect about the fetus and more open anxiety about themselves as mothers late in pregnancy found their babies more soothable. By contrast, when affect was less consistent -- either average or low -- women's positive affect toward the fetus and their open anxiety about themselves as mothers late in pregnancy showed little or no relation to their perceptions of infant soothability, as predicted. Apparently, temporary shifts in positive feeling toward the fetus or anxiety about being a mother did not matter much in predicting perceived soothability. For women with highly consistent affect, emotional avoidance towards themselves as mothers (taken to be a defended form of anxiety) also was linked to how soothable they perceived their infants to be, but in a negative direction. The more emotionally avoidant the women were, the less soothable they found their babies to be. For women with highly Inconsistent affect, the results for emotional avoidance toward the self were just the opposite. For women whose affect about self as mother was very inconsistent, or fluid, over pregnancy, the more emotionally avoidant they were toward themselves as mothers late in pregnancy, the more soothable they found their babies. This reversal of relationship between avoidance and soothability when affect is Inconsistent over time was unexpected and may be further evidence of a temporary disruption in representational content near the end of pregnancy (see discussion for Figures 3 and 5).

These findings about affect and infant soothability suggest that emotional arousal around (or emotional investment in) the fetus and the mothering role late in pregnancy influences how soothable women perceive their infants to be. Affect toward the baby after birth did not influence soothability. For fetus representations, a single affect influenced perceived soothability -- positive affect toward the fetus. For self as mother representations, a blend of affects jointly influenced perceived soothability, rather than one strong emotion, with significant findings for total intensity of affect, anxiety, and avoidance. For both fetus and self as mother representations, the individual affects (positive affect, anxiety, and emotional avoidance) only influenced soothability,

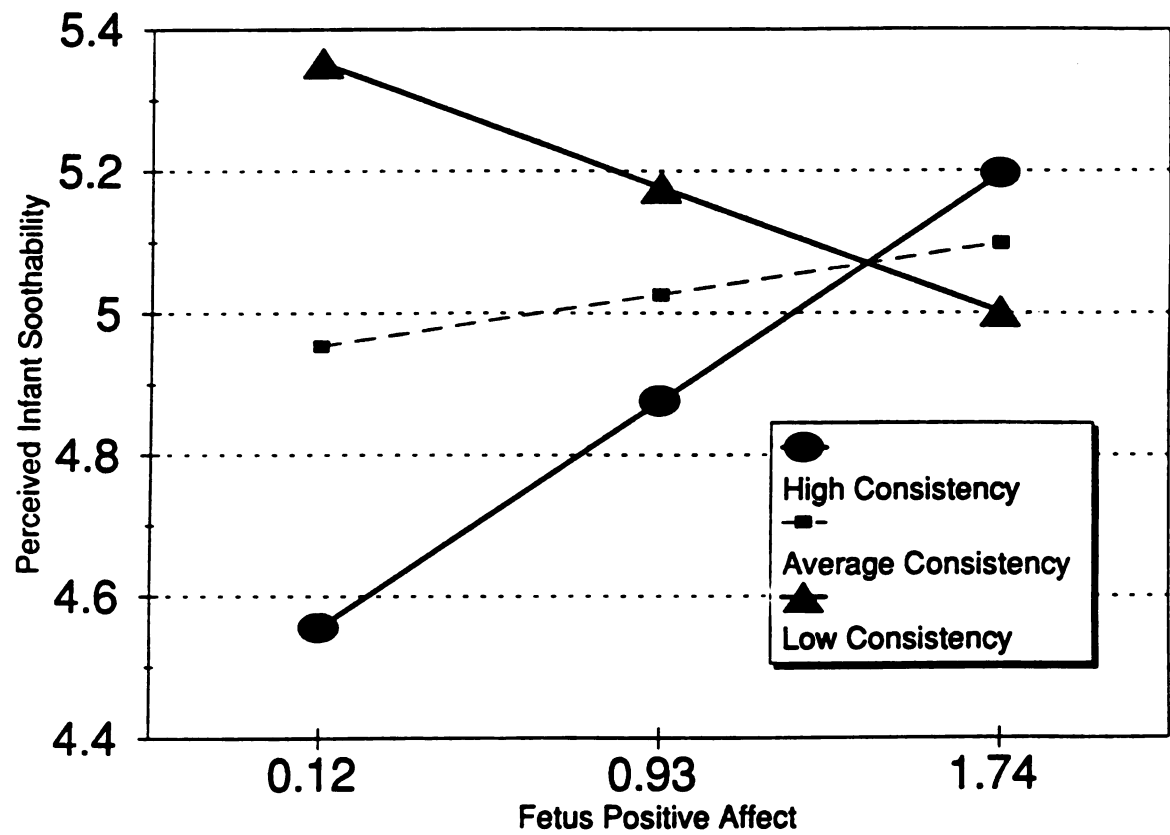


Figure 6. Interaction between late-pregnancy fetus positive affect scores and affect consistency scores as predictors of perceived infant soothability.

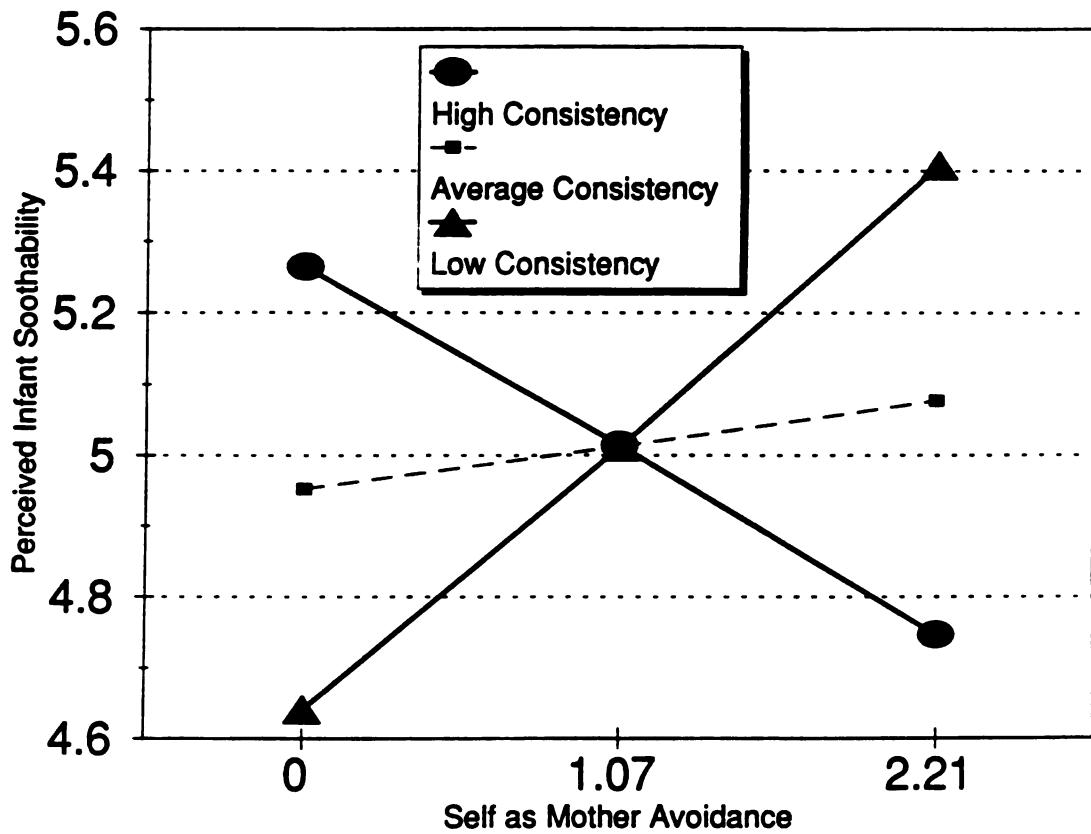


Figure 7. Interaction between late-pregnancy emotional avoidance scores for self as mother and affect consistency scores as predictors of perceived infant soothability.

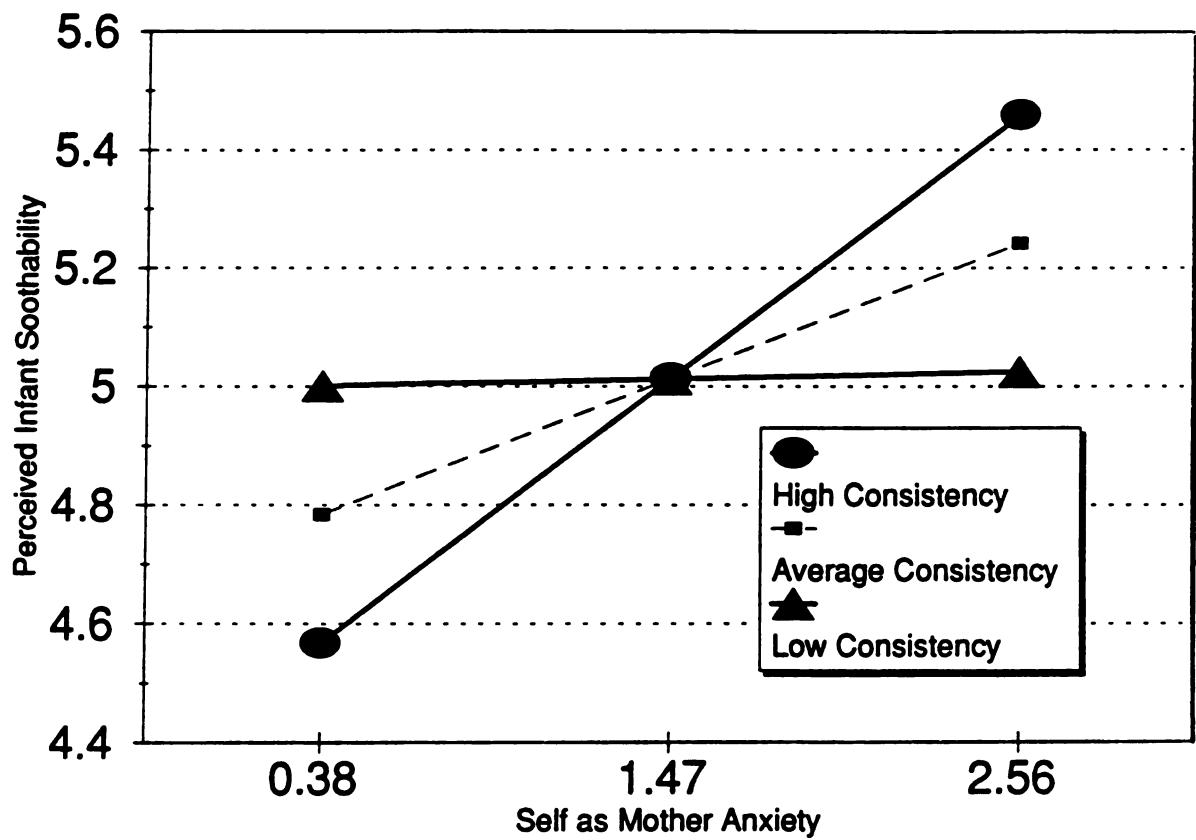


Figure 8. Interaction between late-pregnancy anxiety scores for self as mother and affect consistency scores as predictors of perceived infant soothability.

however, as a function of how consistently each was accessed over pregnancy, and in the case of emotional avoidance toward self as mother, in an unexpected way.

