

## Psychosocial Variables Predict Complicated Birth

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**Abstract:** None available.

**Full Text:** Headnote ABSTRACT: The purpose of this study was to assess the possible contribution of psychosocial factors to birth outcome, through prospective assessment prior to delivery. Four hundred, eighty-six consecutive pregnant women in their first or second trimester were enrolled along with their partners; interviews were conducted with the benefit of physiological monitoring and a variety of psychological measurements. Seven categories of psychosocial variables emerged with stability and reliability. Two psychological factors—fear of birth and support from the woman's partner—most strongly discriminated between the uncomplicated and complicated birth outcome groups. The authors conclude that psychosocial factors do influence birth complications and attention to reducing their impact could potentially improve birth outcome. Obstetrical care providers should no longer ignore these factors.

INTRODUCTION Psychosocial factors, such as stress, anxiety, fear, and lack of social support, may increase obstetrical risk.1 Realistic, accurate social support during pregnancy may facilitate a healthier birth outcome.2 Smilkstein, Helsper-Lucas, Ashworth, Montano and Page<sup>3</sup> have provided the Cycle of Psychosocial Risk Model which conceptualizes the effects of psychosocial factors on prenatal health and disease. In Smilkstein's model, multiple stressors impact upon an individual each day. A response is generated reflecting the individual's cognitive appraisal of the stressor. The 'Tilack box' within which cognitive appraisals are made is the individual's belief system. Beliefs are influenced by many factors, including the person's past experience with similar stressors. Beliefs represent the results of prior learning. Smilkstein notes that the cognitive appraisal process is affected by the person's psychosocial equilibrium at the time the stressor is received and by the number and intensity of other stressors being processed by the person. Once past the point of abortion, pregnancy is an irresolvable stress. After this point of no return, birth and parenthood cannot be prevented, though many women may choose not to conceive or may terminate their pregnancy after conception. Once the decision to keep the pregnancy is made (consciously or unconsciously), adjustment and therefore anxiety is inevitable. Anxiety is inherent in change. Anxiety can be minimal and manageable or can be intense and disruptive. We wondered if women having more social support would suffer less physiological impact from anxiety and therefore experience more uncomplicated labors? Decreasing support for the family in current conditions of urban mobility is increasing the stress of pregnancy and parenthood.2 Today's ambiguity and inherent contradictions in woman's role in society may increase medical risk for childbearing.4 The struggle to integrate career and motherhood can be intense for women whose own mothers served as negative role models. We know that stress affects children. The probability of children's adjustment difficulties rises with the number of family stressors.6 Cumulative family adversity differentiated secure from insecure infants among a sample of 100 low-income families, but only when three or four stressors were present.6 Stressors included parental criminality, maternal depressive symptomatology, maternal personality risk, overcrowding in the home, and the quality of the relationship of the parents with each other. Waters, Vaughn, and Egeland<sup>7</sup> suggest that neonatal difficulties interact with difficult environments to produce anxious attachments and other behavioral problems. But could stress affect the actual physical outcome of birth? Meta-analysis of studies on maternal emotion, stress, and birth outcome<sup>8</sup> does support a relationship between psychosocial variables and birth outcome. The most methodologically acceptable studies show significant links of the emotional state of the expectant mother to habitual abortion, hyperemesis gravidarum, toxemia, deviant infant behavior, and a variety of pregnancy and birth complications. Anxiety was the emotional condition most often studied and most significantly implicated in birth complications. Available

