PSYCHOLOGICAL PREPARATION FOR MOTHERHOOD AND ITS ASSOCIATION WITH POSTPARTUM OUTCOMES

by

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A DISSERTATION

Presented to the Department of Psychology
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy

June 2008

University of Oregon Graduate School

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Title:

"Psychological Preparation for Motherhood and its Association with Postpartum Outcomes"

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June 14, 2008

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An Abstract of the Dissertation of

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in the Department of Psychology to be taken June 2008

Title: PSYCHOLOGICAL PREPARATON FOR MOTHERHOOD AND ITS ASSOCIATION WITH POSTPARTUM OUTCOMES

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Although nearly two million U.S. women will give birth for the first time during the year 2008, surprisingly little is known about the process by which women prepare psychologically for this life transition or what impact this process has on postpartum outcomes. Understanding how women do and do not prepare psychologically for first-time motherhood should be an important scientific endeavor given the normative nature of this transition and the potential risk that may accrue to mother and child if this process is problematic. This dissertation sought to develop the construct of psychological preparation for motherhood and to investigate its role in predicting postpartum outcomes in first-time mothers, specifically women's mental health as new mothers and their infants' development.

Psychological preparation for motherhood was conceptualized as the process by which a first-time expectant woman begins to form representations of 1) herself as a

mother, 2) her unborn child, and 3) her relationship with that child once it is born. It was hypothesized that these three types of representations and, specifically, the degree and flexibility of these representations would differentiate women whose psychological preparation for motherhood was subsequently adaptive and maladaptive. The overarching aim of this work was to test this tripartite conceptualization of psychological preparation for motherhood by investigating the psychometric properties of an interview developed by the author (Transition to Motherhood Interview). The reliability and validity of this instrument, including the relations between preparation variables and other prenatal risk indices, are discussed. Results demonstrated that particular components of women's prenatal representations predicted postpartum outcomes. In particular, the flexibility of a woman's prenatal representation of her infant predicted 1) change in maternal depression across the transition to motherhood and 2) individual differences in infant developmental level at 5 months postpartum. Women who evidenced less flexible prenatal representations of their infants tended to show increases in maternal depression across the transition to motherhood and tended to have infants with lower mental development scores at 5 months postpartum. The implications of these findings for screening and intervention development as well as future directions in psychological preparation research are considered.

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ACKNOWLEDGMENTS

I would like to thank Jennifer Ablow and Jeffrey Measelle for their assistance and support throughout all stages of this project. In addition, I would like to acknowledge the members of the Developmental Sociobiology Lab at the University of Oregon and the women and children who participated in the From Pregnancy to Parenting Your First Baby Project.

This research was supported by the Beverly Fagot Dissertation Fellowship, as well as several awards to the Principle Investigator of the From Pregnancy to Parenting Your First Baby Project (Jennifer Ablow, Ph.D.), including: the Associate Dean of Natural Sciences Discretionary Funds Award (University of Oregon), the National Institutes of Mental Health 1 R03 MH068692-01A1, the Oregon Community Credit Union Fellowship, and the National Science Foundation, BCS-Social Psychology Program award.

For my husband, whose immense patience throughout this process has not gone unnoticed.

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CHAPTER I

INTRODUCTION

The Transition to Motherhood

The transition to motherhood is, for many women, a profound and exciting time. However, along with the joy that can accompany this life change comes a great deal of vulnerability. During the prenatal and postpartum periods, women are at increased risk for a variety of mental health problems that result directly from motherhood, including depression, anxiety, and anger/frustration (O'Hara & Swain, 1996). Additionally, difficulty with the transition to motherhood places women at-risk for developing non-optimal relationships with their infants, which could have implications for their children's mental health for many years to come (Greenberg, 1999).

The U.S. Census projects that nearly 2 million women will give birth for the first time in the year 2008. Given the extent of this number, and the documented risks associated with this transition, one might expect there would be a vast literature focused on the variables that predict difficulty in the transition to motherhood. To the contrary, the factors that predict the quality of this transition have received strikingly little research attention. In particular, very little research has been conducted on the process that women go through psychologically to prepare themselves for motherhood. This gap, both theoretical and empirical, limits our capacity to develop scientifically-informed methods of intervention for women during the prenatal period in particular. A search of the

literature suggests that, outside of standard prenatal healthcare checkups, essentially no empirically validated approaches have been developed to help women prepare psychologically for motherhood. This is surprising given that prenatal interventions (e.g., home visitation) have already been shown to make contributions to the well being of the mother-infant dyad (e.g., lower levels of abuse and neglect) above and beyond the contributions of neonatal intervention (Honig & Morin, 2001). Although *all* women might benefit from some level of assistance with this process, it is high-risk women for whom interventions designed to support and enhance psychological preparation for motherhood might be most advantageous. In particular, individuals with other known prenatal vulnerabilities (e.g., history of psychopathology, limited social support, limited financial resources) may, because of the co-occurrence of a variety of risk factors, evidence lower levels of psychological preparation for motherhood or problematic patterns of preparation (e.g., inaccurate expectations about motherhood). This risk will be compounded by the fact that this is also a population that is less likely to receive adequate care and support during the transition to motherhood (Mikhail, 1999). Given that the transition to motherhood is known to be a vulnerable period of change and that intervening during this time period may have important benefits, it is imperative that research be focused on understanding how women prepare psychologically for motherhood and the ways in which variability in this process may place women at-risk.

Psychological Preparation for Motherhood

The idea of psychological preparation for motherhood received initial theoretical attention in the nursing literature several decades ago. Nursing theorist Reva Rubin

argued that the physical changes associated with pregnancy push women to face the fact that they will soon become a mother (Rubin, 1975). Rubin discussed the concept of prenatal fantasy, which refers to the process of imagining oneself as a mother and envisioning one's future child. Her work provided preliminary evidence that an increased level of mental rehearsal for motherhood was correlated with more positive outcomes for labor, delivery, and measures of parenting in the first days of life (Mercer, 1995). The few empirical studies that have followed this work have echoed the validity of this concept by 1) demonstrating that first-time expectant women do engage in psychological processes preparing themselves for motherhood and 2) beginning to show that there are individual differences in these processes that are related to postpartum outcomes.

Qualitative work has extended Rubin's conceptualization and provided additional description of the normative psychological processes women undertake during the transition to motherhood. In one example, Smith (1999) used interview and diary techniques to chronicle first-time expectant women's experiences of pregnancy. By asking participants to record and report on their state of mind at multiple points throughout their pregnancy, he found that women undertook a revision of their self-concept to include ideas and images of themselves as mothers. In particular, he highlighted the fact that pregnancy is a time during which there can be substantial change in self-concept and drew particular attention to the role that significant others (e.g., family members, partner) seem to play in women's descriptions of their shift towards imagining themselves in the maternal role. This work emphasizes what may be a critical component in the process of preparing for motherhood: the idea that talking to significant

others about the transition may facilitate a woman's preparation and, specifically, her progress in imagining herself as a mother. For example, a woman may spend time talking with family and friends about her pregnancy, the arrival of the infant, and what becoming a mother will be like. In addition, she may gather information about others' experiences related to this transition and to parenting. Information from others might help to inform a woman's developing expectations and ideas about motherhood.

There is a small body of work that has examined women's prenatal attitudes and expectations about motherhood, which complements the qualitative descriptions of prenatal psychological processes discussed above. While not tapping psychological preparation directly, this work does speak to individual variability in prenatal thinking about motherhood (e.g., attitudes, expectations) and provides beginning evidence for the possible utility of examining how individual differences in these processes predict to postpartum outcomes. In one such example, Coleman , Nelson, and Sundre (1999) utilized a questionnaire-based approach to evaluate individual differences in women's expectations for motherhood. Using the Prenatal Maternal Expectations Scale (PMES; Coleman et al., 1999), Coleman and colleagues assessed women's expectations about the impact that motherhood would have on their lives as well as their sense of the type of mother they hoped to be. They found that scores on this measure predicted postpartum attitudes about the infant and the woman's role as a mother. In particular, women who had more negatively oriented expectations (e.g., expectations that the arrival of the infant would have a notable negative impact on life areas such as the woman's relationship with her partner and her friends, as well as negative expectations related to her enjoyment of

parenting) about the transition to motherhood tended to have more negative postpartum attitudes, related both to their parenting and their experience of being a mother.

Like Coleman et al. (1999), Hart and McMahon (2006) and Deave (2005) used self-report measures to investigate individual differences in prenatal attitudes. Hart and McMahon examined the degree to which prenatal attitudes were related to concurrent symptomatology. They found that women who had higher levels of anxious symptomatology tended to be more negative in their attitude towards becoming a mother. Unfortunately, prediction to postpartum outcomes was not examined. However, this study highlights that a conceptualization of psychological preparation must consider the extent to which this construct is related to known prenatal risk variables. Deave (2005) examined associations between prenatal maternal expectations and postpartum infant development. Specifically, Deave found that women who expected that becoming a mother would result in significant life changes tended to have infants with higher cognitive development scores at 2 years of age. This study is important and unique in that it provides evidence for relations between prenatal attitudes and later infant outcomes. Deave does not provide hypotheses about possible mechanisms behind this effect. However, it seems reasonable to postulate that women's prenatal attitudes may be related to subsequent maternal behaviors (e.g., maternal sensitivity), which could mediate the relation between prenatal thinking and subsequent child development.

It is important to note that, in the majority of the psychological preparation literature to date (e.g., Smith, 1999; Coleman et al., 1999; Hart & McMahon, 2006) investigators have utilized community samples. The fact that individual differences in

psychological preparation for motherhood have been demonstrated in these populations and that these differences have been linked with postpartum outcomes raises the possibility that individual variation in psychological preparation might be more pronounced in samples with higher levels of contextual risk.

