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The effects of a supportive intervention during labor and delivery on the postpartum psychological adaptation of first-time mothers

Hoffman, Yonit, Ph.D.

Case Western Reserve University, 1992

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THE EFFECTS OF A SUPPORTIVE INTERVENTION
DURING LABOR AND DELIVERY ON
THE POSTPARTUM PSYCHOLOGICAL ADAPTATION OF FIRST-TIME MOTHERS

by

YONIT HOFFMAN

Submitted in partial fulfillment of the requirements
for the Degree of Doctor of Philosophy

Thesis Advisor: Dennis Drotar, Ph.D.

Department of Psychology
CASE WESTERN RESERVE UNIVERSITY
May 1992
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GRADUATE STUDIES

We hereby approve the thesis of

YONIT HOFFMAN

candidate for the Ph.D.
degree.*

Signed:  Lewis Cote
         (chairman)
         John H. Kemeny
         Jane W. Kessler
         Elizabeth Short

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THE EFFECTS OF A SUPPORTIVE INTERVENTION
DURING LABOR AND DELIVERY ON
THE POSTPARTUM PSYCHOLOGICAL ADAPTATION OF FIRST-TIME MOTHERS

Abstract

by

YONIT HOFFMAN

The present study examines the impact of a supportive intervention during labor and delivery on the psychological adaptation of new mothers. Prior studies documented that the presence of a supportive female labor companion - a "doula" - during labor and delivery resulted in significant decreases in labor length, cesarean deliveries, and perinatal complications. The present study, which is part of a larger, ongoing project designed to refine and extend prior research, addresses prior design limitations by including both lower and middle SES subjects and their labor partners and by assessing psychosocial variables within a prospective, longitudinal framework.

The effects of doula support on three areas of maternal postpartum psychological adjustment were examined: depressed mood, self-evaluation regarding maternal role, and marital/relationship satisfaction. It was hypothesized that the doula intervention
would be most beneficial to those mothers who were most lacking in two resources which are salient in the transition to motherhood and which reflect key functions of the doula; perceived social support and positive relationship with mother.

Subjects included 188 women (127 middle SES, 61 low SES) who were recruited during their third trimester of pregnancy, administered prenatal questionnaires, and then randomly assigned to experimental or control group status. Control group subjects received routine obstetric care while subjects in the experimental group had the additional support of a doula who remained with them throughout labor and delivery. Outcome measures were assessed at 8-10 weeks postpartum.

Contrary to prediction, the doula intervention did not have significant main effects on postpartum psychological adaptation independent of level of prenatal resources. However, as predicted, interactions between experimental group status and prenatal resources contributed significantly to the prediction of postpartum depressed mood and self-evaluations (though not relationship satisfaction). Subjects' perceived social support and the quality of their relationships with their own mothers moderated the impact of the doula intervention - but had differential roles with regard to their impact on postpartum mood or self-evaluations. SES differences were also detected. The empirical and clinical implications of these results are discussed.
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TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Stresses and Outcomes Associated with Labor</td>
<td></td>
</tr>
<tr>
<td>and Delivery</td>
<td></td>
</tr>
<tr>
<td>Supportive Interventions to Improve Perinatal</td>
<td></td>
</tr>
<tr>
<td>Outcomes</td>
<td></td>
</tr>
<tr>
<td>The Effects of a Supportive Female Labor</td>
<td></td>
</tr>
<tr>
<td>Companion (Doula)</td>
<td></td>
</tr>
<tr>
<td>Limitations of Prior Studies of Doula-</td>
<td></td>
</tr>
<tr>
<td>Supported Childbirth</td>
<td></td>
</tr>
<tr>
<td>The Present Study</td>
<td></td>
</tr>
<tr>
<td>Factors Assumed to Underlie Effects of Doula</td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td></td>
</tr>
<tr>
<td>Outcomes Hypothesized to be Sensitive to</td>
<td></td>
</tr>
<tr>
<td>Effects of Doula Intervention</td>
<td></td>
</tr>
<tr>
<td>Hypotheses</td>
<td></td>
</tr>
<tr>
<td>II. METHOD</td>
<td>40</td>
</tr>
<tr>
<td>Subjects</td>
<td></td>
</tr>
<tr>
<td>Demographic Characteristics</td>
<td></td>
</tr>
<tr>
<td>Labor Support</td>
<td></td>
</tr>
<tr>
<td>Attrition</td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td></td>
</tr>
<tr>
<td>Measures</td>
<td></td>
</tr>
<tr>
<td>Prepartum Resources (Predictor Variables)</td>
<td></td>
</tr>
<tr>
<td>Postpartum Adaptation (Outcome Variables)</td>
<td></td>
</tr>
</tbody>
</table>

vi
III. RESULTS ................................................. 59

Prenatal Group Differences
   Doula versus Control Patients
   Staff versus Private Patients