data did not permit any conclusions regarding the nature of the relationship between maternal emotionality and obstetric and reproductive outcome. We also know that non-whites have higher rates of birth complications than whites. Non-whites are more likely to be of lower socioeconomic status and unmarried, both associated with higher pregnancy risk.<sup>9</sup> Therefore, minorities and lower socioeconomic status women may experience more psychosocial stress than their white, middleclass counterparts. Such stress is associated with an increased incidence of pregnancy complications, including low birth weight.<sup>10</sup> They may also experience more anxiety, which a number of studies have shown increases pregnancy complications.<sup>11</sup> Minorities experience more of the stressful life events that have been linked to pregnancy complications.<sup>12</sup> Stressful or anxiety-provoking life events activate the pituitary-adrenocortical axis and the sympathetic-adrenomedullary system, resulting in elevated blood plasma concentrations of the glucocorticoid corticosterone and of the catecholamines norepinephrine and epinephrine.<sup>13</sup> These hormones can reduce uterine blood flow and fetal oxygenation, leading to decreased fetal oxygenation and eventual fetal distress. Minorities typically have higher Life Stress scores. Total life stress score measures alone have been insufficient to differentiate increases in obstetrical complications, premature births or growth retardation,<sup>14</sup> but when changed to ratings of perceived life stress, prediction of obstetrical complications has been possible.<sup>15</sup> If psychosocial support could buffer that stress, better pregnancy outcomes might result. We know that the presence of a supportive lay woman (called a "doula") can reduce the incidence of cesarean birth in some settings, as well as reducing the incidence of meconium staining (a sign of fetal distress).<sup>16</sup> The presence of the doula can reduce the length of labor. Mothers who had a doula during labor may also stroke their babies more, smile more at their babies, and talk more to their babies. Are these effects due to social support and stress reduction? This research aimed to address the question of whether psychosocial factors, including high stress and low social support, contributes to birth complications. We chose to look at uncomplicated versus complicated birth, consistent with the Smilkstein hypothesis that stress and social support would affect a general propensity toward dysfunctional labor, while genetics and environment would logically determine which specific complication appeared. In this view, stress and lack of social support should increase the likelihood of complicated birth, though not necessarily any specific complication. All would theoretically be increased relatively equally.

**METHODS**

**Subjects.** Subjects were recruited for a study on the prediction of obstetrical risk. All subjects who called were accepted. We placed posters in laundromats, day care centers, midwives' offices, obstetricians' offices, and gave fliers to childbirth educators. We encouraged doctors and midwives to make referrals. Subjects received a nominal fee for participating. A total of 486 subjects were available for psychosocial evaluation during their first or second trimesters. Patients who came to attention in the third trimester were excluded due to the lack of sufficient time to conduct a thorough evaluation. Study design and recruitment were approved by our Institutional Review Board. Written, informed consent was obtained for participation from all subjects. Some subjects were also part of the first author's clinical practice. A participation bias existed against poor women and women on public assistance. Despite the nominal reward for participation, virtually no Medicaid funded women or women on other forms of public assistance joined the study. No illegal aliens or uninsured women joined the study.

**Assessment.** A complete medical and psychosocial history was obtained from all subjects, including: (1) Demographic information, (2) Family medical history, (3) Ob/gyn health history, (4) Psychosocial history, (5) Past medical history, and (6) Review of current symptoms. Assessments were reviewed in a research team meeting and discussed until consensus was reached. Research staff consisted of the authors, one clinical psychologist, two clinical psychology post-doctoral fellows, and two clinical psychology graduate students. Several standard, short tests were administered including The Holmes-Rahe Life Stress Inventory (modified for perceived life stress), the Taylor Manifest Anxiety Scale, the Dyadic Adjustment Scale, and the Beck Depression Inventory. All scores were normalized to a 0 to 1 scale. On the Dyadic Adjustment Scale, higher scores meant greater marital satisfaction. The Holmes-Rahe Life Stress Inventory was assessed over the preceding 3 years. Couples were interviewed whenever possible and during that interview, information was

solicited from which an assessment of the couple's shared and separate beliefs, experiences, expectations and affective states was made. Assessment was made of the women's stressors, fears, and social support. Interview questions are available on request. Areas of disagreement between partners were noted. Questions asked were standardized with the interviewer having free reign to probe for more information on any question.

**Evaluation.** We used a qualitative methodology for analyzing interviews. We wanted to see what variables would spontaneously emerge from the data using standard data reduction methods, feeling that these variables would be easiest for clinicians to recognize and assess, since clinicians were doing the data reduction. Initial interviews aimed to establish sufficient rapport with subjects so that feelings, fears, and complaints could be freely expressed. Interviews usually lasted 1 to 2 hours and occurred over 2-5 sessions. Information about the woman's past and current behavior patterns under stress and about her family, partner, work, and her social and religious beliefs was elicited. Questions were asked about her knowledge of the physiological changes of pregnancy and birth. Her prior menstrual history and attitudes were assessed as were family history of pregnancy and birth, pregnancy-related changes in sexual relationships, attitudes toward her pregnant body, attitudes toward the baby and nursing, and general expectations of pregnancy and birth, along with past personal experience of previous pregnancies and births. A standard mental status examination was conducted which included observation of changes in tempo and intensity of verbalizations, slips of the tongue, innuendo, facial expression, vasomotor activity, and tone of voice, particularly in response to specific questions. Physiological monitoring was sometimes included and changes in blood pressure, heart rate, skin conductance, skin temperature and muscle tension were noted when associated with specific subject matter. The interviews represented different experiences to different patients. To most, they gave a much-needed feeling of being an individual in whom others were interested. To a few, the interviews were simply an opportunity to be a part of a study, and to a very small group of women, the interviews provided a threat. Most patients came to regard the interview as a helpful experience—an opportunity to talk about worries and problems. All participants understood that the study had no influence on the woman's medical care and absolute confidentiality was assured. Every effort was made to learn as much as possible about the patients in terms of their psychological functioning, cultural background and life experiences. Data were gathered on their reactions to pregnancy, from the time of their first prenatal visit, as well as before, during and immediately after delivery. Observations of the behavior and emotional reactions of subjects during the interviews were noted by the interviewer. Chart review was done for prenatal medical data and all physical examination findings during the course of pregnancy. Information regarding the course of labor and delivery and any complications encountered were recorded on a standard form by individuals who had no relation to the study or knowledge of the women's psychosocial evaluations.