Researchers have also examined particular representational processes during the transition to motherhood, focusing primarily on the representations that a woman creates of herself as a mother and of the infant that she is expecting (Ammaniti et al., 1992; Vizziello et al., 1993). Vizziello et al. (1993) examined content themes in first-time expectant women's speech during a task in which women were asked to discuss their pregnancy, their image of themselves as a mother, and anticipated life changes during the transition to motherhood. While Vizziello and colleagues (1993) documented patterns in the content of the representations (e.g., fear at particular points during pregnancy), this work was limited in that they did not formally examine the associations between the content of the representation and postpartum outcome. However, it provided an initial demonstration that these two important representations, that of self as mother and of the infant, are operating during the transition to motherhood.

Ammaniti et al. (1992) used a similar task to examine prenatal representations of motherhood (that of self as a mother and of the infant). However, unlike Vizziello et al. (1993), the coding was focused on particular aspects of the quality of the representation (e.g., the degree of detail in the woman's descriptions), rather than content. Ammaniti and colleagues investigated the extent to which aspects of representational quality were correlated in the two representations examined. They found significant positive

correlations, indicating similar processes occurring in a woman's representation of herself as a mother and in her representation of her infant. They suggest that, in the latter stages of pregnancy, women appear to have representations of both themselves in the maternal role and of the infants that they are expecting. Therefore, their work leads one to hypothesize that it is the quality of these representations that may be critical to postpartum outcome, given that the existence of these representations appears to be ubiquitous. This work did not examine individual differences in these representational processes or the association between these processes and postpartum outcome. However, based on individual case studies, Ammaniti has speculated that these prenatal representational processes are related to postpartum outcome, particularly the security of the attachment relationship (Ammaniti, 1991; Ammaniti, 1994).

Benoit, Parker, and Zeanah (1997) focused specifically on women's prenatal representations of their infants. They classified women's representations of their infants into three, mutually exclusive categories, based on characteristics such as the valence of their descriptions and the degree to which their expectations about the infant's characteristics appeared to be realistic. Their results demonstrated that 1) there was significant stability in women's representational category across the pre- to postnatal period and 2) women's prenatal representations of their infants were predictive of attachment security at 12 months postpartum. With respect to stability, Benoit and colleagues reported that pre- and postnatal representational classifications were concordant in 80% of the sample, suggesting that such concordance is typical in the transition to motherhood.

This literature has taken a critical first step in demonstrating that psychological preparation for motherhood is a normative psychological process during the transition to first-time motherhood that has associations with postpartum outcome. However, there are numerous aspects of this process that remain to be investigated. First, there has been insufficient attention to variations in the extent to which each distinct representation is formed during the process of psychological preparation for motherhood. For example, Ammaniti et al. (1992) examined two important representations that women create during pregnancy: that of themselves as a mother and that of their infant. However, this work did not examine individual differences in these representations or their possible unique implications for postpartum outcome. For example, there may be variability in the degree of detail in a woman's representation of her infant, which could have implications for postpartum adjustment. Smith (1999), Coleman et al. (1999), Deave (2005), and Hart and McMahon (2006) all focused on components of the representation a woman creates of herself as a mother (e.g., expectations and attitudes about motherhood), but focus less so on the representation of her child. In addition, the existing psychological preparation literature has not devoted significant attention to the relationship the primiparous woman imagines that she will have with her child. The current psychological preparation literature has also paid limited attention to the particular features of a woman's prenatal representations that may be important to postpartum outcome, including the flexibility of these representations and particular qualities of a woman's representation of her infant (e.g., a lack of individuation between self and infant). Ammaniti et al. (1992) began this process, but did not examine individual differences in these aspects of representational

quality or the importance of these aspects for predicting postpartum outcomes. In addition, the strategies that have been used to measure psychological preparation for motherhood have been limited in their consideration of how prenatal representations coexist and interact in a woman's psychological preparation for motherhood. Because the three representations that are proposed to comprise a woman's preparation (representation of herself as a mother, representation of infant, and representation of future relationship with child) have not been examined together, using a measurement strategy in which they can be distinguished from one another, it is not yet known how each aspect predicts to postpartum outcome and whether particular aspects predict to unique outcomes. Because of this limitation, the predictive validity of psychological preparation for motherhood has not been fully explored. In particular, it is critical to determine how psychological preparation for motherhood relates to other known prenatal risk factors (e.g., prenatal symptomatology) and whether this construct can provide unique information about a woman's level of risk during the transition to motherhood.

Psychological Preparation for Motherhood: Current Study

Based on the literature discussed above, I hypothesize that three aspects (a woman's ***representation of herself as a mother***, her ***representation of her infant***, and her ***representation of her future relationship with that child***) of a woman's psychological process during pregnancy are important and distinct indicators of her psychological preparation for motherhood. In addition, I hypothesize that there are particular measurable components of these representations that are prospectively linked with postpartum adjustment. In particular, I hypothesize that the *extent* to which an

expectant woman has developed representations of motherhood will predict postpartum outcomes, with individuals with more developed representations evidencing more optimal outcomes. In this study, *extent* is conceptualized as the degree to which a woman appears to have clear ideas about the type of mother that she would like to be (extent of representation of self as mother), the anticipated characteristics of her child (extent of representation of infant), and the type of relationship she would like to have with that child (extent of representation of future relationship).

In addition to the measure of the extent to which an expectant woman has developed representations of motherhood, I hypothesize, based on the research discussed, that there are other characteristics of these representations that will provide important information about a woman's psychological preparation for motherhood. In particular, I hypothesize that the *flexibility* of these representations and the *individuation* between self and infant evident in the woman's representation of her infant will be important indicators of psychological preparation. Each of these characteristics is described below.

The dimension of *flexibility* reflects the extent to which a woman's representations of motherhood recognize that certain aspects of the endeavor are necessarily unpredictable (e.g., situational factors that arise postnatally, infant temperament), and, thus, that early preconceptions and expectations may need to change once an infant is born. Ammaniti et al. (1992) addressed this representational aspect, which he called openness to change. However, in his work this aspect was conceptualized as the extent to which representations were open to change throughout pregnancy, rather than during the postpartum period. Although a certain amount of psychological

preparation for motherhood is necessary, rigid prenatal representations may predispose some women to respond non-optimally to their infants.

Flexibility has also been discussed more broadly in the cognitive literature. Specifically, researchers have examined the degree of flexibility versus rigidity in both behavior and attitudes and have examined how variability in flexibility is related to concurrent cognitive, personality, and demographic variables (e.g., Egan, Piek, Dyck, & Rees, 2007; Ferrari & Mautz, 1997; Panek, Partlo, & Romine, 1993). In addition, there is work demonstrating that flexibility (e.g., flexible approaches to coping) is predictive of positive adjustment when faced with stressful circumstances (e.g., Cheng & Cheung, 2005; Qouta, El-Sarraj, & Punamaki, 2001). The broader research examining mental flexibility and rigidity establishes flexibility as a valid measure of cognitive process and suggests that inflexible attitudes and behavior may have negative implications for adjustment.

For the purposes of this work, representational flexibility is conceptualized as a woman's *prenatal* awareness of and preparation for the possibility that her expectations about the reality of this transition may not be borne out. In particular, representational flexibility reflects the recognition that there are a variety of variables that will contribute to the match between a woman's prenatal representations and postpartum experience, including the actual characteristics of the infant and unanticipated difficulties that may arise after the infant's arrival (e.g., difficulty breastfeeding), which may require the woman to adjust the representations she developed during the prenatal period.

A second characteristic or property of these representations worth pursuing is the extent to which a woman conceptualizes her developing fetus as a person that is fundamentally distinct from herself (i.e. *individuation* between self and infant). The idea that expectant women form representations in which the infant becomes individuated from themselves has been presented by a variety of authors (e.g., Ammaniti et al., 1992; Cohen & Slade, 2000). This work has identified variability in the extent that women appear to differentiate between themselves and their infants in their prenatal representations but has not examined the impact of this variability on postpartum outcome. In previous work, women rated highly on individuation have provided descriptions of their infants' characteristics that were unrelated to their descriptions of their own personality, while women rated low on individuation presented overlapping descriptions of themselves and their infant (e.g., descriptions of infant were very similar to their description of their own characteristics). Constructs that are conceptually related to individuation have been assessed postnatally, using both interview and observational measures (e.g., Meins, Fernyhough Fradley, & Tuckey, 2001; Zeanah & Benoit, 1995). In particular, Meins and colleagues (e.g., Meins et al., 2001) have examined the extent to which mothers, during a mother-infant interaction paradigm, attribute an independent mental state to their preverbal infants (i.e. maternal mind-mindedness) and found it to be predictive of both subsequent relationship quality (i.e. infant attachment classification) and theory of mind development. Despite the apparent importance of this related construct for early development, there has been limited examination of individuation prenatally and virtually no examination of its associations with postpartum outcomes. In

the current study, individuation is conceptualized as the degree to which a woman describes the child she is expecting as an individual, who she expects to have characteristics, thoughts, and feelings that are distinct from her own.