Cognitive Content and Affect as Joint Predictors of Infant Soothability

Because cognitive content and affect variables both predicted women's perceptions of their infant's soothability postpartum, an additional exploratory MRC analysis was performed to assess whether cognitive content and affect made independent contributions as predictors of women's perceptions of infant soothability. A four-step hierarchical MRC analysis was performed with infant soothability as the dependent variable (Table 21):

Step 1. Method of delivery was entered as a covariate, together with main-effect sets for kind of content and consistency of content, which must be entered before kind x consistency interaction terms.

Step 2. The two cognitive variables that significantly predicted infant soothability were entered next -- namely, the two kind x consistency interaction terms psycho-relational content about baby after birth and self as mother. This cognitive set accounted for a significant increment of 13 percent (shrunk R-squared, 11 percent) of the variance in infant soothability.

Step 3. The two affect variables that significantly predicted infant soothability were entered next: total intensity of affect for self as mother and the kind x consistency interaction term for fetus positive affect. This affect set accounted for a significant increment of 11 percent (shrunk R-squared, 10 percent) of the variance in infant soothability.

Step 4. Four terms carrying the interaction between cognitive and affect predictors were entered last to test whether affect makes an additive or interactive contribution to perceived soothability. This final set accounted for no additional variance in perceived soothability, suggesting that cognitive content and affect make additive contributions to perceived soothability.

These results demonstrate that cognitive content and affect that women accessed late in pregnancy about their babies and themselves as mothers make significant, independent, additive contributions to the women's perceptions of how soothable their infants were postpartum.

Table 21

MRC Results for Cognitive Content and Affect as Joint Predictors of Women's Perceptions of Their Infant's Soothability

Effect	R-squared Change	df	F
Step 1	.18	7,51	1.58
Method of delivery (covariate)			
Consistency scores			
Baby after birth, cognitive			
Self as mother, cognitive			
Fetus, affect			
Psycho-relational, baby after birth			
Psycho-relational, self as mother			
Fetus positive affect			
Step 2	.13	2,56	4.53*
Psycho-relational x consistency			
Baby after birth			
Self as mother			
Step 3	.11	2,56	4.34*
Total intensity of affect, self as mother			
Fetus positive affect x consistency			
Step 4	.01	4,54	0.18
Four terms for testing interaction between variables in Step 2 and Step 3			

* $p < .05$.

Together, the cognitive and affect predictor sets accounted for a significant 24 percent (shrunk R-squared, 21 percent) of the variance in perceived infant soothability.

MRC Results for Women's Postpartum Mood

Tables 22 and 23 present the results for cognitive content and affect variables, respectively, as predictors of women's postpartum mood. None of the cognitive or affect predictor sets accounted for a significant amount of variance in postpartum mood for main or alternative models. Analysis of residuals suggested that five outlier values for postpartum mood may have compromised the adequacy of the MRC models. The five values (representing the subject's mean score on the POMS scale) ranged from 4.0 to 6.7 on a 7-point scale. Each was recoded to the next most extreme value (3.4), and the MRC analyses were performed again. MRC results were the same with the recoded values. These results indicate that the prenatal content of women's representations of baby and self as mother -- either cognitive or affective and whether consistently accessible or not -- did not influence women's ratings of total mood disturbance six weeks postpartum in this sample. For this sample, mean POMS scores were nearly all in the normal range, and this restricted range for the POMS scores may account for the negative findings. For a sample with a full range of scores, including extreme values, the results might be different. Or, it may be that prenatal representational content about baby and self as mother does not predict postpartum mood.

MRC Results for Women's Behavior Toward Their Baby

The two behavior variables -- weeks of breastfeeding and weeks home with the baby -- were measured five months postpartum. In this sample, half the women were still breastfeeding five months postpartum ($n=29$), and over half were still home full time with their infants five months postpartum ($n=35$). This resulted in distributions for the two behavior outcome variables that were positively skewed. Analysis of residuals following the MRC analyses showed that this positive skew, or truncation of range, may have compromised the adequacy of the MRC models for describing these data. As a check on the MRC results, both behavior variables were dichotomized and used as dependent variables in a series of logistic regression analyses

Table 22

MRC Results for Cognitive Content Predicting Women's Postpartum Mood

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Information MRC			
Total information, fetus			
and self as mother	.02	2,56	<i>0.74</i>
Consistency scores for	.06	4,54	0.88
total information	(.04)	2,56	(1.03)
Total information x	.07	6,52	<i>0.60</i>
consistency	(.00)	2,56	<i>(0.10)</i>
Results for Kind of Content MRC			
Kind of content, fetus			
and self as mother	.02	3,55	<i>0.34</i>
Consistency scores for	.06	5,53	0.63
kind of content	(.04)	2,56	(1.07)
Kind of content x	.11	8,50	<i>0.77</i>
consistency	(.05)	3,55	<i>(1.00)</i>

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

Table 23

MRC Results for Affective Content Predicting Women's Postpartum Mood

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Intensity of Affect MRC			
Total intensity, fetus			
and self as mother	.02	2,56	<i>0.68</i>
Consistency scores for	.03	4,54	0.48
total intensity	(.01)	2,56	(0.30)
Total Intensity x	.13	6.52	<i>1.28</i>
consistency	(.09)	2,56	<i>(2.82)^b</i>
Results for Kind of Affect MRC			
Kind of affect, fetus and			
self as mother	.06	8,50	<i>0.38</i>
Consistency scores for	.08	10,48	0.43
kind of affect	(.02)	2,56	(0.66)
Kind of affect x	.21	18,40	<i>0.58</i>
consistency	(.12)	8,50	<i>(0.78)</i>

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

^b This borderline-significant F change is not interpreted because the multivariate F for the full model (cumulative R-squared) is not significant.

* $p < .10$.

(Anderson, Auquier, Hauck, Oakes, Vandaele, & Weisberg, 1980). Inspection of frequency distributions for both variables suggested a natural break in the distribution of the breastfeeding variable at 9 weeks (the mean was 14 weeks), and a break in the distribution of home with baby variable at 15 weeks (the mean was 17 weeks). The breastfeeding variable was split into shorter and longer breastfeeding groups, with the shorter group breastfeeding 9 weeks or less ($n=19$). The home with baby variable was split into shorter and longer time home, with the shorter group staying home with their babies 15 weeks or less ($n=19$). Logistic regression analyses were identical to the MRC analyses except for the scaling of the dependent variables.

The logistic regression analyses replicated all the significant MRC findings for both of the behavior variables, and they produced two additional significant findings. This supports the usefulness of the MRC findings, and the MRC findings will be reported here. It also suggests that the two behavior variables may be more powerfully represented in some samples as typologies, rather than as continuous variables -- a shorter breastfeeding group vs. the rest, and an earlier return group vs. the rest.

Logistic regression results will be noted alongside all the MRC findings reported below. Where MRC results are not significant but logistic regression results are, the latter will be reported briefly. Results are presented first for weeks of breastfeeding and then for weeks home with the infant.

Results for Weeks of Breastfeeding

Cognitive Content Predicting Breastfeeding

Tables 24 and 25 present the results for cognitive content and affect variables, respectively, as predictors of the number of weeks women breastfed their baby postpartum (out of 20 weeks). For main and alternative models, none of the cognitive predictor sets accounted for a significant amount of variance in breastfeeding behavior. Logistic regression analyses matched MRC results for the main model (fetus, self as mother), but for the alternative model (baby after birth, self as mother), the Chi-square test for the total information set was significant (improvement Chi-square=7.76; $df=2,56$; $p<.021$). Univariate tests showed that length of

Table 24

MRC Results for Cognitive Content Predicting Weeks of Breastfeeding

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Information MRC			
Total information, fetus			
and self as mother	.01	2,56	<i>0.37</i>
Consistency scores for	.04	4,54	0.52
total information	(.03)	2,56	(0.66)
Total information x	.05	6,52	<i>0.44</i>
consistency	(.01)	2,56	<i>(0.30)</i>
Results for Kind of Content MRC			
Kind of content, fetus			
and self as mother	.01	3,55	<i>0.22</i>
Consistency scores for	.03	5,53	0.37
kind of content	(.02)	2,56	(0.61)
Kind of content x	.07	8,50	<i>0.45</i>
consistency	(.04)	3,55	<i>(0.60)</i>

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

Table 25

MRC Results for Affective Content Predicting Weeks of Breastfeeding

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Intensity of Affect MRC			
Total intensity, fetus and self as mother	.04	2,56	1.04
Consistency scores for total intensity	.05 (.01)	4,54 2,56	0.66 (0.32)
Total Intensity x consistency	.07 (.02)	6,52 2,56	0.68 (0.71)
Results for Kind of Affect MRC			
Kind of affect, fetus and self as mother	.20	8,50	1.57^b
Consistency scores for kind of affect	.24 (.04)	10,48 2,56	1.57 (1.41)
Kind of affect x consistency	.28 (.04)	18,40 8,50	0.88 (0.28)

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

^b In alternative model testing, when baby after birth variables were substituted for fetus variables, kind of affect accounted for a significant 25 percent of the variance at this step (E = 2.10, $p = .05$).

breastfeeding was influenced by the total amount of information that women accessed late in pregnancy about the baby after birth, but not about self as mother. Women who had more to say about the baby after birth were more likely to breastfeed longer, as compared with women who had less to say (Wald=4.51; $df=1,57$; $p<.034$).

Taken together, these results suggest that the cognitive content of women's representations of the fetus and self as mother -- whether consistently accessible or not -- did not influence how long women breastfed their babies. It may be, though, that women who readily access more information about their babies after birth, particularly near the end of pregnancy, tend to breastfeed longer than women who access less information.

Affect Predicting Breastfeeding

For affect none of tests for the predictor sets was significant for the main model. When baby after birth variables were substituted for fetus variables in the alternative model, kind of affect accounted for 25 percent (shrunken R-squared, 13 percent) of the variance in weeks of breastfeeding. Among the eight predictors in the set, two self as mother affects uniquely accounted for significant portions of the variance. The emotional avoidance scores from late pregnancy for self as mother accounted for 11 percent of the variance (sr-squared=.108, $p<.011$), and self as mother positive affect accounted for another 10 percent of the variance (sr-squared=.096, $p<.01$). Women who were more emotionally avoidant and who accessed more positive affect late in pregnancy when describing themselves as mothers tended to breastfeed longer than women who were less emotionally avoidant and less positive about themselves as mothers.

Logistic regression results were negative for the main model (fetus, self as mother). They matched setwise and univariate MRC results for kind of affect for the alternative model (for the set, improvement Chi-square=18.314; $df=8,50$; $p<.02$: for mother avoidance, Wald=5.37; $df=1,57$; $p<.021$: for mother positive affect, Wald=5.01; $df=1,57$; $p<.026$). With logistic regression, an additional significant result was obtained for the alternative model: the test for the kind x consistency interaction set was significant (improvement Chi-square=17.09; $df=8,50$;

$p < .03$). With the interaction terms in the model, however, the goodness-of-fit test for the regression equation approached significance, suggesting that the equation did not fit the data well (goodness-of-fit Chi-square=52.53, $p < .10$). Because of the poor fit with interaction terms included, the additional kind x consistency finding was not interpreted.

Together, the cognitive content and affect results suggest that women's thoughts and feelings about the fetus does not influence how long they breastfeed their babies. Rather, what may influence breastfeeding behavior is the amount they think about the baby after birth late in pregnancy (regardless of the specific content of their thinking) and their feelings about themselves as mothers. The more anxiety or concern women feel about being a mother, the longer they may breastfeed their babies, especially when the anxiety or concern is accompanied by positive feelings about being a mother.