**Coding Methods.** The techniques of grounded theory<sup>17</sup> were used to code and analyze statements made during the interview. Coding categories had been previously developed and tested on 123 interviews of pregnant women conducted prior to the data collection for this study. Grounded theory is an established qualitative methodology with a proscribed step-wise progression from raw data to coded information amenable to data analysis. Interviewers' notes and subjects' responses were reviewed along with completed questionnaires and interviewers' summary forms to extract information on each subject. Interviewers had begun with a list of questions and suggested queries so as to extract the information desired. The coding team identified categories of information which appeared frequently. Statements made and judgments of the interviews were assigned to one of these categories. Intercoder reliability for category assignment was 0.84, generally considered high for qualitative research. Once a response had been assigned to a category, coders rated the response for intensity from -3 to +3. The inter-coder reliability of making the same sign assignment (positive or negative) was 0.97. Within sign assignment, the inter-coder reliability for making the same numerical assignment (-1, -2, or -3, for example) was 0.74. Verbal responses from the women were recorded and the relationship between the verbal expression and the clinical impression of affective states noted. For example, the statement, "I am afraid of pain in childbirth" was coded in the category of fear. The degree of physiological

arousal noted on monitoring would have influenced the intensity score. The scores for statements made in each category were tabulated by adding the intensity ratings within each category. Statements made by the women were coded using content analysis in the following areas: (1) Fear, (2) Anxiety-stress, (3) Maternal self-identity, (4) Beliefs, (5) Psychosocial support from the partner, (6) Psychosocial support from the mother's mother, (7) Psychosocial support from friends. A team of three behavioral obstetrics clinicians assigned responses to the appropriate category for each subject. The frequency of occurrence of a specific response and the magnitude or intensity of the responses were sufficient for clinicians to grade responses from -3 to +3 according to the strength of the statement. The verbal responses of the women were differentially weighted in the specific content categories in proportion to the assumed intensity represented by statements classifiable in certain content categories. Values were assigned to all the verbal responses made. One type of direct verbal report of the subjective affective experience, such as, "I am anxious", would be classified in the 'anxiety-stress' category, and have a weighted value of a -2, while the same statement with a greater intensity, "I am very anxious", would be weighted -3. Each of the women's responses was assessed with the value weighted on each variable to develop a profile of her psychological attitude during pregnancy. The sign of the rating (+ or -) was in accordance with the hypothesized relationships of how this factor would affect the birthing process. The different rating level codes are presented in Appendix A. The inter-coda reliability was checked on each 10th patient and remained consistently at or above the previously mentioned values. All ratings were finalized and stored before delivery. Ratings could not be changed once finalized. Physical activity was assessed as the number of hours exercised per week multiplied by a three-point scale representing intensity (1 = mild, 2 = moderate, 3 = strenuous). Scores were normalized. Other variables used included number of previous hospitalizations, surgeries, infections, and previous drug use (yes or no). Outcome Variables. An uncomplicated birth was operationally defined as one without obstetrical intervention (no Cesarean, no uterine dysfunction, no fetal distress, no low Apgar scores, no infant resuscitation required, etc). A complicated birth involved obstetrical technology. It included Cesareans, uterine inertia, induction and augmentation of labor, fetal distress, low Apgar scores, postpartum hemorrhage, and other major complications. An obstetrician and two certified nurse-midwives reviewed each case to assess uncomplicated versus complicated. They were blind to the purpose of this study. They agreed on 95% of cases. For the remaining cases, their consensus was accepted. These were borderline cases in which, for example, blood loss was possibly excessive or fetal distress was reported but the delivery was uncomplicated and the Apgar scores were high. Data Analysis. The T-test procedure and the discriminant analysis procedures from the Systat statistical package were used. Statistics provided are already corrected for the number of comparisons made using Bonferoni methods. Chi-square tests were used to test statistical significance of differences between groups. Actual outcome groups were compared for differences in the variables within the sample. Internal Controls. Care provider, birth setting, and parity did not influence the results. These variables were included in the discriminant analysis and held no predictive value. RESULTS No significant differences were found between the uncomplicated and complicated birth outcome groups on age, years of education, religion, distance from place of birth, socioeconomic status, parity, medical risk, or marital status (see Table 1, Appendix B). Age of the subjects varied from 18 years to 39 years with an average of 27.5 years. Years of education ranged from 9 to 19, with an average of 14 years. Fifty-two percent of the women were primigravidas, 24% were secundigravidas, 11% were having their third child, and 13% were pregnant with their fourth or greater child. Contribution of Medical and Demographic Variables to Risk. We found no differences between the two groups for members having previous live births, previous abortions and previous miscarriages (see Table 2, Appendix B). Women in the complicated birth group showed significantly more previous (to the pregnancy) infections, injuries and hospitalizations. These events were not obstetrical or gynecological and did not increase their risk on the Popras Obstetrical Risk Screening Criteria (UCLA-Harbor General Hospital). There were no differences in number of prior surgeries or diagnosed illnesses. Women in the complicated birth group showed more remote drug use. Neither group used drugs during the pregnancy.