The Role of Additional Prenatal Risk Factors

Although little is known about the implications of psychological preparation for motherhood, there is ample evidence that other aspects of women's functioning during the prenatal period are important predictors of postpartum outcomes (Beck, 2001; Porter & Hsu, 2003; Hesse, 1999; Goldstein, Diener, & Mangelsdorf, 1996; Fowles, 1996). Measures of expectant women's psychosocial adjustment (e.g., symptomatology, life stress, social support) have been shown to predict postpartum maternal adjustment and mother-infant interaction (e.g. Goldstein et al., 1996; Beck, 2001). For example, Goldstein et al. (1996) found that women's prenatal levels of anxiety were associated with their postnatal expressiveness with their infant, such that women who were more anxious during pregnancy tended to be less expressive with their infants. Building on the links between prenatal anxiety and postnatal maternal behavior, Huffman and colleagues (Huffman, Kerivan, Ablow, & Feldman, 2001) found that women high on trait anxiety evidenced dysregulated levels of arousal when observing and listening to an unfamiliar infant cry. In addition, a meta-analysis by Beck (2001) demonstrated that both prenatal symptomatology and low levels of prenatal social support predicted maternal adjustment problems during the postpartum period (i.e. depression). Also of note are the documented relations between measures of socioeconomic status and postpartum outcomes, including maternal depression, mother-infant interaction, and infant cognitive development (e.g.,

Normand, Baillargeon, & Brosseau, 2007; Roopnarine, Fouts, Lamb, & Lewis-Elligan, 2005; Campbell & Cohn, 1991). Together, this work suggests that prenatal maternal adjustment and socioeconomic status are critical risk factors predicting the quality of the transition to motherhood.

The associations between particular psychosocial characteristics and women's psychological preparation for motherhood have not been examined to date. However, it is reasonable to hypothesize that psychosocial risk may impact individuals' ability to engage in psychological preparation for motherhood or affect the quality of this preparation (e.g., depression may predispose individuals to have more negative expectations about the transition to motherhood). As such, it is important to examine psychological preparation together with other psychosocial factors, to understand the relative contributions of each to risk during the transition to motherhood.

In sum, examining the associations between known prenatal risk factors and heretofore unexplored aspects of the psychological preparation for motherhood will help to foster a clearer picture of the processes that shape the transition to motherhood. In the work proposed, I will use Kraemer, Stice, Kazdin, Offord, and Kupfer's (2001) guidelines for multiple risk factor research. In particular, I will consider various conceptual models (e.g., risk factors independently impacting outcome, one risk factor mediating the impact of another risk factor) for how risk factors may be combining to affect risk in the transition to motherhood. This framework will guide the examination of the relative contributions of both the known risk factors and the aspects of psychological

preparation to postpartum outcomes, and begin to delineate how these factors may work in concert to predict optimal versus non-optimal postpartum adjustment.

Preliminary Work

Preliminary work in this area (McDade, 2004) involved global coding of psychological preparation for motherhood based on first-time expectant women's responses to a portion of the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996). This work demonstrated that psychological preparation for motherhood can be coded reliably from interview responses and echoed previous work (e.g., Coleman et al., 1999) in showing that individual differences in psychological preparation for motherhood do exist. Specifically, there was variability in the extent to which women had developed ideas about the type of mother that they wanted to be, as well as the extent to which they appeared to have adjusted to the approaching arrival of the infant. However, this work was limited in that the AAI is not explicitly designed to assess psychological preparation for motherhood. Given this, transcripts were given global ratings of psychological preparation and were not rated on specific prenatal representations (e.g., of self as a mother and of infant). This limited my ability to understand whether distinct representational processes may comprise psychological preparation and to determine how these individual processes predict particular postpartum outcomes. In addition, this work was limited by the sample utilized. Because the sample was low-risk, the variability in psychological preparation was more restricted than I would expect in a high-risk sample. In addition, the level of other prenatal risk factors (e.g., risk for parenting problems, depression, low social support) was modest to inconsequential, which made it difficult to

determine how psychological preparation for motherhood might relate to these constructs. Though psychological preparation is hypothesized to be a normative process, it is important that it is also examined in high-risk samples, in which multiple vulnerabilities may be operating, to facilitate our understanding of how individual differences in psychological preparation may function in the context of other variables as a risk factor for problematic postpartum outcomes.

Contributions of the Current Study

The current study is a step toward understanding a life transition that millions of American women progress through each year. Through examining this conceptualization of psychological preparation for motherhood and its relations to other prenatal risk factors, the work proposed here will contribute to understanding the etiology of maladaptive adjustment during the transition to motherhood.

The specific aims of the study are as follows:

Aim #1

To test the reliability of the coding of the tripartite conceptualization of psychological preparation for motherhood and the degree of overlap among representational variables. This will include an examination of the reliability of the coding of each aspect of the three representations under study: 1) *representation of self as a mother* (coded variables: presence of representation, extent of representation, and flexibility of representation), 2) *representation of infant* (coded variables: presence of representation, extent of representation, flexibility of representation and individuation between self and infant), and 3) *representation of future relationship with child* (coded

variables: presence of representation, extent of representation, and flexibility of representation). In addition, the intercorrelations among these variables will be examined, to determine the extent to which representational components are interrelated.

Hypothesis 1.1

Variables indexing the three representations involved in psychological preparation for motherhood will be reliably measured using the Transition to Motherhood Interview. Specifically, it is hypothesized that acceptable levels of inter-rater reliability will be achieved for all Transition to Motherhood Interview variables.

Hypothesis 1.2

Patterns of intercorrelation among the representational domains and principal component factor analytic results will provide psychometric support for the proposed tripartite conceptualization of psychological preparation for motherhood. Specifically, it is hypothesized that factor analytic results will support a 3-factor solution for the Transition to Motherhood Interview variables, with variables from each representation clustering together (e.g., presence, extent, and flexibility of representation of self as mother will comprise one factor).

Aim #2

To test the discriminant validity of the proposed conceptualization of psychological preparation for motherhood.

Hypothesis 2.1

Demographic variables (age, maternal education, household income, ethnicity, marital status, and plannedness of pregnancy) will *not be associated* with psychological preparation for motherhood.

Hypothesis 2.2

Psychological preparation for motherhood will have concurrent psychological correlates. Specifically, prenatal mental health will be correlated with dimensions of the Transition to Motherhood Interview. Women who evidence higher levels of symptomatology (anxiety, depression) will likely show lower levels of psychological preparation for motherhood (e.g., less developed representations). However, it is hypothesized that these constructs will only partially overlap, such that psychological preparation for motherhood will provide unique information about a woman's state of mind during the prenatal period. Associations with other known prenatal risk variables (stressful life events, social support) will also be examined. However, this examination is exploratory in nature and, as such, no specific hypotheses are offered.

Aim #3

To test the predictive validity of the psychological preparation for motherhood construct by examining its prospective links with a panel of postpartum outcomes, including maternal mental health and infant developmental progress.

Hypothesis 3.1

Women who, during the prenatal period, evidence more developed representations of motherhood will manifest (a) lower levels of psychological

symptomatology and parenting stress and will have (b) infants who are more advanced with respect to mental and motor development at 5 months of age.

Hypothesis 3.2

Women who, during the prenatal period, evidence higher levels of flexibility in their representations of impending motherhood will manifest (a) lower levels of psychological symptomatology and parenting stress and will have (b) infants who are more advanced with respect to mental and motor development at 5 months of age.

CHAPTER II

METHOD

Overview

The current study utilizes data from the From Pregnancy to Parenting Your First Baby Project (FPP), a prospective, longitudinal study examining the impact of psychological and psychobiological factors on the transition to motherhood, early parent-child interaction, and infants' cognitive and socioemotional development. The sample comprises 107 women, recruited during pregnancy from social service agencies and hospital tours in Eugene, OR.

Sample

Participants were recruited during their third trimester of pregnancy with their first child. To insure a sample at-risk for parenting problems, women included in the study met criteria for two out of three risk factors known to be associated with problematic parenting: low socioeconomic status, risk for problematic parenting, and/or current depressive symptoms. Women who indicated interest in the project were contacted and screened over the phone. Those who met criteria were scheduled for a laboratory session. The first of two planned assessments took place during the third trimester of pregnancy. This was followed by a postnatal assessment, which included both the women and their infants, and occurred at 5 months postpartum. The participants' mean age at the prenatal assessment was 24.0 years. A majority of the sample is

Caucasian (80.4%), unmarried (58.9%), and has a household income of less than 20K per year (56.1%). Approximately one third of the sample reported their highest level of education as a high school diploma or less (36.4%), with an additional 43% completing some college. One fifth (20.6%) of the sample received a college degree. Sample attrition from Time 1 to Time 2 was less than 10% (n=7).

Measures

Time 1 (Prenatal)

Psychological Preparation for Motherhood

In order to assess psychological preparation for motherhood, participants were administered the **Transition to Motherhood Interview** (TMI; McDade, 2004, see Appendix A), which was developed for this study by the author. The goal of the TMI is to assess a primiparous woman's psychological preparation for motherhood. The interview takes approximately 10 minutes to administer and is semi-structured, such that each individual is asked the relevant stem questions, followed by structured probes for each question that are based on the content of the participant's response (**Example Stem**: Now I am wondering if you could tell me how much you have talked about becoming a mother with your partner and/or family and friends? **Structured Probe**: What types of things have you talked about?). Individuals are asked directly about their sense of their preparation for motherhood and their anticipated strengths and weaknesses as mothers. In addition, they are asked to describe their impressions of their unborn child. Development of the TMI was informed by 1) my own preliminary work in this area, 2) examination of themes in the existing psychological preparation literature (e.g., the documentation in the

previous literature that women develop representations, during the prenatal period, of themselves in the maternal role and of their infants), and 3) examination of the Working Model of the Child Interview (Zeanah & Benoit, 1995), which was designed to assess parents' representations of their infants and children across development. Two of the questions stem from the Working Model of the Child Interview but were modified to be appropriate to the prenatal time point (questions noted in Appendix A).