Cognitive Content and Affect as Joint Predictors of Breastfeeding

Because cognitive content and affect variables both predicted weeks of breastfeeding, an additional exploratory analysis was performed to assess whether cognitive content and affect made independent contributions as predictors of breastfeeding behavior. Cognitive content was significant as a predictor of breastfeeding with logistic regression, but not with MRC, so hierarchical logistic regression analysis was used to assess the independent contributions of cognitive content and affect. A three-step logistic regression analysis was performed using the dichotomized breastfeeding variable as the dependent variable:

Step 1. The single cognitive content variable that predicted breastfeeding behavior was entered first -- total information about the baby after birth. The Chi-square test was significant (improvement Chi-square=6.81; $df=1,57$; $p < .01$).

Step 2. The two affect variables that predicted breastfeeding behavior were entered next -- positive affect about self as mother and emotional avoidance about self as mother. The affect set made a highly significant improvement in the Chi-square model (improvement Chi-square=10.76; $df=3,55$; $p < .005$).

Step 3. Two terms carrying the interaction between cognitive and affect predictors were entered last to test whether affect makes an additive or interactive contribution to breastfeeding behavior. This final set did not improve the Chi-square model (improvement Chi-square=2.055; $df=2,56$; $p>.35$), suggesting that cognitive content and affect make additive contributions to how long women breastfed their babies.

These results demonstrate that the cognitive content and affect that women accessed late in pregnancy about their babies and themselves as mothers make significant, independent, additive contributions to how long women breastfed their babies. Examination of effect size values [odds ratio, or $\exp(B)$, values] for cognitive and affect predictors suggest that breastfeeding behavior is more strongly driven by affect, with cognitive content making a smaller contribution. For the three predictors, the single cognitive variable had the smallest effect size [for mother positive affect, $\exp(B)=7.5$; for mother avoidance, $\exp(B)=3.4$; for total information about the baby after birth, $\exp(B)=1.3$].

Results for Weeks Home with the Infant

Cognitive Content Predicting Weeks Home

Table 26 presents the results for cognitive content predicting how long mothers remained home with their infants postpartum. For the main model, the tests for total amount of information were not significant. For the alternative model using content about the baby after birth instead of the fetus, total information about baby and self as mother late in pregnancy accounted for a borderline-significant 9 percent (shrunken R-squared, 7 percent) of the variance in how long women remained at home ($p<.08$). Of the two predictors in the set, total information about the baby uniquely accounted for 8 percent of the variance ($sr\text{-squared}=.078$, $p=.03$). Women who accessed more information late in pregnancy about the baby as they imagined it would be after birth remained home longer with their infant. Logistic regression results for total amount of information also were negative for the main model, and they matched the MRC results for the alternative model (for the total information set, improvement Chi-square=6.19; $df=2,56$; $p<.046$; for total information about baby after birth, Wald=4.40; $df=1,57$; $p<.037$).

Table 26

MRC Results for Cognitive Content Predicting Weeks Home with Infant

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Information MRC			
Total information, fetus and self as mother	.06	4,54	<i>1.64^b</i>
Consistency scores for total information	.07 (.01)	4,54 2,56	1.04 (0.47)
Total information x consistency	.09 (.02)	6,52 2,56	<i>0.87</i> <i>(0.56)</i>
Results for Kind of Content MRC			
Kind of content, fetus and self as mother	.13	3,55	<i>2.85**</i>
Consistency scores for kind of content	.20 (.07)	5,53 2,56	2.63** (2.12)
Kind of content x consistency	.22 (.02)	8,50	<i>1.77</i> <i>(0.47)</i>

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

^b In alternative model testing, when baby after birth variables were substituted for fetus variables, total information accounted for a borderline-significant 9 percent of the variance at this step ($E = 2.72$, $p < .08$).

* $p < .10$. ** $p < .05$. *** $p < .01$.

For the main model, the predictor set for kind of content significantly accounted for 13 percent (shrunk R-squared, 9 percent) of the variance in how long women remained home with their infants. Among the predictors, fetus appearance content uniquely accounted for 12 percent of the variance ($sr\text{-squared}=.116$, $p<.01$). The two psycho-relational content variables did not make an independent contribution to the variance accounted for by the set. The setwise test for kind of content predictors also was significant for the alternative model substituting baby after birth variables for fetus variables. The set of predictors accounted for 16 percent (shrunk R-squared, 11 percent) of the variance in how long women remained home with their infants ($p<.02$). Like fetus appearance content in the main model, appearance content for the baby after birth uniquely accounted for nearly all the variance, or 14 percent ($sr\text{-squared}=.144$, $p<.005$). Psycho-relational content variables did not make an independent contribution to the variance accounted for by the set. Logistic regression results for kind of content matched the MRC results for main and alternative models. (For main model set, improvement Chi-square=9.31; $df=3,55$; $p<.026$; for fetus appearance, Wald=6.05; $df=1,57$; $p<.014$. For alternative model set, improvement Chi-square=16.49; $df=3,55$; $p<.001$.)

An additional MRC analysis was conducted entering fetus content variables (appearance, psycho-relational) and baby after birth content variables (appearance, psycho-relational) as a set to see if content variables from both of the different baby representations would uniquely predict weeks home with the infant. Together, the four content variables accounted for 22 percent (shrunk R-squared, 16 percent) of the variance in weeks home with the infant ($F=3.73$; $df=4,54$; $p<.01$). Appearance content for baby after birth uniquely accounted for 9 percent of the variance ($sr\text{-squared}=.090$, $p<.02$), and fetus appearance content uniquely accounted for 7 percent of the variance ($sr\text{-squared}=.072$, $p<.03$). The psycho-relational content variables did not make an independent contribution to the variance accounted for by the set. Taken together, these results suggest that when women accessed more observable information women late in pregnancy about the fetus and about the baby after birth (e.g., information about its health and development, appearance, physical state), they tended to stay home longer with their infants.

An additional significant finding from the logistic regression analyses may qualify the finding for the influence of fetus appearance content on weeks home with the baby (but not the finding for appearance content about the baby after birth). It may be that the amount of observable information the women accessed about the fetus only influenced how long women remained home with their infants when cognitive representational content was fluid, rather than fixed, over the course of pregnancy. In the logistic regression, the main model test was highly significant for the set containing interaction terms for kind of content x consistency (improvement $\chi^2=13.31$; $df=3,55$; $p<.005$). Univariate test revealed a significant interaction between amount of appearance women accessed about the fetus late in pregnancy and how consistently they accessed information about the fetus over pregnancy.

Figure 9 illustrates this interaction. Contrary to prediction, fetus appearance content was unrelated to how long women remained home with their infants when representational content was highly consistent from early to late in pregnancy. Instead, fetus appearance content was most related to how long women remained home when representational content was highly inconsistent, or fluid, from early to late in pregnancy. As noted in the discussion for Figure 2 (see **Cognitive Content Predicting Infant Activity/Distress to Limits**), the high- and low-consistency groups did not significantly differ in early pregnancy content about the fetus. But, from early to late in pregnancy, women in the low-consistency group showed changes in cognitive content about the fetus that were strongly consistent with growing familiarity with the fetus: they showed highly significant drops in observable (appearance) content and highly significant increases in psychological (internal properties) content. The high consistency group showed no changes that signal growing familiarity. It may be that women who grew in familiarity with their fetus during pregnancy were more inclined to remain home longer with the baby because of a familiar bond they had formed with the baby before birth. Women who grew in familiarity over pregnancy, however, also tended to perceive their babies as more active and distressed to limits (see above) -- and perhaps very accurately so. It may be, then, that women who grew in familiarity with their babies over pregnancy had more active babies who were more

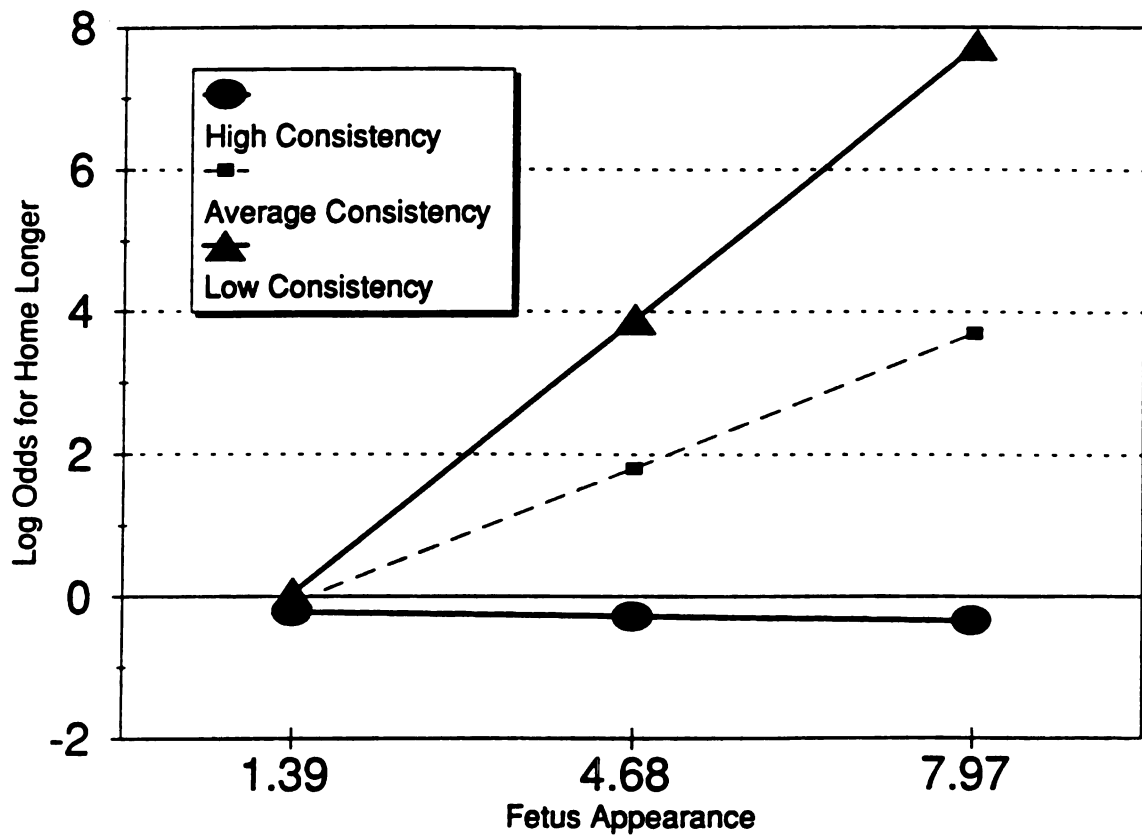


Figure 9. Interaction between late-pregnancy fetus appearance scores and cognitive content consistency scores as predictors of the probability (log odds) of remaining home longer with the baby.

prone to distress, and so it was more difficult to leave these babies with another caregiver.

Further research is needed to test whether either of these explanations is correct.