Women in the uncomplicated birth group were more physically active. Birth setting, birth attendant, and parity were unrelated to outcome or to prediction in discriminant analysis. Emotional State Variables. All four emotional state variables were significantly different between groups (see Table 3, Appendix B). Women in the complicated birth group showed more anxiety-stress and fear. Their beliefs were more negative toward birth. They showed less maternal self-identity. Psychological Testing. Beck Depression scores were not different between women in the two outcomes group; nor were scores on the Holmes-Rahe Life Stress Inventory for the past 3 years. Women in the complicated outcomes group had significantly higher scores on the Taylor Manifest Anxiety Scale (Table 3). Social Support Variables. Higher levels of perceived support from the woman's partner (husband, boyfriend, etc.) were significantly associated with uncomplicated birth outcome (Table 4). Higher levels of perceived support from the woman's own mother was, intriguingly, significantly associated with complicated birth outcome. Higher levels of support from the woman's friends were significantly associated with uncomplicated birth outcome. Higher levels of marital satisfaction as measured by the Dyadic Adjustment Scale were significantly associated with uncomplicated birth outcome. Birth Data. In comparing the mean scores between the uncomplicated and complicated birth outcome groups on birth data variables, first stage labor length, Apgar score at 1 minute, and Apgar score at 5 minutes, significant differences were found as would be expected (Table 5). First stage labor length was shorter, and the Apgar scores at 1 and 5 minutes were better for the uncomplicated birth outcome group than for the complicated birth outcome group (by definition). No significant differences between the mean scores for the uncomplicated and complicated birth outcome groups were found for gestational age, second stage labor length and birthweight, indicating neither premature labor nor small for gestational age infants contributed to these differences. Discriminant Function Analysis. This method was used to correctly classify 91% of the cases into the uncomplicated birth outcome group (group N) or the complicated birth outcome group (group A). Women having uncomplicated deliveries were classified correctly with 90.2% accuracy, compared to 92.1% for women having uncomplicated births. The canonical correlation was 0.7808 meaning that about eight times out of ten, correct classification occurred. The most significant psychosocial factors were fear, support from the baby's father, and past drug use. DISCUSSION Psychosocial variables were related to complicated birth outcome. Several major psychosocial variables were relevant to birth problems, including maternal stress and anxiety, fear, negative beliefs about birth, and negative maternal self-identity. Psychosocial support variables of significance included support from the baby's father, support from friends, and marital satisfaction/dissatisfaction as measured by the Dyadic Adjustment Scale. Depression as measured by the Beck Depression Inventory was not associated with complicated birth but manifest anxiety (Taylor Manifest Anxiety Scale) was. Life Stress over the past three years (Holmes-Rahe Life Stress Inventory) was not. The variables which emerged from our qualitative methodology are those which are easily recognized and rated by clinicians who do not have extensive psychological training. We feel that qualitative methods provide an important initial approach to an area of endeavor such as this, since formal psychological tests do not always measure what they purport to measure, and may not be relevant to day-to-day clinical practice. With a small amount of training, a nurse or nurse practitioner can be trained to ask women questions about their fears, worries, social support system, beliefs about birth, and self-esteem. A short clinical interview can potentially discriminate those women at psychosocial risk for birth complications. The findings here support Smilkstein's model<sup>3</sup> (1984, 1985, 1986) and the developing family practice model of obstetrics, in which attention is directed at the psychosocial aspects of prenatal care as well as the biological. The emphasis upon family relationships and emotions differentiates family practice obstetrics from that practiced by conventional obstetricians. The success of a qualitative methodology such as this suggests greater ease of application since the concepts are among those readily recognized by psychosocially oriented clinicians. Our data and the reviewed studies of others show that birth is a psychophysiological process, and that avoiding the psychosocial realm by obstetrical care providers can no longer be justified. Psychosocial clinicians or obstetrical clinicians with psychosocial awareness and training need to be involved in perinatal care. Intervention programs