Responses to the interview were recorded and transcribed verbatim. Each transcript was then reviewed by a second individual, to insure transcription accuracy. Transcripts were coded using a system developed for this project by the author (description follows). One-third (n=33) of the transcripts were double-coded to assess inter-rater reliability. The original coding system included the rating of three representational characteristics (presence of representation, extent of representation, and flexibility of representation), which were outlined for the three hypothesized prenatal representations. In addition, a variable unique to the representation of infant (individuation) was outlined, for a total of ten variables tapping various components of a woman's psychological preparation for motherhood. The primary variables for each representation are listed below. A more detailed description of the system, including text examples, is provided later in this section.

1. Presence of representation: a binary rating of whether a representation appears to exist.
2. Extent of representation: the extent to which this representation is developed, rated on a 5-point, Likert-type scale.

3. Flexibility of representation: the degree to which the representation appears to be amenable to alteration based on the reality of the postnatal experience, rated on a 5-point, Likert-type scale.
4. Individuation in representation of infant: the degree to which the speaker appears to have a representation of her infant as an individual, distinct from herself, rated on a 5-point, Likert-type scale.

Given that this was the first application of this coding scheme, the system remained under development throughout the coder training process and several alterations were made during this progression. These changes were largely based on the fact that the interview content was developed prior to the tripartite coding conceptualization. As such, it became apparent as the training progressed that the interview did not probe sufficiently for certain aspects of the representations outlined. In particular, there was insufficient information to inform reliable ratings of the representation of future relationship. Most likely this was due to the fact that women were not asked explicitly about this relationship, whereas they were asked directly about both motherhood and their infant. Given this, the degree to which a woman discussed her future relationship with her child was not systematic and, as such, the coders did not have confidence that the rating was reflecting the underlying psychological process of interest. Therefore, the decision was made to remove the representation of future relationship variables from the coding system. The modification of the interview to address this concern will be considered in the Discussion.

An additional alteration to the coding system relates to the presence of representation variable. As the coding system was developed further, it appeared that this variable was lacking theoretical and practical utility. In particular, as additional literature was reviewed (e.g., Ammaniti et al., 1992), it became apparent that there was sufficient evidence to support the assertion that the process of developing prenatal representations is universal. This would suggest that the distinction of whether or not the representation exists is not the central question, as all women appear to possess these representations to some degree. As such, presence of representation was not coded.

The final coding scheme was as follows:

For representation of self as a mother, two variables were coded:

1) Representation of self as mother: Coders rated 1) the extent to which this representation was developed (*extent of representation)*, on a 5-point Likert-type scale ranging from 1 (not at all developed) to 5 (fully developed) and 2) the flexibility of this representation (*flexibility of representation)*, ranging from 1 (completely inflexible) to 5 (very flexible to alterations based on the reality of motherhood). Ratings of the extent of representation were based on the number and quality (e.g., extent of detail) of statements that an individual made about themselves as a mother, the degree to which they referenced having talked to family, friends, or their partner about becoming a mother, and their verbal assessment (i.e. response to the question "how mentally and emotionally prepared do you think you are for becoming a mother?") of their own level of psychological preparation. In contrast, flexibility was coded by examining the extent to which the woman's representation of herself as a mother appeared to be conditional upon,

or open to revision based upon, the day-to-day realities that would confront her after the birth of her baby (e.g., having an infant that didn't conform to the mother's desired schedule or pulled for a particular caregiving pattern due to a difficult temperament). For example, women who received high ratings of flexibility tended to make statements about the other factors that might contribute to the reality of motherhood or, in responding to a specific probe about their sense of mental and emotional preparation, reference the fact that it is impossible to be prepared for all of the challenges that might arise during the transition to motherhood.

2) Representation of infant: Coders again rated the extent of representation and the flexibility of representation. In addition, a third variable, individuation, was coded. This variable reflected the individuation between self and infant that was present in the individual's representation, ranging from 1 (representation of infant cannot be distinguished from representation of self) to 5 (representation of infant is completely distinct from representation of self). Similar to ratings of extent of representation of self as a mother, ratings of the extent of representation of infant were based on the number and quality of statements that an individual made about the anticipated characteristics of her infant. Ratings of flexibility were based on the extent to which the woman tempered her impressions of her infant with the understanding that she could not know with certainty what her infant would be like. Finally, ratings of individuation were based on the statements that did or did not convey the impression that a woman saw her infant as an individual. Examples ranged from those indicating excitement about meeting the infant and learning what they were like (indicative of high levels of individuation) to

statements indicating either hesitation about being separated from the infant upon birth or describing a belief that the unborn infant was nearly identical to the mother in personality or other characteristics (both indicative of low individuation).

For purposes of illustration, several text examples are presented below. Given that all variables were coded as the accumulation of many statements across the transcript, these excerpts should be interpreted cautiously. However, they do provide examples of some "gold standard" statements for the poles of each variable scale.

Representation of Self as Mother

> **High Extent:** {{participant's response to questions pertaining to greatest weakness and greatest strength as a mother}} " My greatest weakness—I think it might be—maybe being, I don't know. Like not, like if she doesn't feel like doing certain things. Being able to accept that…knowing the line of encouragement versus pushing and stuff. Biggest strength—I hope that my biggest strength will be to let her know that she's loved…And, and cared about. I know that is something that I can really do. And to let her feel safe."
>
> **Low Extent:** {{participant's response to "what kind of things do you talk about" with regard to becoming a mother}} " Umm—how it's going pretty much. Everybody asks me. And it's just like the feelings and stuff that you—I mean you don't, you never felt it before so it's so crazy. It's like ohh and my aunt's, umm, she's like oh, wait till you get little flutters and all this stuff. And when you feel him it's just, it's cool, it's amazing."
>
> **High Flexibility:** "Um, well a lot of times…we talk about like the pregnancy and how it's going and, like specific details about—baby things I guess…I wanna feel like it's, like I've planned for everything. But I know that I haven't. I don't think that I could every really be prepared. Cause it's something I've never experienced before."
>
> **Low Flexibility:** "[We talk about], like—what, kind of like, ideas I have about parenting… Umm like how to handle what happens and, I think I've always had it in my like, you know, each year they get to stay up a half an hour later and you know I've wanted to be a mom since I was little so I'm gonna have this all planned out. You know? My only problem was getting the baby when I wanted it."

Representation of Infant

> **High Extent:** " I think that he's pretty active. And, um, that he's kind of gonna do what he wants to do. Regardless of—what I think he should be doing. I sort of think that he'll be somewhat laid back. Kind of mellow, just cause both of us are."
>
> **Low Extent: "**I think she's gonna be a great little girl. She's just perfect the way she is. That's the only impression I have."
>
> **High Flexibility:** "Um, I think that he'll probably be, um, pretty outgoing…I think that he'll be a snuggler…I don't really expect—I am not expecting any certain thing out of him like I'll—which I think is a good way to go about it, is not to expect some, you know, precious darling little thing that will never, you know never do any wrong…"
>
> **Low Flexibility:** "Yeah, I think she'll be, um, very happy…I think that she will be very happy, very outgoing…very well grounded. She will be one of those people that she just leaves an impression on you. She just has a good spirit, a good attitude about things most of the time."
>
> **High Individuation:** "She, she can sit here and kick and kick and kick and do whatever she wants and all it's, Name-1, you need to stop, you need to be good. She won't listen to me and as soon as she hears her dad's voice, she's calm, she's like, okay whatever, dad said to be good so now I have to be good."
>
> **Low Individuation:** "I feel like she'll be like me. If it, I don't know if I just want her to be…I definitely like visualize her being more of a little clone of me."

Prenatal Adjustment

To assess prenatal adjustment, participants completed the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) and the Center for Epidemiologic Studies-Depression Scale (Radloff, 1977). Social support and recent stressful life events were also assessed, using an abbreviated version of the Perceived Support Scale (Procidano & Heller, 1983) and the Psychiatric Epidemiologic Research Inventory (Dohrenwend et al., 1986), respectively. Details about the measure length, content, and reliability and validity are as follows:

The Beck Anxiety Inventory (BAI) is a 21-item self-report scale in which respondents are asked to indicate the frequency of anxiety symptoms (e.g., unable to relax, fear of the worst happening) during the previous week, on a 4-point Likert-type scale ranging from 0 (not at all) to 3 (severely, I could barely stand it). Higher scores indicate higher levels of anxious symptomatology. The psychometric properties of the BAI, including internal consistency and construct and discriminant validity, have been demonstrated on a variety of samples (e.g., Beck et al., 1988; Fydrick, Dowdall, & Chambless, 1992). In addition, this instrument has been used in previous work to examine anxiety symptoms during the transition to motherhood (e.g., Wenzel, Haugen, Jackson, & Brendle, 2005).

The Center for Epidemiologic Studies- Depression Scale (CES-D) is a 20-item self-report scale in which respondents are asked to indicate the frequency of depressive symptoms during the previous week (e.g., I was bothered by things that don't usually bother me, I felt that I could not shake off the blues even with help from family and friends), on a 4-point Likert-type scale ranging from 0 (rarely or none of the time) to 3 (most or all of the time). Higher scores indicate higher levels of depressive symptomatology. The reliability and validity of the CES-D have been demonstrated and the instrument has been used in previous work to measure depressive symptomatology in women during the prenatal and postpartum periods (e.g., Besser & Priel, 2003; Pancer, Pratt, Hunsberger, & Gallant, 2000).

The abbreviated version of the Perceived Support Scale utilized with this sample contains 19-items probing various components of social support from friends and family

(e.g., There is a member of my family I could go to if I were feeling down without feeling funny about it later; My friends give me the moral support I need). For each question, participants answer "yes", "no", or "I don't know". Higher scores indicate higher levels of perceived social support. The reliability and validity of this scale have been demonstrated in several samples, with varying demographics (e.g., Lyons, Perrotta, & Hancher-Kvam, 1988; Procidano & Heller, 1983). The abbreviated version used here had acceptable internal consistency (α= .84) in the current sample.