Correlations
   Demographic and Postpartum Outcome Variables
   Prenatal and Postpartum Study Variables

Reliability Analyses

Analyses of Intervention Outcomes

Depressed Mood
   Multiple Regression Analyses
   Analyses of Significant Interaction Effects

Self-Evaluations
   Multiple Regression Analyses
   Analyses of Significant Interaction Effects

Relationship Satisfaction
   Multiple Regression Analyses

Summary of Findings

IV. DISCUSSION ........................................... 102

Review of Findings

Salient Issues: The Role of Responsivity and Resources

Implications

Limitations

Future Directions

REFERENCES ............................................. 125

Appendix

A. SAMPLES OF CONSENT FORM AND MEASURES ............ 137
B. GUIDELINES FOR DOULAS ................................. 173
C. SAMPLE DOULA REPORT FORM AND SUBJECT COMMENTS .... 179
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Study Design and Data Collection Schedule</td>
<td>50</td>
</tr>
<tr>
<td>2.</td>
<td>Prenatal and Postpartum Depressed Mood Scores of Doula Staff Subjects with Low and High Levels of Relationship with Mother Resource</td>
<td>85</td>
</tr>
<tr>
<td>3.</td>
<td>Prenatal and Postpartum Depressed Mood Scores of Doula Private Subjects with Low and High Levels of Relationship with Mother Resource</td>
<td>86</td>
</tr>
<tr>
<td>4.</td>
<td>Prenatal and Postpartum Self-Evaluation Scores of Doula Subjects (Whole Group) with Low and High Levels of Social Support Resource</td>
<td>95</td>
</tr>
<tr>
<td>5.</td>
<td>Prenatal and Postpartum Self-Evaluation Scores of Doula Staff Subjects with Low and High Levels of Social Support Resource</td>
<td>96</td>
</tr>
<tr>
<td>6.</td>
<td>Prenatal and Postpartum Self-Evaluation Scores of Doula Staff Subjects with Low and High Levels of Relationship with Mother Resource</td>
<td>97</td>
</tr>
<tr>
<td>7.</td>
<td>Prenatal and Postpartum Self-Evaluation Scores of Doula Private Subjects with Low and High Levels of Social Support Resource</td>
<td>98</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Means, Standard Deviations, and Frequencies: Demographic Variables</td>
<td>41</td>
</tr>
<tr>
<td>2.</td>
<td>Frequencies of and Reasons for Exclusion or Attrition from Study</td>
<td>44</td>
</tr>
<tr>
<td>3.</td>
<td>Comparisons between Excluded Subjects, Drop-out Subjects (No Postpartum Questionnaires), and Subjects Remaining in Study</td>
<td>47</td>
</tr>
<tr>
<td>4.</td>
<td>Experimental Group Comparisons: Means, Standard Deviations, and Frequencies on Demographic Variables</td>
<td>61</td>
</tr>
<tr>
<td>5.</td>
<td>Experimental Group Comparisons on Prenatal Study Variables: Means, Standard Deviations, and t values</td>
<td>63</td>
</tr>
<tr>
<td>5a.</td>
<td>Experimental and Control Group Means and Standard Deviations on Postpartum Study Variables</td>
<td>64</td>
</tr>
<tr>
<td>6.</td>
<td>SES Group Comparisons: Means, Standard Deviations, and Frequencies on Demographic Variables</td>
<td>65</td>
</tr>
<tr>
<td>7.</td>
<td>SES Group Comparisons on Prenatal Study Variables: Means, Standard Deviations, and t values</td>
<td>67</td>
</tr>
<tr>
<td>8.</td>
<td>Correlations Between Prenatal Demographics and Postpartum Outcome Variables: Whole Group, Staff, and Private Patients</td>
<td>69</td>
</tr>
<tr>
<td>9.</td>
<td>Correlations Between Prenatal and Postpartum Study Variables: Whole Group</td>
<td>72</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>10. Correlations Between Prenatal and Postpartum Study Variables: Staff and Private Groups</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>11. Multiple Regression Analyses Predicting Postpartum Depressed Mood</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>12. Prenatal and Postpartum Depressed Mood Scores of Doula Subjects With Low and High Levels of Relationship with Mother Resource</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>13. Multiple Regression Analyses Predicting Postpartum Self-Evaluations</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>14. Prenatal and Postpartum Self-Evaluation Scores of Doula Subjects With Low and High Levels of Relationship with Mother and Social Support</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>15. Multiple Regression Analyses Predicting Postpartum Marital/Relationship Satisfaction</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER I