should be designed to affect these psychosocial variables to determine if birth outcomes can be improved through such intervention. The days of ignoring women's feelings, stressors, social support, and relationships by obstetrics are over. Future research by our group will be directed toward developing and testing intervention programs and to determining if nurses and nonpsychological clinicians can identify these variables of interest reliably in a short intake interview. The more streamlined psychosocial assessment can become, the more likely it will be used. On the other hand, cursory assessment can be more offensive than helpful, so a balance must be struck between time expenditure on the part of clinicians and patient's having the time to feel respected and heard as they describe their lives. In today's managed care environment, that is not an easy task.

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**Negative (-2)**

- A. Seemingly unresolvable sense of birth leading to physical damage.
  - B. Unaddressable fears of pain during labor.
  - C. Fear of loss of control
  - D. Fear of abandonment
  - E. Fear of motherhood
  - F. Fear of "failing" at birth
  - G. Fear for baby's health
- } Difficult to resolve; all with few coping skills

**Mildly negative (-1)**

Apprehensions about:

- A. Labor & birth
  - B. Pain
  - C. Loss of control
  - D. Abandonment
  - E. Motherhood
  - F. Failure
  - G. Baby's health
- } minimal skills for managing with these fears

Appendix Neutral (0) No codable response Mildly Positive (+1) Fears about A. through G., which the woman is actively attempting to cope, through established coping styles and/or learning new coping styles with staff. Positive (+2) Healthy anticipation for the challenges of A. through G. When fear appears, there are active, working, mature coping styles through which fears are resolved. Very Positive (+3) Enthusiastic anticipation of the challenges of A. through G. with excellent coping skills and very realistic expectations. 2. ANXIETY-STRESS Very Negative (-3) A. Severe conflicts in significant relationships. B. Excessive fatigue and lack of energy in the face of stress. C. Significant depression in the face of stress. D. Intense externally directed responses under stress (Blame, aggression, projection). E. Highly unstable living situation. F. Significant somatization during stress (headache, back pain. G. High levels of unmanageable anxiety. Negative (-2) A. Moderate conflict. B. Moderate fatigue & lack of energy. C. Moderate depression. D. Moderate external responses. E. Moderately unstable living situation. F. Moderate somatization (nausea, tension). G. Moderate levels of anxiety. Mildly negative (-1) Mild levels of A. through G. Neutral (0) No codable response Mildly positive (+1) A. Significant relationships are somewhat harmonious. B. Energy is somewhat available for coping with anxiety-stress. C. Low levels of happiness and contentment are described. D. Anxiety and stress are handled through internally directed processes, including relaxation and seeking support and assistance. E. Living situation has more stability than not. F. Coping styles are generally successful at resolving stress without somatic effects. G. Anxiety and stress is overall tending toward management and resolution. Positive (+2) A. Harmonious significant relationship. B. Energy is available. C. Happiness and contentment are described. D. Stress and anxiety are managed through internal means which work well for the woman. E. Stable living situation. F. Successful coping styles. G. Anxiety and stress is managed and resolved. 3. MATERNAL SELF-IDENTITY Very Negative (-3) A. The woman feels forced into motherhood against her will. B. The woman is very oriented toward career & believes that child will ruin her career (major identity). C. The woman feels repulsed by thoughts of the fetus and is alienated from the experience of being pregnant. D. The woman cannot imagine herself as a mother and feels very unsure and insecure about the prospect. E. The woman is convinced she will be a very poor mother and will damage her child. F. The woman feels great shame at being pregnant and about motherhood. Negative (-2) A. The woman is resentful at having been manipulated into motherhood. B. The woman's primary identity is her career. Motherhood seems incompatible. C. The woman expresses