The Psychiatric Epidemiologic Research Inventory is a 68-item checklist in which respondents indicate whether the life events listed have occurred during the previous 2 years. Items include events in a variety of areas of an individual's life, including events related to social relationships (e.g., getting married or divorced), finances (e.g., change in income), and occupation and school (e.g., changing jobs). The marked events are summed to determine a total score indicating the number of recent stressful life events that the individual has experienced. The reliability and validity of this instrument have been demonstrated (Dohrenwend et al., 1986) and the instrument has been used in previous work (e.g., Kiecolt-Glaser, Kennedy, Malkoff, Fisher, Speicher, & Glaser, 1988) to measure the frequency of stressful life events.

Time 2 (5 months Postnatal)

Postnatal Adjustment

Two components of postnatal adjustment were examined: maternal mental health and parenting stress.

1) Maternal Mental Health: This construct was assessed using the same measures of current symptomatology as at the prenatal time point.

2) Parenting Stress: This construct was assessed using the Parenting Stress Index- Short Form (Abidin, 1997), a widely used measure of parenting stress that has established reliability and validity and has been utilized to evaluate parenting stress in the parents of young infants (e.g., Essex, Klein, Cho, & Kalin, 2002). The measure includes 36-items. Ratings are made on a Likert-type scale, ranging from 1 (strongly agree) to 5 (strongly disagree). For the purposes of this study, the Total Stress summary score was utilized. This score reflects the overall level of stress in the parent-child dyad.

Infant Development

Infant cognitive and motor development were assessed using the Bayley Scales of Infant Development, 2nd Edition (BSID-II, Bayley, 1993). The Bayley is a standardized developmental assessment, which yields standard scores that describe a child's mental and motor development compared to same-aged peers. For the age range tested in this sample, the Bayley takes approximately 15 minutes to administer and combines a series of activities completed with the infant on the floor and seated at a table on its caregiver's lap.

Data Analysis Plan

Data Verification and Screening

All questionnaire and coding forms were screened for missing data. Questionnaire data were optically scanned; coding and questionnaire data were entered twice, and discrepancies were identified and corrected. Prior to analyses, all variables were checked

for out-of-range values and frequency distributions and plots were examined for unusual data distributions or data points.

Analysis of Aim 1

Correlational and principal component factor analytic techniques (PCA) were used to examine the reliability of the coding of psychological preparation for motherhood and the factor structure of the psychological preparation construct. First, inter-rater reliability was evaluated using intraclass correlations. Second, correlations between each component of psychological preparation (i.e. extent of representation of self as mother, flexibility of representation of self as mother, etc.) were computed as initial indices of distinctiveness. Finally, PCA was used to examine the dimensionality of psychological preparation for motherhood.

Analysis of Aim 2

Correlational and ANOVA techniques were used to evaluate the discriminant validity of the psychological preparation construct. Correlations between coded aspects of psychological preparation for motherhood and possible psychological correlates (symptomatology, life stress, social support, and continuous demographic variables (e.g., maternal education, age, household income)) were computed. In addition, ANOVA techniques were used to evaluate differences in psychological preparation in relation to categorical demographic variables (e.g., ethnicity, marital status, plannedness of pregnancy).

Analysis of Aim 3

Correlational techniques were used to examine relations between aspects of psychological preparation for motherhood and postpartum outcomes. Then, linear regression models were used to test the predictive validity of the psychological preparation for motherhood construct. Models were run to examine the effects of each coded aspect of psychological preparation for motherhood on postpartum outcomes. Next, linear regression models tested the utility of psychological preparation for motherhood in predicting postpartum maternal adjustment, when combined with prenatal levels of the outcome variable of interest. This allowed for the determination of the unique predictive utility of psychological preparation in predicting change in adjustment across the transition to motherhood.

CHAPTER III

RESULTS

Aim 1: Descriptive Characteristics of Psychological Preparation

The first aim of this study was to examine 1) the inter-rater reliability of the Transition to Motherhood Interview (TMI) representational variables and 2) the descriptive characteristics of these variables and their intercorrelations. First, intraclass correlations were calculated to determine inter-rater reliability for the five TMI representational variables (*extent* and *flexibility* of representation of self as mother, *extent* and *flexibility* of representation of infant, *individuation* between self and infant). Results revealed strong inter-rater reliability for both flexibility of representation variables and moderate inter-rater reliability for the extent of representation variables (Table 1). In contrast, the inter-rater reliability for the individuation variable was low (ICC = .358). Given this, individuation was not included in subsequent analyses.

Table 1
Inter-rater intraclass correlations for TMI representational variables.

	ICC (95% CI)
Mother	
Flexibility	.794*** (.58 - .90)
Extent	.672** (.34 - .84)
Infant	
Flexibility	.840*** (.68 - .92)
Extent	.641** (.27 - .82)
Individuation	.358 (-.30 - .68)

* p< .10, ** p < .05, *** p < .001

Analyses were then completed to examine the level of independence of the four TMI representational variables. First, Pearson correlation coefficients were calculated to determine their degree of association. Results are presented in Table 2. The pattern of intercorrelations suggested some overlap across the representational domains but these correlations were all small to moderate in size (range: .039-.345). There was a significant correlation between the two extent variables, $r(106) = .345$, $p < .001$, such that individuals who had more developed representations of themselves as mothers also tended to have a more developed representations of their infants. Interestingly, there was also a significant negative correlation between infant extent and infant flexibility, $r(106) = -.309$, $p < .001$, such that women who had more developed representations of their infant also tended to have representations of their infants that were less flexible. The opposite was true for the mother extent and flexibility variables: women with more developed representations of themselves as mothers tended to be more flexible in their representations, $r(106) = .196$, $p < .05$. Finally, there was a small but significant correlation between infant extent and mother flexibility, $r(106) = .207$, $p < .05$, such that women who had more developed representations of their infants also tended to have more flexible representations of themselves as mothers.

Next, a Cronbach's alpha was calculated to determine the degree of internal consistency among the TMI representational variables. The alpha value ($\alpha = .350$) was indicative of limited internal consistency amongst the four scales. Finally, a principal components analysis (PCA) with varimax rotation was run to test for the possibility that the four TMI variables might overlap in unanticipated ways. Results are presented in

Table 3. The PCA yielded a two-factor solution that accounted for 69% of the overall variance in the four TMI scales. Although the component factor loadings provided

Table 2
Correlations among TMI representational variables.

	1	2	3
Mother			
1 Flexibility	--		
2 Extent	.196**	--	
Infant			
3 Flexibility	.157	.039	--
4 Extent	.207**	.345***	-.309***

* p < .10, ** p < .05, *** p < .001

Table 3
TMI representational variables principal components analysis.

	Component 1 Rotated Factor Loadings	Component 2 Rotated Factor Loadings
Mother		
Flexibility	.718	.285
Extent	.743	-.109
Infant		
Flexibility	.146	.893
Extent	.609	-.626
%Variance Explained	38.165	30.411
Eigenvalue	1.527	1.216

some evidence for separable mother representation and infant representation factors, the crossloadings were too high to justify such a solution. On the whole, these analyses point to the relative lack of association among the four TMI variables. Consequently, the decision was made to proceed with subsequent analyses using each of the four representational scales as separate variables.

Descriptive statistics for the TMI representational variables are presented in Table 4. The full range of possible ratings (1-5) was used in the coding for all variables, with the exception of infant flexibility, for which only ratings 2-5 were utilized. Measures of central tendency for all variables clustered around 3, with the exception of the mode score for mother extent (mode= 2). These descriptive statistics indicate that, on the whole, the sample was rated in the moderate range on both the extent and flexibility of their prenatal representations. The mode rating for mother extent indicates that there was a notable portion of the sample that had relatively undeveloped representations of themselves as mothers, which may reflect the high-risk population under study.

Table 4
Descriptive statistics for TMI representational variables.

	M (SD)	Median	Mode	Range
Mother				
Flexibility	3.45 (.86)	3	3	1 - 5
Extent	2.80 (.97)	3	2	1 - 5
Infant				
Flexibility	3.09 (.73)	3	3	2 - 5
Extent	2.77 (2.07)	3	3	1 - 5

In sum, results demonstrated adequate inter-rater reliability for four of the five TMI representational variables. Results from the computed correlations, the alpha coefficient, and the principal components analysis suggest overall independence amongst the four scales examined, though some small to moderate intercorrelations were demonstrated. Finally, descriptive statistics indicate that the full-range of ratings was used for all but infant flexibility and that mean levels of all variables centered around the midpoint of the scale.

Aim 2: Discriminant Validity of Psychological Preparation

In Aim 2, the discriminant validity of the psychological preparation construct was examined. The goal of these analyses was to determine the extent to which psychological preparation variables overlapped with demographic variables and known prenatal risk factors, with the ultimate aim of determining whether this construct can provide unique information about risk in the transition to motherhood. First, analyses were conducted to examine the relations between pre- and postnatal variables and demographic variables, specifically women's ethnicity, marital status, age, level of education, household income, and plannedness of pregnancy. The results of these tests are presented in Table 5. Pearson correlations were calculated for the continuous demographic variables (age, level of education, household income) and one-way ANOVAs were completed for the categorical demographic variables (ethnicity, marital status, plannedness of pregnancy). With respect to associations between demographic variables and the four TMI representational variables, the only significant relation that emerged was a small correlation between mother flexibility and maternal education, $r(106) = .225$, $p < .05$, such that individuals

with higher levels of education tended to have more flexible prenatal representations of themselves as mothers. Given the overall lack of association between demographics and TMI representational variables, subsequent analyses did not control for demographic variables. However, taking into account the small correlation between maternal education

Table 5
Relations between pre- and postnatal variables and demographics.