Affect Predicting Weeks Home

Table 27 presents the results for affect predicting how long mothers remained home with their infants postpartum. Main model tests for total intensity of affect were not significant. As a set, kind of affect accounted for a borderline-significant 24 percent (shrunk R-squared, 11 percent) of the variance in how long women remained home with their infants ($p < .08$). Among the eight predictor variables in the set -- four affects for fetus and four for self as mother -- three made independent contributions to the variance accounted for by the set. Anxiety about the fetus uniquely accounted for 8 percent of the variance ($sr\text{-squared} = .078$, $p < .03$) and anxiety and hostility about self as mother each accounted for 6 percent (for both, $sr\text{-squared} = .063$, $p < .05$). None of the remaining predictor variables made an independent contribution to the variance accounted for by the set. Women who accessed more anxiety about the fetus and about themselves as mothers late in pregnancy, but who were also less hostile toward themselves as mothers, tended to stay home longer with their infants. Women who accessed more hostility about themselves as mothers and less anxiety about themselves and the fetus tended to return to work earlier. Logistic regression results for kind of affect matched the MRC results for main and alternative models, with one exception. The main model test for kind of affect reached significance with logistic regression analysis, whereas the test was only borderline-significant with MRC. (For main model kind of affect set, improvement Chi-square=15.61; $df=8,50$; $p < .05$: for fetus anxiety, Wald=4.07; $df=1,57$; $p < .05$: for mother anxiety, Wald=4.57; $df=1,57$; $p < .04$: for mother hostility, Wald=3.43; $df=1,57$; $p < .05$.)

Together, the results for cognitive content and affect suggest that weeks home with the baby is guided by a physical focus on the baby -- both the fetus and the baby after birth -- that begins for women before the baby is born. This physical focus appears to be coupled with anxiety about being a mother (but not hostility or self-denigration) and anxiety about the fetus. Perhaps women who stay home longer with their infants are especially concerned about the

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Table 27

MRC Results for Affective Content Predicting Weeks Home with Infant

Effect	Cumulative R-squared (RSQ Change)	df	E (F Change) ^a
Results for Total Intensity of Affect MRC			
Total intensity, fetus			
and self as mother	.00	2,56	<i>0.05</i>
Consistency scores for	.02	4,54	0.90
total intensity	(.02)	2,56	(0.49)
Total Intensity x	.04	6,52	<i>0.36</i>
consistency	(.02)	2,56	<i>(0.54)</i>
Results for Kind of Affect MRC			
Kind of affect, fetus and			
self as mother	.24	8,50	<i>1.94*</i>
Consistency scores for	.25	10,48	1.57
kind of affect	(.01)	2,56	(0.33)
Kind of affect x	.33	18,40	<i>1.10</i>
consistency	(.08)	8,50	<i>(0.63)</i>

^a Critical tests (i.e., those that test the study hypotheses) are printed in ***bold italics***.

* $p < .10$.

physical wellbeing of their baby and meeting its physical needs. This concern may be based on the perception, formed partly from intrauterine information, that their baby is more active and prone to distress, or it may be rooted in a familiar bond that has grown over pregnancy between mother and fetus. Additional study is needed to learn which of these alternative explanations is correct.

Cognitive Content and Affect as Joint Predictors of Weeks Home with Infant

Because cognitive content and affect variables both predicted how long women remained home with their infants, an additional exploratory MRC analysis was performed to assess whether cognitive content and affect made independent contributions as predictors of weeks home with the infant. A three-step hierarchical MRC analysis was performed using weeks home with the infant as the dependent variable (Table 28):

Step 1. Cognitive content variables that predicted weeks home with the infant in MRC analyses were entered first: fetus appearance content and appearance content for the baby after birth, as measured late in pregnancy. (Total information about the baby after birth was not included in the analysis because a preliminary MRC showed that it did not account for additional variance beyond the two baby appearance scores; change in R-squared=.00) This cognitive set accounted for 21 percent (shrunk R-squared, 18 percent) of the variance in weeks home with the baby ($p<.002$).

Step 2. Affect variables that predicted infant soothability were entered next: anxiety about fetus, anxiety about self as mother, and hostility toward self as mother. This affect set accounted for an additional, borderline-significant 10 percent (shrunk R-squared, 6 percent) of the variance in weeks home with the infant. [Reversing the order of cognitive and affect sets resulted in significant contributions for each: entered first, the affect set accounted for 16 percent (shrunk R-squared, 11 percent) of the variance in weeks home with the infant ($p<.03$), and entered second, the cognitive content set accounted for an additional 15 percent (shrunk R-squared, 13 percent) of the variance ($p<.007$).]

Table 28

MRC Results for Cognitive Content and Affect as Joint Predictors of Weeks Home with Infant

Effect	R-squared Change	df	E
Step 1	.21	2,56	7.49***
Fetus appearance			
Baby after birth appearance			
Step 2	.10	3,55	2.51 ^a
Fetus anxiety			
Self as mother anxiety			
Self as mother hostility			
Step 3	.05	6,52	0.66
Six terms for testing interaction between variables in Step 1 and Step 2			

^a Reversing the order of sets 1 and 2 resulted in significant contributions for each: entered first, the affect set accounted for 16 percent of the variance ($F=3.50$; $df=3,55$; $p<.03$), and entered second, the cognitive content set accounted for an additional 15 percent ($F \text{ change}=5.72$; $df=2,56$; $p<.002$).

* $p < .10$ ** $p < .05$. *** $p < .01$.

Step 3. Six terms carrying the interaction between cognitive and affect predictors were entered last to test whether affect makes an additive or interactive contribution to weeks home with the infant. This final set accounted for an insignificant 5 percent (shrunk R-squared, -3 percent) of the variance, suggesting that cognitive content and affect make additive contributions to weeks home.

These results demonstrate that cognitive content and affect that women accessed late in pregnancy about their babies and themselves as mothers make significant, independent, additive contributions to how long women remain home with their infants. Together, the cognitive and affect predictor sets accounted for a highly significant 31 percent (shrunk R-squared, 24 percent) of the variance in weeks home with the infant ($p < .002$).

Evaluating the Research Hypotheses:

Did Accessible Prenatal Content Predict Postpartum Outcomes?

The chief task for Phase 2 of this research was to test the **primary hypothesis** that the representational content women readily access about their babies and themselves as mothers by late pregnancy influences how they perceive, feel, and behave toward their babies postpartum. Taken together, the results offer good support that accessible prenatal content guides women's perceptions of their babies and their behavior toward them -- especially if "guide" is used in the narrow sense of preceding and pointing to perceptual and behavioral responses. MRC results for **cognitive content** showed that the cognitive information women readily accessed about their babies and themselves as mothers late in pregnancy accounted for a significant 15 to 25 percent (shrunk R-squared, 7 to 16 percent) of the variance in how active and soothable women perceived their infants to be and in how long they remained home full time with their infants. **Affect** that women readily accessed about baby and self late in pregnancy accounted for a significant 12 to 25 percent (shrunk R-squared, 10 to 13 percent) of the variance in how soothable they perceived their infants to be, how long they breastfed their infants, and how long they remained home with their infants. Readily accessible cognitive content and affect jointly accounted for a significant 25 to 30 percent (shrunk R-squared, 21 to 24 percent) of how

soothable women perceived their infants to be and how long they remained home with their infants.

The links demonstrated here between women's prenatal representations and how they perceive and behave toward their infants constitute important first evidence that a memory system exists in women, made up of self and other representations, that guides, and not merely grows out of, women's responses to their babies. Further, it suggests that this system is in place before the child is born -- that the roots of a woman's relationship with her child are present in a meaningful way, as part of her memory, during pregnancy. Because independent links were found for both cognitive content and affect, this research also confirms for the first time that both the cognitive and affective content of women's prenatal representations of baby and self precedes and predicts their responses to their infant, as theory suggests. The predictive links reported here do not tell us, however, that prenatal representational content about baby and self is a simple, direct cause of mothers' responses to their infants. The **General Discussion** section will take up the question of the extent to which we can use causal language to talk about parents' representations and parents' responses to their children.

The results offered no evidence that accessible prenatal content influences women's postpartum mood. Null findings for postpartum mood may be due to restricted range on the POMS mood measure for this sample of women, or it may be due to a lack of specificity in the measure. The POMS failed to discriminate specific affects, and it may be that representational content relates to one kind of affect but not to general mood disturbance. Or, it may be that the POMS measure failed to detect women's mood specifically in relation to their infants. Alternatively, postpartum mood may be so biologically or situationally driven that prenatal content does not, in fact, account for any significant part of it. Additional study is needed to test these alternative explanations. Phase 2 findings also suggested that parity determines postpartum outcomes through its influence on the content of prenatal representations: the effect of parity on women's perceptions of their infant's activity level and distress to limits was fully mediated by accessible content about fetus and self as mother.

Emotional integration failed to predict postpartum outcomes. Measured for self as mother only, emotional integration was an experimental scale used to capture the affective aspect of what Main refers to as "coherence" in her own scheme for evaluating an adult's working model of childhood relationships with parents (Main, Kaplan, & Cassidy, 1985; Main, 1991). The failure of emotional integration to predict outcomes may be due a flaw in the measure itself -- how it was conceived or rated -- or it may be due to an apparent disruption in integration near the end of pregnancy. Phase 1 results showed a significant decline in integration from early to late in pregnancy for women in the sample. This decline may be related to a dissolution of representational content at the end of pregnancy, as Stern (1991) has reported.

In addition to evaluating the primary hypothesis, Phase 2 of this research also was designed to evaluate three specific, and more heuristic, hypotheses. These hypotheses constituted a first step in thinking about how representational content about baby and self might relate to maternal outcomes. Tests of these hypotheses were meant to generate fruitful hypotheses for future research. The sections that follow discuss the evidence obtained during Phase 2 of this research for each of the three hypotheses. Evidence pertaining to hypotheses 1 and 2 is considered first for cognitive content and then for affect. The question of how independently cognitive content and affect act to predict outcomes is taken up next, followed by the evidence pertaining to hypothesis 3.

What Do the Results Say About Accessible Cognitive Content?

Hypothesis 1 predicted that both the total information and the kind of content (observable vs. psycho-relational) that women readily accessed about their babies and themselves as mothers late in pregnancy would influence postpartum outcomes. Total information did not predict either perception outcome, but it predicted both behavior outcomes. Women who accessed more information about the baby after birth late in pregnancy breastfed longer and remained home longer with their infants. Kind of content as a main effect did not predict perception outcomes or women's breastfeeding behavior, but it predicted how long women remained home with their babies. Women who accessed more observable content about

the baby after birth late in pregnancy remained home longer with their infants.

When consistency of cognitive content over time was taken into account (**hypothesis 2**), interaction terms for kind of content x consistency predicted both perception variables and weeks at home (but not breastfeeding), and often in surprising ways. For example, observable (physical) information about the fetus late in pregnancy predicted women's perceptions of their infant's activity level and distress to limits and how long women remained home full time, but only for women whose cognitive content showed strong signs of growing familiarity with the fetus over pregnancy. These findings were contrary to predictions, demonstrating that highly Inconsistent information over pregnancy can be related to postpartum outcomes, and not just highly consistent information. For perceptions of infant soothability, psychological and relational information about the baby after birth and about self as mother was positively related to how soothable women perceived their infants to be when cognitive information was consistently accessible over pregnancy. This suggests that women who consistently think psychologically and relationally may be better able to respond sensitively to their babies. Contrary to the prediction, however, Inconsistent psychological and relational thinking over pregnancy also was related to infant soothability, but in the opposite direction. For women in the inconsistent group, the higher the psychological and relational content at the end of pregnancy about baby or about self, the **less** soothable their babies seemed postpartum. This reversal of relationship continues an intriguing pattern of results reported here showing that highly consistent access to representational content predicts postpartum outcomes, and so does highly inconsistent access, and often in opposite ways. A late-pregnancy dissolution or transient-shift hypothesis may be the best starting point for making sense of the anomalous findings for women whose representational content is highly inconsistent from early to late in pregnancy.