antagonism toward the fetus and regrets being pregnant. D. The woman feels insecure about becoming a mother. E. The woman worries she will not be a good mother. F. The woman feels shame at being pregnant and about motherhood. Mildly Negative (-1) A. The woman vacillates on her decision to have a baby. B. The woman tends away from identifying as a mother, feels unready for motherhood. C. The woman feels unprepared for the fetus. D. The woman is somewhat insecure about becoming a mother. E. The woman is somewhat concerned that she will not mother well. F. The woman is embarrassed about pregnancy and motherhood. Neutral (0) No codable response Mildly Positive (+1) A. More than less, woman feels accepting of her pregnancy. B. Woman is working toward accepting her identity as a mother. C. Woman is working toward acceptance of the baby. D. Woman is working toward becoming comfortable with the reality of motherhood. E. Woman is beginning to accept that she will mother adequately. F. Woman is working toward feeling good about pregnancy and motherhood. Positive (+2) A. Accepting of her pregnancy. B. Acceptance of identity as a mother. C. Acceptance of the baby. D. Comfort with reality of motherhood. E. Acceptance that she will be/is a good mother. F. Feeling good about being pregnant and becoming a mother. Very Positive (+3) A. Enthusiastic acceptance. B. Enthusiastic identification with being a mother. C. Enthusiastic welcoming of the baby. D. Excitement about the reality of motherhood. E. Valuation of herself as a excellent mother. F. Feeling very proud about becoming a mother. 4. BELIEFS Very Negative (-3) A. All pain is very bad, even life-threatening. B. Birth is disgusting, repulsive, and even life-threatening. C. People are evil, always untrustworthy, and should be shunned and avoided. D. Motherhood is a degrading, awful, humiliating experience. E. Work is the only means of achieving worth, and having a baby destroys that. F. Deep inside, I am worthless and unimportant, and am lucky to be permitted even to exist. G. There are no comforts or sources of help anywhere. Negative (-2) A. Pain is bad. B. Birth is an unpleasant experience that you go through to get a baby. C. People are usually unhelpful and often untrustworthy and not to be relied upon. D. Motherhood is an unpleasant experience. E. Work is the major source of personal worth; having a baby will erode that. F. I am an inferior person deep inside; nobody could really truly love me. G. If there are sources of strength and assistance, they're not available for me. Neutral (0) No codable response Mildly Positive (+1) A. Pain is frightening, but can be accepted and worked with. B. Birth is frightening, but I'm learning I can overcome those fears. C. People have let me down, but I'm starting to learn to trust. D. Motherhood has seemed negative in the past, but I'm learning that I can make it a positive experience. E. Work has always been very important to me, but I'm learning it's not everything. F. I'm starting to learn how to really trust and love myself. G. I'm beginning to draw on inner sources of strength that I never knew I had. Positive (+2) A. Pain can be healthy and can be worked with as part of a satisfying experience. B. Birth is a positive experience. C. Other people provide a support in times of need. D. Motherhood is a positive experience. E. I will balance in a gratifying manner motherhood with all my other life activities. F. I trust and love myself much of the time. G. I draw on inner sources of strength when in need. Very Positive (+3) A. Pain is a healthy challenge which I will handle and will grow with. B. Birth is an exciting and wonderful experience. C. Other people are a real source of strength, comfort, and support to me. D. Motherhood is the most wonderful experience of a woman's life. E. I'm really excited to experience the integration of mothering and work. F. I trust and love myself and am a very worthwhile person. G. I'm constantly nourished by inner, spiritual resources. 5. PSYCHOSOCIAL SUPPORT FROM BABY'S FATHER Very Negative (-3) A. Overtly hostile relationship. B. Extreme conflict present. C. Father is actively rejecting. D. No intimacy; no contact. E. No communication. F. No marriage or relationship. G. No skills at conflict resolution. Negative (-2) A. Covert hostility with occasional eruptions into overt hostility. B. Moderate conflict present. C. Father is removed and distant. D. Low levels of intimacy; live separate lives with little contact. E. Very poor communication. F. Very unhappy with marriage. G. Minimal skills at conflict resolution (conflict is generally not resolved). Mildly Negative (-1) A. Mild hostility present. B. Mild conflict present. C. Father is generally unemotional, but present. D. Occasional intimacy, but generally separate. E. Poor communication. F. Unhappy with marriage. G. Conflict is resolved, but with threat to the relationship. Neutral (0) No codable responses Mildly Positive (+1) A. Attempting