	Demographic Variables					
	Plannedness F(4, 106)	Ethnicity F(6, 106)	Marital Status F(2, 106)	Income (r) n= 107	Education (r) n= 107	Age (r) n= 107
Prenatal						
Mother						
Flexibility	.683	.614	.725	-.094	.225**	-.037
Extent	1.016	.797	1.386	-.057	-.051	-.082
Infant						
Flexibility	1.528	1.812	1.843	.009	-.050	.117
Extent	.283	1.070	1.666	-.042	.166	-.111
Anxiety	.654	7.531***	4.241**	-.063	-.129	-.062
Depression	1.782	5.715***	5.880**	-.084	-.164	-.017
Life Events	.077	1.567	.309	-.011	-.031	.122
Social Support	2.648**	2.950**	.133	-.024	.105	-.061
Postnatal						
Anxiety	.173	2.543**	.802	.058	-.148	-.123
Depression	2.001	1.990*	1.714	.099	-.233**	-.090
Mental Development	.648	1.519	.257	.078	.051	-.102
Motor Development	.524	1.883	1.788	.166	.079	-.142
Parenting Stress	1.646	1.466	.461	.107	.131	.08

* $p < .10$, ** $p < .05$, *** $p < .001$

and mother flexibility, linear regression models examining the impact of psychological preparation on postpartum outcomes were examined both with and without the inclusion of maternal education as a covariate.

Bivariate correlations were then calculated to examine the associations between the four TMI representational variables and known prenatal risk variables (anxiety, depression, social support, life events). Results are presented in Table 6. There was a significant correlation between infant flexibility and prenatal maternal anxiety ($r = -.217$, $p < .05$), such that women with higher prenatal levels of anxiety tended to have less flexible representations of their infants. In addition, there was a significant though small correlation between infant extent and prenatal stressful life events ($r = .194$, $p < .05$), such that women who had a larger number of stressful life events tended to have more developed representations of their infants. This association was unanticipated, but could reflect the possibility that the experience of stress may augment some women's tendency to think about their infant, which may afford them a greater sense of control over the transition. This sense of control may be more critical for women for whom life during the prenatal period is particularly stressful. No other significant correlations emerged from these tests. Given the overall lack of association between the TMI representational variables and other prenatal risk variables, the study's central analyses did not control for possible covariates. The overall limited associations between TMI representational variables and other indices of risk suggest that the TMI variables are providing unique information about women's psychological state during the prenatal period.

Table 6
Intercorrelations among prenatal risk variables.

	Anxiety	Depression	Life Events	Social Support
Mother				
Flexibility	-.123	-.101	.093	.138
Extent	.026	-.147	.188*	-.022
Infant				
Flexibility	-.217**	-.014	-.147	.151
Extent	.104	-.103	.194**	-.072

* $p < .10$, ** $p < .05$, *** $p < .001$

Aim 3: Predictive Validity of Psychological Preparation

The focus of Aim 3 was to examine the utility of psychological preparation for motherhood in predicting postpartum outcomes for both mother and infant. In particular, analyses aimed to investigate the extent to which TMI representational variables were associated with outcomes at 5 months postpartum (maternal anxiety, maternal depression, parenting stress, infant mental development, infant motor development). First, correlations were calculated to document the relations among postnatal outcome variables. The results are presented in Table 7. Overall, the pattern of intercorrelations was consistent with expectations. The exceptions to this were unanticipated negative correlations between parenting stress and both depression ($r(80) = -.484$, $p < .001$) and anxiety ($r(80) = -.472$, $p < .001$), such that individuals with higher levels of parenting stress tended to have lower levels of both depression and anxiety.

Table 7
Intercorrelations among postnatal outcome variables.

	1	2	3	4	5
Anxiety	--				
Depression	.694***	--			
Parenting Stress	-.472***	-.484***	--		
Mental Development	.088	.064	.037	--	
Motor Development	-.093	-.073	.097	.596***	--

* $p < .10$, ** $p < .05$, *** $p < .001$

Next, correlations between TMI representational variables and postpartum outcome variables were examined. Bivariate correlations revealed several significant relations. Results are presented in Table 8. First, both mother flexibility, $r(92) = -.219$, $p < .05$, and infant flexibility, $r(92) = -.320$, $p < .001$, were negatively correlated with maternal depression at 5-months postpartum. In both cases, higher levels of prenatal flexibility were associated with lower levels of depression at 5 months postpartum. Infant flexibility was also associated with 5-month maternal anxiety, $r(92) = -.204$, $p < .05$, such that women who evidenced higher levels of flexibility when discussing their infant had lower levels of anxiety at 5-months postpartum. Finally, infant flexibility was associated with infant mental development at 5 months of age, $r(93) = .222$, $p < .05$, such that individuals who evidenced higher levels of prenatal flexibility had infants with higher mental development scores on the Bayley Scales of Infant Development at 5-months postpartum.

Linear regression models were then used to examine the extent to which the TMI representational variables provided independent and joint prediction of maternal and infant postpartum outcomes. To reduce the chance of Type I error, only those postnatal

variables that emerged as significant correlates in the bivariate analyses were examined further in multivariate regression models. As such, separate regression models were employed to predict maternal anxiety, maternal depression, and infant mental development.

Table 8
Correlations between TMI variables and postpartum outcomes.

	Anxiety	Depression	Parenting Stress	Mental Development	Motor Development
Mother					
Flexibility	-.116	-.219**	.048	-.013	.040
Extent	.041	-.005	-.020	.059	.056
Infant					
Flexibility	-.204**	-.320***	.113	.222**	.114
Extent	.113	.065	-.006	-.050	-.073

* $p < .10$, ** $p < .05$, *** $p < .001$

In a first set of regression models, all four TMI variables were entered simultaneously as main effect predictors. Maternal education was also entered initially as a covariate, but was subsequently dropped given its irrelevance as a predictor in all models. In addition, centered, two-way interaction terms were created using each of the TMI variables. As with maternal education, none of the interaction terms added significant explanatory power to any model, thus the interaction terms were dropped from the final models. Results of these models are presented in Table 9.

First, the four TMI representational variables were entered into a regression model predicting to maternal depression at 5 months postpartum. This model accounted for a significant portion of the variance in 5 month maternal depression, $F(4,92)= 3.441$,

Table 9
Linear regression: TMI variables predicting postpartum outcomes.

	B	SE	β	t
Outcome: Maternal Depression				
Mother				
Flexibility	-1.959	1.099	-.192	-1.783*
Extent	.475	.939	.056	.506
Infant				
Flexibility	-3.263	1.204	-.292	-2.711**
Extent	.011	.905	.001	.012
Outcome: Maternal Anxiety				
Mother				
Flexibility	-.996	.965	-.116	-1.033
Extent	.307	.844	.041	.363
Infant				
Flexibility	-1.566	1.113	-.160	-1.406
Extent	.533	.834	.078	.639
Outcome: Infant Mental Development				
Mother				
Flexibility	-1.259	1.664	-.084	-.756
Extent	.786	1.474	.060	.533
Infant				
Flexibility	4.199	1.960	.246	2.143**
Extent	.282	1.460	.024	.193

* $p < .10$, ** $p < .05$, *** $p < .001$

$p < .05$, $R^2 = .135$. Infant flexibility was the only significant predictor ($\beta = -.292$, $p < .05$). However, mother flexibility was significant at the trend level ($\beta = -.192$, $p = .08$). Next, the same model was run, predicting to maternal anxiety at 5 months postpartum. This model did not account for a significant portion of the variance in 5-month anxiety, $F(4,92) = 1.320$, $p = .27$, $R^2 = .057$. Finally, the model was run predicting to infant mental development at 5 months postpartum. This model did not account for a significant portion of the variance in 5-month infant development scores, $F(4,93) = 1.376$, $p = .25$, $R^2 = .058$. However, flexibility of representation of infant was a significant predictor in this model ($\beta = .246$, $p < .05$).

The regression models presented above provided some evidence for the utility of psychological preparation for motherhood in predicting to postpartum outcomes. Given this, the decision was made to examine whether TMI representational variables were predictive of postpartum outcomes over and above prenatal levels of these constructs. For anxiety and depression, the models to be considered were autoregressive, with the goal of determining whether psychological preparation predicted change in symptomatology across the transition to motherhood. Given that there was no prenatal measurement of infant mental development, this outcome was not tested in these models. Full-models, including all prenatal risk variables (TMI variables, depression, anxiety, social support, and life events) were also examined. However, given that these full models did not reveal differing patterns of association, and that the inclusion of these variables reduced the overall power of the analyses, only the autoregressive models are presented here.

Therefore, to test the above questions, two-step linear regression models were run for 5-month depression and 5-month anxiety as outcome variables. Results from these models are presented in Table 10. In the first set of analyses, a 2-step model was run to examine prediction to postpartum depression at 5 months, with prenatal depression entered in the first step and TMI representational variables entered in the second step. Both steps predicted a significant portion of the variance in maternal depression (Step 1: $F(1,92)= 18.693$, $p < .001$, $R^2= .170$; Final model: $F(5, 92)= 6.997$, $p < .001$, $R^2= .287$) and the addition of the representational variables produced a significant improvement in the model, $F(4,87)= 3.549$, $p < .05$, R^2 change = .116. This suggests that the TMI representational variables predicted change in maternal depression across the transition to motherhood. Prenatal depression and flexibility of representation of infant were both significant predictors of 5-month maternal depression scores (depression: $\beta= .394$, $p < .001$; infant flexibility: $\beta= -.280$, $p < .05$).