For cognitive content, then, hypotheses 1 and 2 received qualified support. Total amount of content predicted the two behavior outcomes, but not the perception outcomes. As a main effect, kind of content predicted only one of the postpartum outcomes in the research -- weeks home with the baby. Taking into account consistency of cognitive content over time, kind of

content x consistency predicted both women's perceptions of their infants (both variables) and how long women remained home full time, but not their breastfeeding behavior. And, contrary to the prediction, very Inconsistent content over pregnancy influenced the relationship between kind of content and maternal outcomes as strongly as very consistent access. Observable content predicted one of the perception outcomes, and psychological and relational content predicted the other. Observable content also predicted how long women remained home with their babies. Neither kind of content -- observable or psycho-relational -- predicted breastfeeding behavior at all: breastfeeding behavior was only related to total amount of cognitive content, regardless of kind.

What Do the Results Say About Accessible Affect?

For affective content, **hypothesis 1** predicted that the total intensity of affect and kinds of affect women accessed about their babies and themselves as mothers late in pregnancy would influence postpartum outcomes. Total intensity of affect did not predict the two behavior outcomes, and it predicted only one of the perception outcomes. The more affect women accessed about themselves as mothers late in pregnancy, the more soothable they perceived their infants to be. As a main effect, kind of affect, by itself, was related to the two behavior variables, but not to the two perception variables. Women who were both more anxious and more positive about being a mother breastfed their infants longer as compared with women who were less anxious and positive about themselves as mothers. Women who were more anxious about their fetus and about themselves as mother, but who were less hostile or self-denigrating toward themselves as mothers, remained home longer with their infants as compared with women who were less anxious about their fetus and themselves as mothers, but more hostile or self-denigrating toward themselves as mothers.

When consistency of affect over time was taken into account (**hypothesis 2**), interaction terms for kind of affect x consistency predicted one perception outcome (infant soothability) and one behavior outcome (breastfeeding). As predicted, positive affect about the fetus and anxiety about self as mother related strongly to perceived infant soothability only when affect for each

target was consistently accessible over pregnancy. For women who were highly consistent in affect from early to late in pregnancy, the more positive they were about the fetus and the more anxious about themselves as mothers, the more soothable they perceived their infants to be. Contrary to the prediction, however, emotional avoidance toward self as mother related strongly to perceived soothability, in opposite directions, when affect was highly consistent and highly inconsistent over pregnancy. For women who were highly consistent, the relationship between emotional avoidance and soothability was negative, and for women who were highly Inconsistent, the relationship was positive.

So, hypotheses 1 and 2 received the same sort of qualified support for accessible affect as for cognitive content. Total intensity of affect predicted only one outcome -- women's perceptions of infant soothability. As a main effect, kind of affect predicted one outcome -- weeks home with the baby. Taking into account consistency of affect over time, kind of affect x consistency was related to perceived soothability (but not perceived activity/distress) and weeks of breastfeeding (but not weeks home with the baby. And, contrary to prediction, very Inconsistent access to affect over pregnancy influenced the relationship between kind of affect and maternal outcomes just as strongly as very consistent access. Affect did not predict women's perceptions of infant activity/distress to limits at all.

Taken together, the findings for consistently accessible content (~~hypothesis 2~~) suggest that, in determining outcomes, consistency of access does not work as simply as theory predicts. Consistency of access to representational content -- whether cognitive or affective -- did not always matter in predicting outcomes. Consistency of access to representational content may fail to influence outcomes for reasons specific to the outcome of interest. For example, consistency of access to affect may not have influenced the relationship between affect and women's perceptions of infant activity/distress to limits because the affective content of women's prenatal representations may not determine those perceptions at all. The results of this study suggest that cognitive content, and not affect, guides women's perceptions of infant activity/distress. For weeks home with the infant, the results suggest that anxiety or concerns about the fetus and

about being a mother contribute to women's decisions to remain home with the baby, and these concerns need only be in place by the end of pregnancy to influence women's decisions to remain home longer with their infants. More study is needed to carefully map the conditions under which consistently accessible content predicts specific outcomes. More study also is needed to validate and explain the anomalous pattern of results for low-consistency representational content. Judging from this research, accessible content that is highly inconsistent over time can guide outcomes just as strongly as accessible content that is highly consistent over time, or even more strongly. Four kind x consistency findings clearly and significantly showed this effect.

Do Cognitive Content and Affect Act Independently to Predict Postpartum Outcomes?

Judging from Phase 2 results, the cognitive content and affect that women readily access about their babies and themselves as mothers can act independently of one another to predict women's perceptions and behavior toward their infants, and when they act together, they can make independent, additive contributions to outcomes. Perceptions of infant activity and distress to limits were predicted by prenatal cognitive content only. Perceptions of infant soothability and both behavior outcomes were predicted independently and additively by a combination of cognitive content and affect. For weeks of breastfeeding, affect clearly made the stronger contribution. These findings fit with evidence from other research that perceptions and behavior can be driven mostly by cognition, mostly by affect, or by both, and that cognitive and affect representational systems are at least partly independent (e.g., Millar & Tesser, 1986; Swan, Griffin, Predmore, & Gaines, 1987). Together, they furnish more evidence that we can only understand how accessible content influences outcomes by carefully mapping the features of specific predictors to the features of specific outcomes.

Hypothesis 3: Which Target Mattered Most?

Hypothesis 3 predicted that variables for the self as mother target would predict outcomes more strongly than the baby targets because, for both cognitive content and affect, representational content was more accessible for self as mother than for baby. In this research,

baby variables uniquely accounted for significant amounts of variance alongside self as mother variables for all outcomes, and the amounts of variance each uniquely accounted for were mostly comparable. So, hypothesis 3 was not supported by the results of this research. The Phase 2 findings suggest that, as Bretherton and others have proposed, representations of baby and self as mother are complementary, and they act together to guide women's responses to their infants. Women's perceptions of infant soothability offer a good example of the how the accessible content of baby and self representations act in complementary fashion to guide outcomes. For perceived soothability, psychological and relational content about self as mother predicted women's perceptions only in combination with representational content about the baby after birth. When the same self as mother content was entered with fetus variables in the MRC analyses, psychological and relational content for self as mother failed to significantly predict women's perceptions.

Phase 2 findings about the relative predictive power of self versus baby content also tell us something about the role of familiarity in predicting outcomes. In this research, content about the most familiar representational target -- the self -- predicted outcomes, and so did content about the least familiar representational target -- the fetus. Though not so accessible, what we think and feel about an important stranger may influence our responses to the stranger just as much as what we think and feel about our highly accessible selves.

GENERAL DISCUSSION

Evidence continues to mount that the quality of the parent-child relationship has a powerful effect on children's cognitive, social, and emotional development and on their capacity for healthy, intimate relationships throughout life (Bowlby, 1988; Hazan & Shaver, 1994). The bulk of this evidence comes from studies that draw upon current representation-based theories of parent-child relationships. Fundamental to these theories is the proposition that parents have representations of their child and of themselves as parents, and the cognitive and affective content of these representations guides their responses to their child. Studies testing this proposition have examined only a small piece of the cognitive content of parents' representations -- notions about their child's temperament -- and its relationship to parents' perceptions (Zeanah, Keener, Stewart, & Anders, 1985; Zeanah & Anders, 1987; Mebert & Kalinowsky, 1986). These studies used the same instrument to measure independent and dependent variables, and their results have not been replicated by research using independent methods. No studies have examined how the affective content of parents' representations of child and self relates to parent outcomes.

My research is the first to describe the cognitive and affective content of parents' representations of their child and of themselves as parents from parents' free responses. It is the first to demonstrate with independent methods that the content of parents' representations of child and self predict their perceptions of their child. And, it is the first to demonstrate that parents' representations of child and self predict their behavior toward their child. The descriptive portion of the research showed:

1. Women's representations of their babies and themselves as mothers could be described reliably in terms of cognitive content and affect, which were independent of one another.

2. The cognitive content of women's representations of their babies and themselves as mothers could be described in terms of three different kinds -- **observable content** (appearance, physical states), which people typically use to describe strangers; **psychological**

content (traits, beliefs, desires), which people typically use to describe familiar persons; and **social relationship content**, which people also use to describe familiar persons.

3. Women's representations of baby and self could be described in terms of four distinct affects – positive affect, open anxiety, hostility, and emotional avoidance.

4. Women's representations of baby and self could be described in terms of how consistently women retrieved, or accessed, cognitive content and affect from early to late in pregnancy. Consistency of access varied from woman to woman, with some women very fluid in their representational content about baby or self and some women very fixed.

The predictive portion of this research accomplished two important things. First, it demonstrated a key proposition of representation-based theories of parent-child relationships -- namely, that the cognitive and affective content of parents' representations of their child and themselves as parents predicts their perceptions and behavior toward their child. This research replicated the findings of Zeanah, Mebert, and their colleagues that the cognitive content of parents' representations of the baby during pregnancy predicts their perceptions of the baby postpartum. It showed for the first time that the cognitive content of parents' **self** representations also predicts perceptions of the baby postpartum, and so does the affective content of parents' representations of baby and self. It showed for the first time that the cognitive and affective contents of parents' representations of their babies and themselves as parents predict their behavior toward their infants. Together, cognitive content and affect significantly accounted for some 25 to 30 percent of the sample variance in weeks of breastfeeding and weeks home full time postpartum, or 13 to 24 percent using unbiased estimates of the effect in the population (shrunk R-squared). The research failed, however, to show that the content of women's representations of baby and self predicts their feelings toward their infant. Restricted range for this sample on the postpartum mood measure may be responsible for the null findings, or perhaps a postpartum mood scale is not the right way to measure women's feelings toward their infant.

Second, results from the predictive portion of this research enable us to add four new pieces to current models of how parents' representations of child and self guide their responses to their child:

1. One new piece has to do with **multiple representations of a single child**. In this research, "representations of baby" referred to two different representations of the same baby -- one of the baby in utero and one of the baby as it would be after birth. Sometimes one baby representation predicted mothers' responses, sometimes the other, and sometimes both. Much has been said about multiple representations people have of themselves (e.g., James, 1890; Bowlby, 1980; Markus & Wurf, 1987): apparently, the self is a composite rather than a unified structure. Judging from this research, this is true of parents' models of their children as well. To find a relationship between a parents' representations of their child and their responses, it may be very important for researchers to measure the right representation of the child.

2. Another new piece is the **separate contribution that affect makes to parents' responses**. Representation-based theories of parent-child relationships state that affect is a critical part of the memory system in parents that guides their responses to their child. The theories have not specified how affect relates to the cognitive content residing in this memory system. The results of this research show that the affect in the system can operate independently of the cognitive content to guide parents' responses to their children.

3. **Consistency of access to representational content over time** is a third new piece to add to current models of how parents' representations of child and self guide their responses. The results of this research suggest that the cognitive and affective content of parents' representations of child and self can be state-like or trait-like. In one parent it can be more fixed over time, and in another it can be more fluid over time. The fixed or fluid nature of parents' representational content about child or self can determine whether or not the content relates to an outcome of interest, and it can determine the direction of the relationship. Psychological researchers routinely make a distinction between state- and trait-like anxiety, and this distinction has improved the predictive and explanatory power of their research models.

Judging from this research, the same sort of distinction needs to be applied to the thought and feeling content of parents' representations of their child and themselves as parents. Failure to account for how consistently parents' access information and affect over time can result in spurious null findings or misleading findings about how representational content relates to parents' responses to their child.