to work on reducing hostility present B. Working to resolve conflict in the relationship. C. Father working to become more emotionally available in the relationship. D. Couple is actively working to improve intimacy. E. Couple is working to improve communication. F. Couple is working to improve problems that contribute to their marital satisfaction. G. Couple is learning to resolve conflict without threatening the relationship. Positive (+2) A. Partner is generally accepting of the other and the pregnancy. B. Couple is in harmony with each other. C. Father is interested and involved in the pregnancy and birth plans. D. Trust, intimacy, and closeness are dependable parts of the relationship most of the time. E. Good communication exists most of the time. F. Overall sense of marital satisfaction despite the existence of some problem areas. G. Ease of conflict resolution without threat to the relationship. Very Positive (+3) A. Partner is very accepting of the woman and the pregnancy. B. High levels of harmony exist; for example, baby may have been planned together. C. Father is thrilled about the pregnancy and baby. D. Very high levels of trust and intimacy are present. E. Excellent communication of emotions, including anger and love. F. Very high levels of marital satisfaction. G. Strength of the relationship allows resolution of conflict before problems arise. 6. PSYCHOSOCIAL SUPPORT FROM MOTHER'S MOTHER Very Negative (-3) A. Very negative statements about childbirth, such as "birth will rip your insides out" or "women die in childbirth," or that mother's mother almost died in childbirth. B. Parenting is a very negative experience. C. Mother's mother refuses to have anything to do with her once she is pregnant. D. No contact; no intimacy or sharing. E. No communication. F. Very strong childlike dependency. G. Very actively rejecting. Negative (-2) A. Mostly negative statements about childbirth. B. Parenting is a negative experience. C. Mother's mother avoids contact. D. Contact is superficial. E. Poor communication. F. Mother is overprotective and fosters dependency. G. Mother's mother is anxious and rejecting. Mildly Negative (-1) A. Mildly negative statements about childbirth, such as women lose health and beauty from pregnancy. B. Parenting is mildly negative experience. C. Woman is stressed and anxious in presence of her mother. D. Sharing exists at the level of concern about the mother's mother reactions and disapproval. E. Communication is indirect. F. Relationship fosters feelings that mother's mother is strong and mother is weak. G. Mother's mother is mildly disapproving. Neutral (0) No codable response Mildly Positive (+1) A. Mother is mildly positive about birth. B. Mildly positive about parenting. C. Can turn to mother for support when in crisis. D. Sometimes can share intimately with mother. E. Sometimes easy and good communication exists with opportunity for clarifying feelings. F. Generally adult relationship, with return to mother-child relationship when in crisis. G. Mother is conditionally accepting with periods of genuine warmth. Positive (+2) A. Positive statements about childbirth. B. Positive statements about parenting. C. Mother is available for support. D. Mother and daughter maintain a good relationship with intimacy and sharing. E. Good, direct communication. F. Consistent, adult-adult relationship with opportunities for both to give and receive. G. Mother is warm and accepting. Very Positive (+3) A. Very positive statements and enthusiasm about childbirth. B. Very positive statements and enthusiasm about parenting. C. Mother is very available for support. D. Very good opportunities for intimacy and sharing. E. Excellent, direct communication. F. Very strong personal friendship. G. Very close ties with warmth and acceptance. Positive (+2) A. Positive statements about childbirth. B. Positive statements about parenting. C. Good friendships available for support. D. Good friendships with intimacy and sharing. E. Good direct communication. F. Adult give and take relationship. G. Strong social support system (friends organize baby shower, etc.). Very Positive (+3) A. Very positive statements and enthusiasm about childbirth, describing it as a joyous experience. B. Very positive statements and enthusiasm about parenting. C. Excellent friendships, very available for support. D. Very good opportunities for intimacy and sharing. E. Excellent, direct communication. F. Adult give and take relationships with opportunities for both to be weak and strong. G. Excellent social support system (friends involved in birth preparations and plans).