Finally, a 2-step model was run to examine prediction to postpartum anxiety, with prenatal anxiety entered in the first step and TMI representational variables added in the second step. The first model, which included only prenatal anxiety, explained a significant portion of the variance, $F(1,92)= 6.851$, $p < .05$, $R^2= .070$. However, the addition of the representational variables did not produce a significant improvement in the model (F change $(4, 87)= .786$, $p= .54$) and reduced the overall significance of the model to the trend level ($F(5,92)= 1.99$, $p= .09$). As such, no information about individual predictors is presented here.

Table 10

Linear regression: models predicting postpartum outcomes.

	B	SE	β	t
Outcome: Maternal Depression				
Prenatal Depression	.446	.104	.394	4.299***
Mother				
Flexibility	-1.532	1.009	-.150	-1.519
Extent	.500	.857	.059	.583
Infant				
Flexibility	-3.132	1.100	-.280	-2.848**
Extent	.243	.828	.031	.294
Outcome: Maternal Anxiety				
Prenatal Anxiety	.240	.114	.222	2.108**
Mother				
Flexibility	-.890	.948	-.104	-.939
Extent	.131	.832	.018	.158
Infant				
Flexibility	-1.115	1.113	-.114	-1.01
Extent	.471	.819	.069	.575

* $p < .10$, ** $p < .05$, *** $p < .001$

CHAPTER IV

DISCUSSION

The overarching goal of this work was to develop the construct of psychological preparation by examining the reliability and validity of the Transition to Motherhood Interview. Overall, the analyses presented here provide preliminary support for the utility of this measurement strategy, as well as for the predictive validity of certain components of the psychological preparation construct. In addition, these results provide direction for future work aimed at revising the Transition to Motherhood Interview and integrating the developing understanding of psychological preparation into screening and intervention for women at-risk for difficulty during the transition to motherhood. A review of the results and their implications for future work is provided below.

The first research question was to examine the extent to which the outlined TMI representational variables could be coded reliably using the coding scheme developed. Before addressing this question, it is critical to discuss the removal of the representation of future relationship variables, as this was the primary substantive modification made to the coding system during its development. As noted earlier, this change was made because, during the coder training process, it became apparent that the interview transcripts did not contain a sufficient amount of information to allow for reliable coding of the variables associated with this construct. It appears that this was largely because, unlike the mother and infant representations, the interview did not include a question that

specifically probed the woman's image of her future relationship with her child. It is important to note that this coding scheme alteration does not reflect a shift in the overall conceptualization of psychological preparation or a belief about the conceptual distinction between this component and the remaining representations. On the contrary, it seems critical to modify the interview in future revisions to probe specifically for this representation (e.g., "What kind of relationship do you imagine having with your child?").

Acceptable levels of inter-rater reliability were demonstrated for the extent and flexibility variables. Despite this, given that this was the first application of this system, it is important to consider how inter-rater reliability could be improved in future work. This is particularly true for the extent variables, for which reliability was moderate. Most significantly, it seems viable to consider a shift from 5-point to 3-point scales for both variable categories (extent and flexibility), as this scale might provide a more accurate match to the depth of information the interview yields. The aim of the TMI was to provide a brief survey of psychological preparation, with the hope that this format would be a step towards the development of a measure that could easily be integrated into a medical, prenatal care screening setting. However, as such, the detail contained within the interview is limited. It appears that this limited format, and the resulting level of detail, may have caused some attenuation of inter-rater reliability, which would likely be improved by narrowing the scales' range.

Inter-rater reliability was not achieved with the individuation variable, which resulted in its exclusion from the analyses. The challenges that were encountered in the

coding of this variable were similar to those described with the representation of future relationship variables. Two measurement possibilities should be considered to address this limitation in future work. First, future work could include an additional question about the infant that would probe specifically for this construct (e.g., "At what point did you start thinking about the baby you are expecting as its own person?). As either an alternative or complimentary measurement strategy, it also would be interesting to look at the degree of concordance between anticipated infant characteristics and the woman's rating of her own personality traits. In this case, individuation could be measured as the degree of concordance versus discordance between these two descriptions. It is possible that these two measurement strategies would tap distinct but related aspects of individuation. The proposed interview question would address the woman's sense of the infant she is expecting as a person (rather than pregnancy as merely a physical state), while the trait concordance approach would assess the degree to which she is conceptualizing the infant as similar to herself. Understanding both of these components could add to the conceptualization and measurement of individuation in future work.

After establishing inter-rater reliability for the four TMI representational variables included in the analyses, the relations among these variables were addressed. The pattern of intercorrelations did not support the original hypothesis, which was that variables within each representation would cluster together (i.e. infant flexibility and extent would form one cluster, mother flexibility and extent would form a second cluster). Rather, there were generally minimal to moderate associations between the representational variables and these associations did not fall solely within representations. There was a

significant, moderate correlation between the two extent variables, suggesting that there may be a common process underlying the extent to which a woman has developed representations of both herself as a mother and of her future infant. Interestingly, however, this was not the case with the flexibility variables, which were not significantly correlated. This suggests that the processes underlying the degree of flexibility in each representation may be distinct. There was a moderate, negative association between infant flexibility and extent, suggesting that women who had more developed representations of their infants tended also to have less flexible representations. To understand this finding, it is critical to return to the definitions of these variables and the impact these may have had on patterns of association. For this study, infant extent was coded as the degree to which a woman had a developed representation of what characteristics her infant might possess. As such, one could argue the logic that individuals who have a highly developed repertoire of anticipated infant characteristics also may be less flexible and open to the possibility that their expectations may be incorrect. It seems that the inclusion of the individuation variable in future work may be important in clarifying the representational processes occurring here. Individuation is conceptualized as the degree to which a woman appears to have a representation of her infant as an individual. Therefore, it will be interesting to determine, in future work, the degree and direction of relatedness between infant flexibility and individuation.

Most substantially, however, it is important to emphasize that the intercorrelations among the TMI representational variables were limited. This suggests that these four

variables represent distinct components of a woman's psychological preparation for motherhood.

Given the time investment inherent in all aspects of using a narrative or interview-based approach to assessing psychological preparation, the possibility of whether the same information could be obtained with a self-report measure warrants attention. The central question here is whether women would be able to report accurately on the identified aspects of representational quality (e.g., flexibility). Though this has not been assessed directly in the psychological preparation literature, other research on narrative versus self-report methodology does speak to this question. In particular, research looking at self-report versus interview-based measures of adult attachment status has demonstrated that there is a notable degree of discordance between these measures, particularly with respect to individuals who received less adaptive ratings (e.g., for whom interview data identified an insecure state of mind with respect to attachment) (e.g., Crowell, Treboux, & Waters, 1999). Given this, it is possible that similar discordance might be observed for women whose TMI responses suggest less adaptive psychological preparation. Using flexibility as an example, most would argue that higher levels of flexibility are more socially desirable. This, in combination with the fact that women may not have an explicit awareness of the rigidity in their thinking, suggests that interview methodology may be central in measuring this construct. That said, examining self-reported psychological preparation in future research would allow for a direct test of this hypothesis. In addition, the possibility that these two types of assessment (self-report and interview) could be used together in a tiered approach to screening and intervention

should also be considered. This is discussed in the consideration of clinical applications below.

After investigating the reliability of measurement and the relations among TMI representational variables, discriminant validity was assessed by examining relations between TMI variables and other known prenatal risk factors. The four TMI representational variables were generally unrelated to other risk variables examined. However, two significant associations did emerge. The small but significant correlation between stressful life events and the extent of a woman's representation of her infant was unanticipated and is challenging to interpret. As stated earlier, this correlation may reflect the possibility that women with higher levels of stress tended to think more about their infant as a means of increasing their sense of control over their situation. However, if this hypothesis were accurate, we also would expect to find a relation between prenatal anxiety and infant extent, which was not the case. As such, this finding awaits replication and more detailed examination in future work.

The second correlation that emerged was between prenatal maternal anxiety and women's flexibility in their representations of their infants. Specifically, women with higher levels of anxiety tended to have less flexible representations of their infants. This finding should be considered in the context of the work by Hart and McMahon (2006), who found associations between prenatal attitudes and concurrent anxiety, in a sample of first-time expectant women. However, in that work, the focus was on attitudes related to motherhood generally, rather than the infant specifically. Returning to the discussion of control noted above, it is interesting to consider whether it is more difficult for women

with higher levels of anxiety to have a flexible outlook about their infant, given that this arguably provides them with the least sense of control over the transition.

Though it is useful to consider the origins of these relations, particularly as they may relate to the overall conceptualization of psychological preparation for motherhood, it must be underscored that the two correlations between TMI representational variables and known risk variables were small. Importantly, this overall lack of association suggests that the psychological preparation construct has the potential to provide unique information about women's prenatal psychological status.

The final research question focused on the prediction to postpartum outcomes. Two primary findings emerged in support of the hypothesis that TMI representational variables are predictive of the quality of the transition to motherhood. First, infant flexibility predicted change in maternal depression across the transition to motherhood. Women who had less flexible prenatal representations of their infants showed greater increases in depression at 5 months postpartum. This finding is particularly salient, given the known impact of maternal depressive symptoms on early infant development. Postpartum depression affects 10-15% of women after giving birth and has demonstrated effects on mother-infant interaction and infant cognitive development, as well as several aspects of behavior, in both infancy and childhood (Grace, Evindar, & Stewart, 2003). The strongest predictor of postpartum depression is depressive symptoms during pregnancy (Robertson, et al., 2004). As such, the fact that infant flexibility predicted 5-month maternal depression above and beyond prenatal depression suggests that this variable warrants further study as a risk indicator for postpartum depression.