4. The fourth new piece is the most general, and it is perhaps the most theoretically important. It has to do with a mixed-results vs. a **"differential-engaging" hypothesis** to explain how parents' cognitive-affective representational systems work. This research showed that the cognitive content of women's representations of baby and self as mother did not predict all outcomes, nor did affect. Sometimes one predicted and not the other, sometimes both predicted, and in the case of postpartum mood, neither predicted. Observable cognitive content did not predict all outcomes, nor did psychological and relational. Sometimes one predicted, sometimes the other predicted, and in the case of breastfeeding, neither predicted. In no instance did observable content and psycho-relational content predict a single outcome together. Content that was consistently accessible over pregnancy did not predict all outcomes more strongly than inconsistently accessible content. For some outcomes, inconsistently accessible content predicted outcomes more strongly, and for others, consistency of access did not influence predictions at all. These mixed results may be due in part to limitations in predictor or outcome measures. The postpartum mood measure is a good example of this. Because it failed to discriminate specific affects, it may have compromised the relationship between a particular kind of prenatal content and a particular aspect of postpartum mood.

It may be, however, that the mixed results can be traced to differential engaging of specific parts of the cognitive-affective system that contains baby and self as mother representations and guides parents' responses. We can think of individual outcomes as engaging, or not engaging, different parts of this system. Some outcomes might engage the part containing cognitive content, and some the part containing affect, as other researchers already have demonstrated (e.g., Millar & Tesser, 1986; Swann, Griffin, Predmore, & Gaines, 1987).

Some outcomes might engage observable content, and others psychological and relational. Some might engage consistently accessible content, and some might engage more recent content only. And, some outcomes might engage several or all of these at once.

The two perception variables in this research are a good example of how different parts of the cognitive-affective representational system can be engaged by different outcomes. In this research, perceived infant soothability engaged both the cognitive and affective parts of women's representational systems. It engaged psychological and relational information, but not observable information, and it engaged information about all three representational targets. By contrast, the other perceptual variable in the study -- perceived infant activity and distress to limits -- engaged the cognitive part of women's representational systems only, and not the affective. It engaged observable information, but not psychological and relational, and it engaged information about the fetus and the self as mother, but not about the baby after birth.

This research tells us that a differential-engaging hypothesis may be a heuristically powerful way for researchers to think about the content of parents' representations of their child and themselves as parents and how that content influences parents' responses. The results suggest that, in framing research questions, researchers must think about which specific parts of parents' cognitive-affective representational systems are engaged by which specific parent outcomes. They must begin to ask whether cognitive content, or affect, or both drives a parent outcome of interest. If cognitive content drives the outcome, is it observable content, or psycho-relational, or both? Does the outcome engage consistently accessible content about child or self, or does it engage recent content without regard to consistency? This sort of thinking and research can begin to answer questions about why therapeutic interventions with mothers and children work, and when they do not, why they fail.

The differential-engaging hypothesis could be applied, for example, to Lieberman's successful therapeutic model for intervening with disturbed mother-infant dyads (Lieberman, Weston, & Pawl, 1991). Lieberman proposed that insecure mother-infant relationships in a clinic population resulted from inadequate empathic responding on the part of mothers to infant's needs

and individual characteristics. Inadequate empathic responding in turn was due to mothers' internal affective experience, especially an enduringly negative affective experience of their babies. Lieberman designed and conducted an intervention aimed at changing mothers' internal affective experiences of their babies from negative to positive. Therapists visiting mothers and infants in their homes acknowledged and responded to mothers' affective experiences as the mothers related to their infants. Therapists also provided mothers with information about maternal behavior that was developmentally appropriate for their infants -- but always timing and delivering the information so as to relieve internal affective conflicts on the part of the mother. The intervention enhanced empathic responding on the part of mothers, resulting in changes from insecure to secure attachments for mother-infant pairs. The successful results offered indirect support for the theoretical assumptions underlying the intervention.

The differential-engaging hypothesis would state the theory behind the intervention in these terms:

Mothers' empathic responding to their infant's individual characteristics and needs is driven by the affective content of mother's representations of their babies. Inadequate empathic responding is caused by consistently accessible negative affect on the part of mothers toward their babies. To improve inadequate empathic responding, interventions must target mothers' affective content about their babies and change it from negative to positive. These interventions may include giving mothers cognitive information about their infant and the infant's needs. The therapeutic impact of the cognitive information, however, will lie in its power to change the mother's affect toward the baby from negative to positive.

Adding measures of women's representational content about baby and self as mother before and after this intervention would permit a direct test of whether empathic responding in a clinic population is driven by the affective part of the cognitive-affective representational system, and especially by the affective content of baby representations. These measures also would tell us what specific changes occur in women's representational content about the baby when empathic

responding improves and whether these changes are accompanied by changes in women's representations of themselves as mothers.

In addition to research that informs therapeutic intervention, several other fruitful directions for study are suggested by the results of this research. The results should be replicated with a larger sample and tested with samples drawn from more diverse populations. Alternative ways should be tested for coding the behavior content of child and self representations (perhaps coding social and non-social behavior separately) to see if behavior content can fit more meaningfully with other kinds of cognitive content. The research model used here should be extended to include direct measures of sensitive responding as parent behavior outcomes -- measures such as synchrony between mother and infant in face-to-face interactions and mothers' empathic responses to infant displays of emotion (affect attunement behavior). Theory suggests that these outcomes may be the most powerful in determining the security of parent-child relationships. A fruitful next step might also be to add unaccessed, or unexpressed, content to the model -- as measured via projective methods -- to see if it improves the model's predictive and explanatory power.

Future thinking and research also must grapple with the extent to which we can use causal language to talk about predictive links between the content of parents' representations and their responses to their child. In this study, the content of mothers' representations of baby and self predicted their perceptions and behavior toward their infants. From this, we may be able to conclude that representations guide perceptions and behavior, if "guide" is used in the narrow sense of preceding and pointing to perceptual and behavioral responses. We may not conclude, however, that parents' perceptions and behavior are the simple result of mental models, or representations, of child and self in operation. Theory, clinical data, and common sense tell us that representations of child and self as parent themselves are the complex result of parents' experience and parents' physical and social environment.

The predictive findings for weeks home with the infant are a good example of how representations are formed and operate in the context of parents' socioeconomic environment,

and they illustrate the difficulty of using causal language to talk about the relationship between prenatal representations and postpartum maternal responses. Women who stayed home longer with their infants showed changes in cognitive content over pregnancy that signaled growing familiarity with their fetus. Also, they were more physically focused on the baby, more openly anxious and concerned about fetus, and more openly anxious about themselves as mothers to the new baby, as compared with women who returned to work early. Does this tell us that representational content – that is, growing familiarity with the fetus, a heightened physical focus on the baby, and anxiety about baby and self -- causes women to stay home longer? Or, when a woman knows during pregnancy that she is going to stay home longer with her baby, does that knowledge somehow cause or influence the content of her representations about baby and self as mother? Women who returned to work early did not show changes in cognitive content that signaled growing familiarity with the fetus. They were less physically focused on the baby, and they were more hostile or denigrating toward themselves as mothers, as compared with women who stayed home longer. Does representational content -- that is, no growing familiarity with the fetus, less physical focus on the baby, and more hostility toward self as mother -- cause women to return to work early? Or, when women know during pregnancy that they will return early, does that knowledge somehow inhibit growing familiarity and cause the other differences in representational content between women who return early and women who do not? It may be that the relationship between representational content and returning to work is *reciprocal*. Perhaps the anticipated behavior (returning early or staying home longer) influences women's representations of baby and self as they form during pregnancy, and then the representations help to support and maintain the behavior once the baby is born. As these competing explanations illustrate, it may not be so useful or correct to speak about representations as causes of parents' responses, but as pathways by which parents' experiences and environment are connected to their responses to their child.

In addition to telling us about how parents' representational content guides their responses to their infants, this research also demonstrated several things about social cognition

more generally. It demonstrated for the first time that our behavior in social relationships can be guided by how much information we access about other people and about ourselves in relation to them, as Markus and Kitayama (1991) have proposed. This research showed that women's breastfeeding behavior and their decisions about remaining home full time with their infants were predicted by the total amount of information they accessed about their babies during pregnancy. This research examined for the first time the relationship between cognitive content and affect in people's spontaneous descriptions of themselves and others. It showed that cognitive content and affect can be independent of one another, and they can act additively to influence real and important social outcomes. Finally, the results of this research clearly show that representational content that is highly inconsistent over time -- content that is fluid or state-like, rather than fixed or trait-like -- can have as strong an impact on outcomes as content that is highly consistent over time, and in an opposite way. Chronic accessibility theory, as it is presently framed, cannot account for these findings. Some of these findings may stem from psychological processes unique to pregnant women -- perhaps some dissolution of representational content, as Stern (1991) has reported. Others may stem from real learning that takes place over pregnancy. By late pregnancy, some women may have acquired knowledge about their fetus through sensitivity to intrauterine physical cues, and this knowledge accurately forecasts what they will perceive and how they will behave toward the baby postpartum. Further study is needed to validate and explain the anomalous results about consistency of access and to find out whether they extend to non-obstetric populations.

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Appendix

Correlation Matrices for Phase 1 PCAs

Table A-1
Correlation Matrix for Cognitive Content Variables, T1 with T1

	FAPPEAR1	FBEHAVE1	FCONTEX1	FPROPS1	FRELATE1	BAPPEAR1	BBEHAVE1	BCONTEX1
FAPPEAR1	1.0000	-.3535**	.3256*	-.2141	-.0766	.4400**	.1965	-.1321
FBEHAVE1	-.3535**	1.0000	-.1664	.1917	.2004	-.1573	.1932	-.1011
FCONTEX1	.3256*	-.1664	1.0000	.0653	.3156*	.2259	.0518	.1169
FPROPS1	-.2141	.1917	.0653	1.0000	.2686*	-.2193	.0772	-.0206
FRELATE1	-.0766	.2004	.3156*	.2686*	1.0000	-.0065	.1389	.1951
BAPPEAR1	.4400**	-.1573	.2259	-.2193	-.0065	1.0000	-.0641	-.0102
BBEHAVE1	.1965	.1932	.0518	.0772	.1389	-.0641	1.0000	.1659
BCONTEX1	-.1321	-.1011	.1169	-.0206	.1951	-.0102	.1659	1.0000
BPROPS1	-.2217	.2494	-.1313	.4689**	.2747*	-.2091	.0764	-.1304
BRELATE1	-.2331	.1364	-.1696	-.0098	.2987*	-.1382	.2439	.1115
MAPPEAR1	.1057	.1498	-.1531	-.0774	-.0134	.2176	.1204	-.0047
MBEHAVE1	-.0257	.3399**	.1891	.1421	.3520**	-.0062	.0896	-.0776
MCONTEX1	.0042	.2202	-.1268	-.0603	-.0509	-.2336	-.0745	-.1384
MPROPS1	-.0365	.1422	.2183	.1921	.1944	.1882	-.1261	-.1966
MRELATE1	.2061	.1533	.2635*	.0360	.1526	.0624	.1373	-.2160