APPENDIX B

Table 1  
Comparison of Means and Standard Deviations for the Demographic Variables Between Uncomplicated and Complicated Birth Outcome Groups

Demographic variables	Uncomplicated		Complicated		t-value
	Mean	SD	Mean	SD	
Age	27.42	4.64	28.83	5.09	0.45
Years of education	13.83	2.36	14.50	2.53	0.55
Religion (in absolute numbers)					
Catholic	67		78		0.51
Protestant	124		96		1.21
Jewish	41		50		0.50
Buddhist	19		11		0.73
Other	11		2		NA
Distance from place of birth	382 mi	219	391 mi	292	0.52
Marital status					
Married	84%		81%		
Single	11%		8%		
Separated/divorced	5%		11%		
Parity	1.14	0.89	1.05	0.91	0.54

Table 2  
Comparison of Means and Standard Deviations for the Past Obstetrical History Variables Between Uncomplicated and Complicated Birth Outcome Groups

Past obstetrical history variables	Uncomplicated		Complicated		t-value
	Mean	SD	Mean	SD	
Previous live births	0.72	0.94	0.66	0.83	0.23
Previous abortions	0.85	1.21	0.84	1.10	0.13
Previous miscarriages	0.18	0.33	0.17	0.54	0.07
Past medical history variables					
Infections	0.62	0.72	1.25	1.12	2.83**
Injuries	0.32	0.67	0.79	0.77	2.91**
Surgeries	0.65	0.75	1.04	0.73	1.59
Hospitalizations	0.63	0.75	1.35	0.87	2.51*
Illnesses	0.46	0.43	0.83	1.02	1.50
Habit history variables					
Past drug use	0.77	1.16	1.52	1.24	2.30*
Physical activity	1.34	1.22	0.70	0.80	-2.06*

\*Significant at the 0.05 level ( $p > +1.96$ ); \*\*significant at the 0.01 level ( $p > +2.57$ ).

**Table 3**  
**Comparison of Means and Standard Deviations for the Emotional State Factors Between Uncomplicated and Complicated Birth Outcome Groups**

Emotional state factors	Uncomplicated		Complicated		t-value
	Mean	SD	Mean	SD	
Anxiety-stress	-0.21	1.94	-1.76	1.34	3.40*
Fear	1.16	2.07	-0.83	1.71	4.13*
Maternal identity	0.95	1.80	0.21	1.76	2.67*
Beliefs about birth	1.48	1.43	0.23	1.55	3.34*
Beck Depression Inventory	11	9	13	6	1.31
Life Stress Inventory	328	160	444	311	1.05
Taylor anxiety z-score	0.25	0.23	0.51	0.10	3.93*

\*Significant at the 0.05 level.

**Table 4**  
**Comparison of Means and Standard Deviations for the Psychosocial Support Factors Between Uncomplicated and Complicated Birth Outcome Groups**

Psychosocial support factors	Uncomplicated		Complicated		t-value
	Mean	SD	Mean	SD	
Partner	1.29	1.40	-0.54	1.96	3.83**
Mother's mother	0.29	1.53	-0.42	1.41	1.89*
Friends	0.92	1.17	-0.12	1.01	3.34**
Marital satisfaction (z-score)	0.61	0.15	0.30	0.13	4.01**

\*Significant at the 0.05 level ( $p > +1.960$ ); \*\*significant at the 0.01 level ( $p > +2.576$ ).

**Table 5**  
**Comparison of Means and Standard Deviations for the Birth Data Between Uncomplicated and Complicated Birth Outcome Groups**

Birth data	Uncomplicated		Complicated		t-value
	Mean	SD	Mean	SD	
Gestation (weeks)	40.08	1.09	40.07	3.94	0.1
Labor length (hours)					
First stage	6.53	4.99	11.10	8.11	2.64**
Second stage	1.23	3.00	1.60	2.18	0.94
Birthweight (g)	2701.51	395.35	2887.70	529.52	0.41
Apgar scores					
1 min	8.56	1.23	7.80	2.06	2.50*
5 min	9.13	1.16	8.36	1.44	-2.12*

\*Significant at the 0.05 level; \*\*significant at the 0.01 level.

\*Significant at the 0.01 level ( $p > +2.576$ ).

\*Significant at the 0.05 level ( $p > +1.96$ ); \*\*significant at the 0.01 level ( $p > +2.57$ ).

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