One limitation of this finding is that women's overall levels of cognitive flexibility were not assessed. As stated in Chapter I, flexibility has been demonstrated to be a cognitive variable on which individuals vary (e.g., Egan et al., 2007; Ferrari & Mautz, 1997; Panek, Partlo, & Romine, 1993). As such, it is important to consider the specificity of the infant flexibility effect. It is possible that the coding of infant flexibility is tapping women's preexisting levels of cognitive flexibility, rather than flexibility that is associated specifically with their prenatal representation of their infant. It could be argued that the stronger outcome findings for infant versus mother flexibility provide some evidence for specificity. However, this also could be attributed to measurement artifact. As such, it is critical that future work with the TMI include assessment of overall cognitive flexibility, to address this question directly.

In addition, infant flexibility predicted infant mental development scores at 5 months of age, as measured by the Bayley Scales of Infant Development. This finding should be interpreted with some caution given that the overall model was not significant, but it does provide preliminary evidence that this component of psychological preparation may make contributions to both maternal and infant outcomes. In addition, this finding is consistent with past work by Deave (2005), in which women's responses to a variety of self-report questions about the transition to motherhood were examined in relation to child outcome. Deave found that women who reported prenatally that they felt that they knew that there would be a substantial amount of change accompanying the arrival of the infant had infants with higher mental development scores at 2 years of age. While the measurement methods differ, it seems that women's responses to this question

could be similar to infant flexibility as defined in the current study. It seems plausible to imagine that women who expected a good deal of change with the transition to becoming a mother might also be more open minded about the reality that they cannot predict exactly how the transition will progress, and, in the case of infant flexibility, what their infant will be like.

In considering this finding, the limitations of the measure of mental development (Bayley Scales of Infant Development) should be considered. While the measure is a gold standard in infant developmental assessment, its prediction to childhood intellectual functioning is limited (e.g., Hack, Taylor, Drotar, Schluchter, Cartar et al., 2005). As such, it will be important for future research to include other measures of infant cognitive functioning, to assess the replicability of this effect with a variety of indicators of cognitive development. In particular, measures of infant habituation (e.g., looking time tasks) have demonstrated relations with later cognitive development (e.g., Dougherty & Haith, 1997) and should be considered in future research with the TMI.

Despite this limitation, the fact that a similar finding has been demonstrated in both Deave (2005) and the current study suggests that how women are thinking about the transition to motherhood during pregnancy may have implications for their infant's subsequent developmental level. It will be important in future work to focus on understanding the processes that may be mediating or moderating this effect. In particular, given the known impact of maternal behavior on cognitive development (e.g., Lemelin, Tarabulsy, & Provost, 2006), it may be fruitful to investigate whether certain maternal behaviors (e.g., maternal sensitivity) may mediate the relation between prenatal

representations and postpartum infant mental development. Understanding these links would provide a more clear direction for how to use this knowledge to inform intervention with women who may have prenatal representations that are less adaptive for subsequent infant development.

One question that remains is why the flexibility of an individual's representation of herself as a mother did not demonstrate similar predictive relations with postpartum outcomes. Mother flexibility was related to postpartum depression scores at the trend level, but this effect did not persist when prenatal depression scores were entered into the model. Given this trend level effect, however, it appears that it will be important to continue to examine this association in future work. In addition, it will be important to investigate the associations of each flexibility variable with maternal behavior during the postpartum period. It is possible that the infant flexibility variable is tapping a psychological process that has more relevance to a woman's subsequent interaction with her infant than the mother flexibility variable and, as such, is impacting infant mental development.

In interpreting the predictive strength of infant versus mother flexibility, an additional hypothesis is that perhaps discrepancies between prenatal expectations of one's infant and postpartum reality may be more salient to the mother than discrepancies related to the expectations and reality of one's perception of themselves as a mother. An examination of the transcripts rated low on infant flexibility, as well as the noted negative correlation between infant flexibility and extent, suggests that women who had low levels of infant flexibility tended to have prenatal ideas about their infant that were both

concrete and inflexible. Given the likelihood that some of these expectations will be inaccurate, this pattern of prenatal thinking may predispose women to difficulties with adjustment during the transition.

In thinking forward to future work with the TMI and psychological preparation for motherhood, several lines of questioning emerge. The primary goal is to utilize this work to inform the continued development of a measure that can serve as an indicator of non-optimal psychological preparation during the transition to motherhood. Additionally, the aim is to begin to conceptualize how an intervention program might focus on increasing the adaptive components of psychological preparation for motherhood. However, before this goal can be realized, there are additional questions related to the TMI that should be addressed.

The work presented here suggests that, of the TMI representational variables examined, infant flexibility is the most strongly related to postpartum outcomes. Despite this, given the early stage of this work, the continued inclusion of the remaining TMI variables in future work is warranted. In particular, it will be important to carry out some of the methodological suggestions presented here (e.g., shifting to 3-point rating scales), to determine whether improving the measurement reliability of the extent variables might impact their predictive utility. A reexamination with the inclusion of the future relationship and individuation variables also will be an important addition.

Future work with the TMI also should consider how practical components of preparation (e.g., buying supplies for the infant, arranging daycare) might be related to the representational variables addressed here. As written, the interview probes directly for

women's sense of their practical preparation. Developing a coding scheme to measure this component seems an important future direction, both because some level of practical preparation is nearly ubiquitous and because increasing such preparation could be highly amenable to intervention.

Another theme that emerged from the interviews was that, anecdotally, there was a large degree of variation in the proportion of negative to positive descriptors women used in describing both their anticipated characteristics as a mother and their ideas about their infant. Benoit et al. (1995) have included the valence of descriptors in their criteria for classifying parents' representations of their children, but have not examined the impact of this component on outcome. It would be interesting to understand whether descriptors' valence or, perhaps, the balance between positive and negative or neutral descriptors might be related to both prenatal and postpartum adjustment.

Finally, it will be important to devote attention to understanding how the TMI representational variables discussed here are related to mother-infant relationship quality during the postpartum period. In particular, measures such as maternal sensitivity and infant attachment security should be examined.

The results presented here provide initial evidence for the importance of the flexibility of a woman's prenatal representation of her infant in predicting to postpartum maternal mental health and infant developmental progress. If this finding were to be replicated, identifying women who have inflexible representations and developing strategies to increase this flexibility will be an important direction for future research.

First and foremost, the possibility of a tiered intervention approach should be considered. Related to the question of self-report versus interview methodology discussed earlier, it is possible that a brief (e.g., 1-3 question) self-report screening for psychological preparation could be used during a standard prenatal care visit. Women whose scores on this measure placed them at risk could be administered the Transition to Motherhood Interview during their appointment. In thinking about intervention, it seems reasonable to postulate that the participation in the interview may serve as a brief intervention in and of itself. In particular, asking women about their thinking and activities related to the transition to motherhood may begin or enhance women's engagement in thinking about and preparing for the transition. It is possible that for the bulk of women whose initial self-report screening indicated risk related to psychological preparation, the completion of the TMI, in combination with the provision of educational materials (e.g., focused on normative developmental processes, important preparation for the arrival of the infant), would be an adequate level of intervention.

There is likely a subset of women for whom more extensive intervention focused on psychological preparation would be beneficial. It is possible that, after these women were identified through their prenatal care visit, they could engage in a brief (e.g., 6 session) one-on-one or group-based intervention focused on enhancing adaptive aspects of psychological preparation. Considering infant flexibility specifically, it seems that one critical component of such an intervention would be normative education about the multitude of factors that can impact parent-infant interaction and infant behavior in the early postpartum period. In addition, it seems that an intervention might include cognitive

strategies similar to those used in cognitive-behavioral therapy, aimed at reducing the rigidity in an individual's ideas about their infant. Though there is additional work that needs to be completed with the TMI before the focus shifts to intervention research, it is important that the practical applications for both screening and intervention continue to be considered as this instrument is developed further.

This study informs the understanding of psychological preparation for motherhood in several ways. First, while there are modifications that should be made in future work, there is initial evidence that the Transition to Motherhood Interview is a valid and reliable tool for measuring psychological preparation for first-time motherhood. Second, it appears that the representational variables that this interview yields provide information about women's adjustment during the transition to motherhood that is largely independent of other known risk variables. Finally, the flexibility of an individual's representation of their infant appears to have important implications for the quality of the transition. Together, these results can be used to inform future work in this area and, ultimately, add to a body of research that can aid in the development of assessment and intervention for women during the prenatal period.

APPENDIX

TRANSITION TO MOTHERHOOD INTERVIEW

Now I am going to ask you some questions about your experience in the transition to becoming a mother:

1. **First, I am wondering at what point did this pregnancy become real to you?**

   Structured Probe: What do you think caused this shift and what was your response to it?

   (Possible Additional Probes) Feelings about it, change in behavior or way of thinking about things.

2. **Based on your experiences so far with your pregnancy what are your impressions of your baby?** (If the participant needs clarification) What do you sense that your baby might be like?

   Structured Probe: Do you have a sense of whether your baby will be more like your baby's father or like you?

3. **Now I am wondering if you could tell me how much you have talked about becoming a mother with your partner and/or family and friends?**

   Structured Probe: What types of things have you talked about?

4. **How mentally and emotionally prepared do you think you are for becoming a mother?**

Structured Probe: How about how prepared you are on a practical level, so I am thinking of things like being ready for day-to-day life with the baby.

(If the participant needs examples) the baby's schedule, who will care for them…

5. **What do you think will be your greatest weakness as a mother?**
6. **What do you think will be your greatest strength as a mother?**

Note: The underlined portions of question 1 and question 2 are from the Working Model of the Child Interview (Zeanah & Benoit, 1995), but have been modified to be appropriate to the prenatal time point.

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