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

	BPROPS1	BRELATE1	MAPPEAR1	MBEHAVE1	MCONTEX1	MPROPS1	MRELATE1
FAPPEAR1	-.2217	-.2331	.1057	-.0257	.0042	-.0365	.2061
FBEHAVE1	.2494	.1364	.1498	.3399**	.2202	.1422	.1533
FCONTEX1	-.1313	-.1696	-.1531	.1891	-.1268	.2183	.2635*
FPROPS1	.4689**	-.0098	-.0774	.1421	-.0603	.1921	.0360
FRELATE1	.2747*	.2987*	-.0134	.3520**	-.0509	.1944	.1526
BAPPEAR1	-.2091	-.1382	.2176	-.0062	-.2336	.1882	.0624
BBEHAVE1	.0764	.2439	.1204	.0896	-.0745	-.1261	.1373
BCONTEX1	-.1304	.1115	-.0047	-.0776	-.1384	-.1966	-.2160
BPROPS1	1.0000	.3449**	.1556	.2615*	-.1194	.2074	.0630
BRELATE1	.3449**	1.0000	.1010	.1062	-.0902	-.0492	-.0296
MAPPEAR1	.1556	.1010	1.0000	.0342	-.1121	.1307	.0025
MBEHAVE1	.2615*	.1062	.0342	1.0000	.2681*	.5205**	.6813**
MCONTEX1	-.1194	-.0902	-.1121	.2681*	1.0000	.0736	.2419
MPROPS1	.2074	-.0492	.1307	.5205**	.0736	1.0000	.4431**
MRELATE1	.0630	-.0296	.0025	.6813**	.2419	.4431**	1.0000

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

Table A-2
Correlation Matrix for Cognitive Content Variables, T2 with T2

	FAPPEAR2	FBEHAVE2	FCONTEX2	FPROPS2	FRELATE2	BAPPEAR2	BBEHAVE2	BCONTEX2
FAPPEAR2	1.0000	-.0398	.2689*	-.0852	-.1169	.2531	.2067	.0128
FBEHAVE2	-.0398	1.0000	.2205	.1324	.3756**	.0980	-.0523	.1037
FCONTEX2	.2689*	.2205	1.0000	.3001*	.2920*	.1242	.1196	-.0047
FPROPS2	-.0852	.1324	.3001*	1.0000	.3426**	-.1042	-.0111	.1016
FRELATE2	-.1169	.3756**	.2920*	.3426**	1.0000	-.0880	.0233	.0692
BAPPEAR2	.2531	.0980	.1242	-.1042	-.0880	1.0000	-.1392	-.0984
BBEHAVE2	.2067	-.0523	.1196	-.0111	.0233	-.1392	1.0000	.1300
BCONTEX2	.0128	.1037	-.0047	.1016	.0692	-.0984	.1300	1.0000
BPROPS2	.1362	.1954	.1195	.2367	.1618	-.0817	.1436	.1988
BRELATE2	-.0392	.0547	.1145	.2007	.3758**	-.0173	.1305	.1282
MAPPEAR2	.0309	.0042	.0521	-.0406	.0269	-.0607	.0284	.1862
MBEHAVE2	.1937	.2084	.2259	.1494	.3634**	-.1375	.1536	.2198
MCONTEX2	-.0538	.0489	-.0069	.1864	-.0033	.0935	.1175	.1721
MPROPS2	-.0362	-.0281	.1713	.1173	.0280	.0548	.2048	.0561
MRELATE2	.0115	.0305	.0693	.0942	.0904	-.1360	.2408	.1492

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

	BPROPS2	BRELATE2	MAPPEAR2	MBEHAVE2	MCONTEX2	MPROPS2	MRELATE2
FAPPEAR2	.1362	-.0392	.0309	.1937	-.0538	-.0362	.0115
FBEHAVE2	.1954	.0547	.0042	.2084	.0489	-.0281	.0305
FCONTEX2	.1195	.1145	.0521	.2259	-.0069	.1713	.0693
FPROPS2	.2367	.2007	-.0406	.1494	.1864	.1173	.0942
FRELATE2	.1618	.3758**	.0269	.3634**	-.0033	.0280	.0904
BAPPEAR2	-.0817	-.0173	-.0607	-.1375	.0935	.0548	-.1360
BBEHAVE2	.1436	.1305	.0284	.1536	.1175	.2048	.2408
BCONTEX2	.1988	.1282	.1862	.2198	.1721	.0561	.1492
BPROPS2	1.0000	.1643	-.2434	.1759	-.1786	.0562	.1505
BRELATE2	.1643	1.0000	.0516	.1643	.0255	-.2088	.0079
MAPPEAR2	-.2434	.0516	1.0000	.1197	-.0512	-.0242	.2394
MBEHAVE2	.1759	.1643	.1197	1.0000	-.0656	.2311	.2838*
MCONTEX2	-.1786	.0255	-.0512	-.0656	1.0000	-.0936	-.0555
MPROPS2	.0562	-.2088	-.0242	.2311	-.0936	1.0000	.5464**
MRELATE2	.1505	.0079	.2394	.2838*	-.0555	.5464**	1.0000

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

Table A-3
Correlation Matrix for Affect Variables, T1 with T1

	FPOSAFF1	FANX1	FHOSTIL1	FAVOID1	BPOSAFF1	BANX1	BHOSTIL1	BAVOID1
FPOSAFF1	1.0000	.0410	-.3397**	-.2237	.2409	.1366	.0974	-.0454
FANX1	.0410	1.0000	-.1160	.1464	-.0893	.4079**	.2279	.0451
FHOSTIL1	-.3397**	-.1160	1.0000	.2220	-.1248	-.0185	.0710	-.0286
FAVOID1	-.2237	.1464	.2220	1.0000	.0528	.1585	-.0554	.0682
BPOSAFF1	.2409	-.0893	-.1248	.0528	1.0000	-.0370	-.3634**	-.5595**
BANX1	.1366	.4079**	-.0185	.1585	-.0370	1.0000	.3704**	.1130
BHOSTIL1	.0974	.2279	.0710	-.0554	-.3634**	.3704**	1.0000	.1434
BAVOID1	-.0454	.0451	-.0286	.0682	-.5595**	.1130	.1434	1.0000
MPOSAFF1	.1845	-.2480	.1279	.0351	.1836	-.1730	-.1229	-.0383
MANX1	-.0162	.2515	.1704	.1357	-.2429	.2971*	.1640	.2302
MHOSTIL1	-.0268	.1870	.0396	.1470	.0170	.2113	.1282	-.1091
MAVOID1	-.1298	.0509	.0866	.1445	-.1582	.2496	.0634	.2094
MINTEG1	.0422	.0320	.1583	.1448	-.2130	.0932	-.0246	.1804
* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)								
	MPOSAFF1	MANX1	MHOSTIL1	MAVOID1	MINTEG1			
FPOSAFF1	.1845	-.0162	-.0268	-.1298	.0422			
FANX1	-.2480	.2515	.1870	.0509	.0320			
FHOSTIL1	.1279	.1704	.0396	.0866	.1583			
FAVOID1	.0351	.1357	.1470	.1445	.1448			
BPOSAFF1	.1836	-.2429	.0170	-.1582	-.2130			
BANX1	-.1730	.2971*	.2113	.2496	.0932			
BHOSTIL1	-.1229	.1640	.1282	.0634	-.0246			
BAVOID1	-.0383	.2302	-.1091	.2094	.1804			
MPOSAFF1	1.0000	-.3570**	-.2601*	-.4199**	-.1325			
MANX1	-.3570**	1.0000	.2025	.2416	.4691**			
MHOSTIL1	-.2601*	.2025	1.0000	-.1080	.1659			
MAVOID1	-.4199**	.2416	-.1080	1.0000	.0690			
MINTEG1	-.1325	.4691**	.1659	.0690	1.0000			
* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)								

Table A-4
Correlation Matrix for Affect Variables. T2 with T2

	FPOSAFF2	FANX2	FHOSTIL2	FAVOID2	BPOSAFF2	BANX2	BHOSTIL2	BAVOID2
FPOSAFF2	1.0000	.2985*	.0275	-.2878*	.3234*	.2073	.1033	-.2826*
FANX2	.2985*	1.0000	.1366	-.0697	.1017	.4201**	.1476	-.2050
FHOSTIL2	.0275	.1366	1.0000	.1089	-.1580	.0018	.0888	-.1529
FAVOID2	-.2878*	-.0697	.1089	1.0000	-.3369**	-.1143	-.1375	.2625*
BPOSAFF2	.3234*	.1017	-.1580	-.3369**	1.0000	.1145	-.1968	-.2501
BANX2	.2073	.4201**	.0018	-.1143	.1145	1.0000	.3000*	.1238
BHOSTIL2	.1033	.1476	.0888	-.1375	-.1968	.3000*	1.0000	-.1987
BAVOID2	-.2826*	-.2050	-.1529	.2625*	-.2501	.1238	-.1987	1.0000
MPOSAFF2	.1133	.1509	-.0042	-.0565	.1016	-.0697	.0535	-.2195
MANX2	-.0609	.0163	.0050	-.0008	.0700	.2770*	-.0140	.0616
MHOSTIL2	.1263	.0868	-.0056	-.1236	-.0234	.4253**	.3053*	.0039
MAVOID2	-.0511	-.0752	-.0596	.0882	-.1072	.1552	-.0901	.3539**
MINTEG2	.2270	.2978*	.1173	-.0509	.1376	.1020	.0286	-.1254

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

	MPOSAFF2	MANX2	MHOSTIL2	MAVOID2	MINTEG2
FPOSAFF2	.1133	-.0609	.1263	-.0511	.2270
FANX2	.1509	.0163	.0868	-.0752	.2978*
FHOSTIL2	-.0042	.0050	-.0056	-.0596	.1173
FAVOID2	-.0565	-.0008	-.1236	.0882	-.0509
BPOSAFF2	.1016	.0700	-.0234	-.1072	.1376
BANX2	-.0697	.2770*	.4253**	.1552	.1020
BHOSTIL2	.0535	-.0140	.3053*	-.0901	.0286
BAVOID2	-.2195	.0616	.0039	.3539**	-.1254
MPOSAFF2	1.0000	-.2017	-.0907	-.6926**	.4943**
MANX2	-.2017	1.0000	.2582*	.0569	.1541
MHOSTIL2	-.0907	.2582*	1.0000	.0097	.1420
MAVOID2	-.6926**	.0569	.0097	1.0000	-.4139**
MINTEG2	.4943**	.1541	.1420	-.4139**	1.0000

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

Table A-5
Correlation Matrix for Cognitive Content Variables. T1 with T2

	FAPPEAR2	FBEHAVE2	FCONTEX2	FPROPS2	FRELATE2	BAPPEAR2	BBEHAVE2	BCONTEX2
FAPPEAR1	.5081**	.0147	.2179	-.1511	-.1137	.2539	.1296	.0584
FBEHAVE1	-.1124	-.0170	.1252	.4075**	.0697	-.0506	.0186	-.0645
FCONTEX1	.0880	-.0036	.4041**	.0160	.1169	-.1273	.0654	.1954
FPROPS1	-.0974	-.0583	.0645	.5410**	.1184	-.0953	-.1030	.0307
FRELATE1	.0572	.0527	.2647*	.4235**	.2511	-.0915	-.0960	-.0300
BAPPEAR1	.3660**	-.0514	.1523	-.1171	-.0092	.4279**	.1556	.2411
BBEHAVE1	.2750*	.0213	.3662**	.2355	.0477	.1012	.3446**	-.1354
BCONTEX1	-.1025	-.0233	-.0499	-.1394	-.0070	.0817	-.1075	-.0880
BPROPS1	-.0554	-.0893	-.0337	.3875**	.3393**	-.1705	-.0226	-.0057
BRELATE1	.0099	-.0959	.1777	.0633	.3028*	-.1388	.0665	.0300
MAPPEAR1	.1438	-.1717	.0391	-.0051	.0409	.1207	.0982	-.0217
MBEHAVE1	-.0131	.0376	.0890	.3267*	.1853	-.1697	-.0340	.1491
MCONTEX1	.0988	-.0416	-.0561	.0284	-.1201	.0151	-.1937	-.0683
MPROPS1	.0571	.2431	.1295	.2328	.2072	-.1605	.0528	.3008*
MRELATE1	.0977	.1716	.1740	.1858	.1646	-.1385	.0917	.1957