Introduction

While the birth of a child is often a joyful event, it also signifies a major life transition which can be physically and psychologically stressful (Cutrona & Troutman, 1986). The stressors associated with this period can have a range of negative physical and psychological outcomes for parents and infants. First-time parenthood can be particularly stressful (Leifer, 1980; Melzak, Taenzer, Feldman, & Kinch, 1981). "Pregnancy is an event with demands, constraints, opportunities, and an uncertain outcome" (Norbeck & Tilden, 1983, p. 33) and new parenthood is a period of adjustment to new sets of demands, constraints and opportunities.

Perhaps one of the most stressful phases in the transition to parenthood is the experience of childbirth. While there have been numerous attempts to alleviate negative physical and psychological outcomes (e.g. pre-term delivery, perinatal complications, maternal anxiety and depression, disturbed mother-infant relationship) via supportive interventions during pregnancy, few empirical studies have examined the impact of support during the childbirth experience (Oakley, 1988). The present study examines the impact of a supportive intervention during labor and delivery on the psychological adaptation of new mothers. The study extends previous research which demonstrated that having a supportive female labor companion (a "doula") during labor and delivery greatly reduced length of labor and perinatal complications (Klaus,
Kennell, Robertson, & Sosa, 1986; Kennell, Klaus, McGrath, Robertson, & Hinkley, 1991; Kennell, McGrath, Klaus, & Robertson, 1989; Sosa, Kennell, Klaus, Robertson, & Urrutia, 1980).

**Stresses and Outcomes Associated with Labor and Delivery**

While labor and delivery are stressful for most women, first-time mothers are particularly vulnerable to experiencing fear and anxiety (Cogan, 1974; Melzak et al., 1981). Investigators point to a number of negative physical and psychological outcomes associated with the stress of childbirth. Anxiety about pregnancy and childbirth has, for example, been shown to relate to increased use of anesthesia, longer duration of labor and poorer outcomes for the newborn (Lederman, Lederman, Work, & McCann, 1985; Stadley, Soule, & Copans, 1979). First-time mothers, in particular, have been found to undergo more obstetrical interventions, cesarean deliveries, and have more negative psychological experiences (i.e. higher levels of self-reported pain, fatigue and anxiety) than multiparous women (Booth & Meltzoff, 1984). In reviewing the literature on the negative psychological impact of cesarean delivery on maternal adaptation, Kennell and McGrath (1987) concluded that many of these mothers reveal "... anger; lowered self-esteem; grieving or sense of loss; disappointment with the birth experience, the mother's performance and her partner's failure to protect her."

Maternal stress during labor and delivery can also have adverse implications for the mother-infant relationship. A study
by Peterson and Mehl (1978) found that perinatal factors such as birth experiences and length of labor were related to postpartum maternal attachment toward the infant. Booth and Meltzoff (1984) demonstrated that for first-time mothers only, there was a significant relationship between positive psychological experience of childbirth and greater maternal attachment to the infant at one month postpartum. This is consistent with a descriptive study by Pascoe and French (1988) which found that the longer the duration of labor, the later the development of maternal positive feelings about the baby.

**Supportive Interventions to Improve Perinatal Outcomes**

Several investigators have attempted to improve physical and psychological perinatal outcomes of mother and infant by applying psychologically supportive interventions during pregnancy. In a meta-analysis of research on the impact of social support interventions on perinatal outcomes, Oakley (1988) found consistent and significant reductions in the physical and psychological risks associated with prolonged labor and instrumental delivery following prenatal social support interventions. Although there was evidence of a consistently beneficial impact of supportive interventions during pregnancy on psychosocial and physical outcomes, few studies used the methodologically rigorous approach of a randomized experimental design (Oakley, 1988).

Support during labor and delivery may be a particularly important component of psychological support for pregnant women.
In the anthropological literature there is a preponderance of evidence that in virtually all cultures women are supported during labor and delivery by other women (Jordan, 1983; Murdock & White, 1969). Studies by Runnerstrom (1969) and Slome et al. (1977) comparing the care of midwives to doctors (in this culture) have shown some striking differences in perinatal outcomes, such as shorter labors, greater frequency of normal spontaneous deliveries and fewer instrumental deliveries for midwife patients (cited in Oakley, 1988).