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

	BPROPS2	BRELATE2	MAPPEAR2	MBEHAVE2	MCONTEX2	MPROPS2	MRELATE2
FAPPEAR1	-.0814	-.0642	.0089	.1958	-.1409	.0632	.0767
FBEHAVE1	-.0136	.1101	.0684	-.0627	.0156	-.0205	-.0370
FCONTEX1	-.0062	-.0873	-.1222	.4034**	-.0780	.3641**	.2640*
FPROPS1	.2555	.1977	-.0384	.0041	.1219	.0857	.2196
FRELATE1	.1009	.0844	.0418	.3071*	.0983	.0832	-.0112
BAPPEAR1	.0161	-.0898	.2248	.1238	.0263	.0998	.1878
BBEHAVE1	.1479	.0380	-.1002	.1255	-.0530	.2930*	.1282
BCONTEX1	-.0948	.1279	.0147	-.0108	-.0725	.0197	.0301
BPROPS1	.2256	.1724	-.1666	.1070	.1433	-.1359	.0104
BRELATE1	.3249*	.3909**	.0214	.1165	-.0041	-.3190*	-.0631
MAPPEAR1	.0686	.0155	.0830	-.0036	-.1043	.1238	-.1386
MBEHAVE1	.0318	.0247	.0850	.4572**	-.0436	.1561	.2702*
MCONTEX1	.0784	-.0740	-.1798	-.0005	-.0780	-.0751	-.1361
MPROPS1	.1572	-.0408	.0850	.4425**	.0384	.3283*	.3747**
MRELATE1	.0153	-.0572	.1555	.2964*	-.1285	.3442**	.5077**

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

Table A-6
Correlation Matrix for Affect Variables. T1 with T2

	FPOS AFF2	FANX2	FHOSTIL2	FAVOID2	BPOS AFF2	BANX2	BHOSTIL2	BAVOID2
FPOS AFF1	.3974**	.1304	-.2391	-.0588	.2101	.0867	-.1535	-.0572
FANX1	.2332	.1230	.1371	-.0956	-.2406	.2309	.1861	.1123
FHOSTIL1	-.1407	-.0243	.4344**	-.0060	-.1352	-.2923*	.1137	-.0129
FAVOID1	-.0996	-.0512	.3064*	-.0535	-.0150	.1243	.0037	.2812*
BPOS AFF1	.1664	.0625	.0391	-.1126	.2726*	-.0293	-.0688	-.1840
BANX1	.2115	.1489	-.1766	-.0361	.0000	.3959**	.0646	.3070*
BHOSTIL1	.0186	.0140	-.0466	-.1734	-.1657	.0807	.3219*	-.0882
BAVOID1	-.0546	.0165	-.1368	.1398	-.0294	.2933*	.2335	.3129*
MPOS AFF1	.0515	-.0158	.1004	.0519	.1716	-.0228	-.0043	-.0894
MANX1	-.0774	-.0141	-.0385	.0346	-.1732	.1264	-.1086	.1775
MHOSTIL1	.1988	.1540	.1652	-.2593*	-.0007	.1887	-.0025	-.1420
MAVOID1	-.1988	-.0792	-.0644	.2660*	-.0778	.1407	.1439	.3163*
MINTEG1	.0708	-.0060	.0483	.0373	-.0166	-.1200	-.2729*	.0845

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

	MPOS AFF2	MANX2	MHOSTIL2	MAVOID2	MINTEG2
FPOS AFF1	.1731	-.0221	-.0051	-.0630	.1127
FANX1	.0377	-.1706	.1977	.0210	.1064
FHOSTIL1	.0232	.1116	-.0022	-.1362	.1566
FAVOID1	-.1532	.1342	.1764	.0844	.1397
BPOS AFF1	.2249	.0656	.0842	-.1617	.0672
BANX1	-.1796	.0522	.2731*	.2820*	-.0850
BHOSTIL1	-.2324	.0197	.1356	.0422	-.0648
BAVOID1	-.0993	.0674	.0577	.1156	.0494
MPOS AFF1	.3466**	-.0193	-.0984	-.2528	.2272
MANX1	-.1550	.2928*	.1921	.2321	.0751
MHOSTIL1	-.0279	.0086	.1902	.0466	.0864
MAVOID1	-.3815**	.1968	-.0151	.4052**	-.1732
MINTEG1	-.0063	.1584	-.1298	.0798	.1670

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

Table A-7

Correlation Matrix for Cognitive Content Variables with Affect Variables. T2

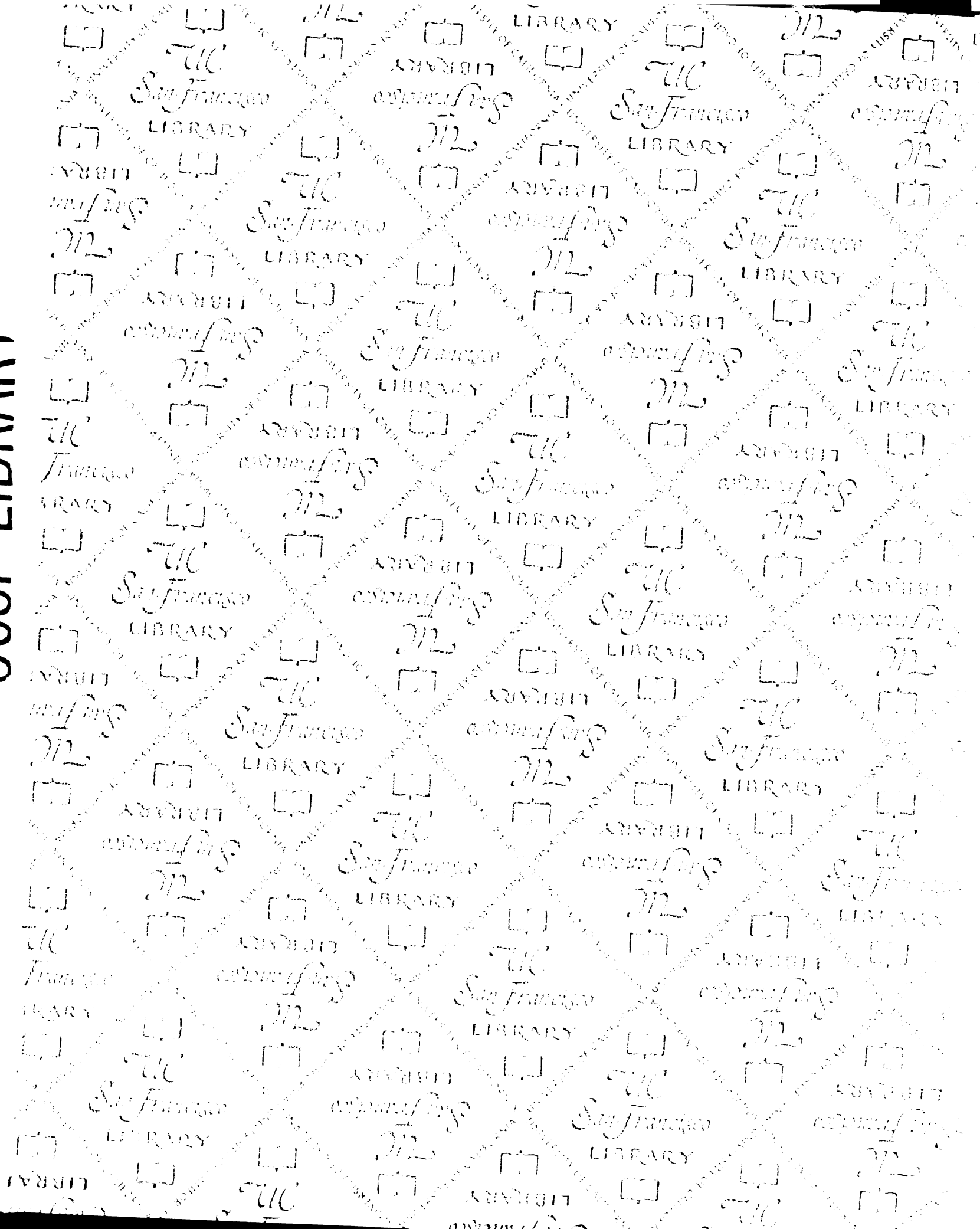
	FPOSAFF2	FANX2	FHOSTIL2	FAVOID2	BPOSAFF2	BANX2	BHOSTIL2	BAVOID2
FAPPEAR2	-.0871	.2538	-.0290	-.2567*	.3602**	.1122	.0704	-.2433
FBEHAVE2	.0845	.0969	.0895	-.1217	.0513	.3621**	.1980	-.1014
FCONTEX2	.2270	.4443**	-.0181	-.0936	-.0025	.3002*	.1905	-.2238
FPROPS2	.6113**	.1017	-.0642	-.2688*	.2105	.1724	.0640	-.2166
FRELATE2	.3606**	.0620	.0691	-.0397	-.0051	-.0049	.1647	-.2927*
BAPPEAR2	-.1057	.0929	.1433	-.1625	-.0341	.1477	.3305*	-.3083*
BBEHAVE2	.0819	.2797*	.1692	-.0931	.0210	.0119	.1929	-.1984
BCONTEX2	.0981	-.0647	.0349	.0377	.1201	-.0013	-.0130	-.1664
BPROPS2	.2648*	.1549	-.0014	-.2070	.4167**	-.0857	.0645	-.3996**
BRELATE2	.2078	.0360	.1261	-.1838	-.0340	.0048	.0730	-.1017
MAPPEAR2	-.0149	-.0043	-.1452	-.0949	.1234	-.0236	-.1758	.0725
MBEHAVE2	.2521	.2812*	.0105	-.0715	.0002	.2681*	.0992	-.1376
MCONTEX2	-.0944	-.0712	-.0483	.1421	-.0700	.1486	.1571	.1747
MPROPS2	.2530	.1253	-.0190	-.0393	-.0573	.0429	.2093	-.1784
MRELATE2	.2142	.2523	-.0413	-.0210	.1386	-.0563	-.1740	-.2826*

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

	MPOSAFF2	MANX2	MHOSTIL2	MAVOID2	MINTEG2
FAPPEAR2	.1130	.1648	-.0901	-.0707	.1903
FBEHAVE2	-.1823	.1182	.3336**	.1688	-.0605
FCONTEX2	.2404	-.0912	.0379	.0569	.1972
FPROPS2	.0788	-.0440	-.1159	-.0274	.2141
FRELATE2	.0793	-.1188	.0997	-.0674	.1036
BAPPEAR2	.0863	.0944	.0915	-.1130	.0788
BBEHAVE2	.1003	-.0537	-.0533	-.0682	-.0763
BCONTEX2	.0445	.1726	-.2015	.0453	-.1185
BPROPS2	.1707	-.1090	-.1073	-.1403	.1061
BRELATE2	-.0789	-.1626	-.2304	-.0094	-.1426
MAPPEAR2	.0361	-.0600	.1338	.0105	.1180
MBEHAVE2	.1170	.2423	.1852	-.0320	.4513**
MCONTEX2	-.0865	.0475	-.0232	.1603	-.1204
MPROPS2	.4509**	.1898	.1698	-.4247**	.4208**
MRELATE2	.2879*	.1430	.0916	-.2964*	.2939*

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

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