The Effects of a Supportive Female Labor Companion (Doula)

Despite the fact that one of the factors "most easily manipulated" in the transition to parenthood is the "social setting of labor" (Norr, Block, Charles, Meyering, & Meyers, 1977, p. 270), few empirical studies have assessed the efficacy of psychologically supportive intervention during labor and delivery. A group of three prospective, randomized studies, two conducted in Guatemala and one in the United States, have shown that the presence of a supportive female labor companion - or doula - during labor and delivery can result in significant decreases in length of labor, obstetrical interventions, cesarean deliveries, and perinatal complications (Kennell et al., 1988; Kennell et al., 1989; Klaus et al., 1986; Sosa et al., 1980).

The term "doula" - derived from a Greek word meaning "woman's servant" - has been previously used by Raphael (1973) to describe a woman who assists a mother at home following childbirth (cited in
Sosa et al., 1980). Its current usage is to refer to a woman who provides support during labor and delivery. A doula’s care is multifaceted. She provides encouragement and explanation, while physically relaxing the mother by rubbing her back, holding her hand and remaining with her throughout the entire experience. The following excerpt from an experienced doula’s notes illustrates the dynamic quality of the supportive interaction:

There are different stages in the doula-patient relationship. (1) During this stage you become a friend; you relax the patient and enjoy her. You become very close at this time. (2) This stage starts when she is dilated between 5 and 6. She needs mothering. Consequently, this is where your mothering instincts take over. It is very important to soften your voice. This relaxes them and they quite often sleep between contractions. I have also found keeping my hand on their leg lets them rest comfortably. (3) This stage starts when she is between 8 and 9. She’s at the point where she can lose control. She needs strong support in a loving way. You must be strong or she will lose control. (4) Pushing is the next stage. I always feel like a cheerleader at this stage. Telling them positive, encouraging remarks makes them pick up your excitement and they seem to have more energy. (5) The delivery room is the final stage. The doctors and nurses are instructing the patient. They’ll be telling her to push but when they’re not talking you’re going to be telling her how great a job she’s doing and there’s a baby at the end of all this. I’m holding her hand all this time, sometimes even both hands. I stay with the patient until she goes to recovery even if the baby is not in the room. I feel a tie to her and I feel she still needs me. (Kennon, 1987)

In the first study conducted in Guatemala (Sosa et al., 1980), healthy nulliparous women in early labor were randomly assigned to an experimental (doula) or control (no doula - routine care) group. Given the hospital’s rate of 50-60 deliveries per day, routine care did not entail any consistent support. Results
showed that length of labor from admission to delivery for women with uncomplicated labors was a significantly longer 19.3 hours for the control group as compared to 8.7 hours for the doula group. Mothers who had a doula were also observed to stroke, smile and talk to their infants more than controls, independent of length of labor. The overall incidence of perinatal complications (including obstetric interventions, cesarean sections, fetal-neonatal problems) was 78.9% for the controls and 37.4% for the doula group.

Findings from Sosa et al.'s (1980) study were replicated in the second Guatemalan study (Klaus et al., 1986) with a 59% overall incidence of perinatal problems in the control group as compared to 26.8% for the doula group. Again, there was a significant difference in length of uncomplicated labor; 7.7 hours for doula supported mothers and 15.4 hours for control group mothers. In a stepwise regression analysis, the presence of the doula accounted for a significant 25% of the variance in labor length above the initial 12% attributed to background variables (maternal age, marital status) and initial dilation.

At the time of the Guatemala studies, a number of sophisticated obstetric practices which are now common - such as fetal monitoring, pitocin augmentation of labor, and epidural anesthesia - were rarely used, making the generalizability of prior research to current practice somewhat limited. Thus, a third randomized study in a large teaching hospital in Houston was conducted to assess the impact of doula support within the context
of current obstetric practice in the United States (Kennell et al., 1991; Kennell et al., 1989). Three groups were compared: a control group, a doula-supported group, and a third group of women who were observed unobtrusively but who received no additional support.

In comparing the use of anesthesia during labor and spontaneous vaginal delivery, it was found that 64% of subjects in the control group were administered epidural anesthesia, as compared to only 10.7% in the doula-supported group. In addition, 29.5% of women in the observed group received anesthesia, demonstrating an unexpected significant effect of the mere continuous presence of a woman perceived as supportive. In comparing types of deliveries, further evidence of the beneficial effects of a doula were found. Only 7.5% of the doula-supported women required a forceps delivery, as compared to 18.6% in the observed group and 22% in the control group. Furthermore, while 18% of the women in the control group and 13% of the observed group patients required a cesarean section, only 8% of doula supported women needed the operation.

In light of the Houston hospital's use of modern obstetric techniques to augment labor, group differences in labor length were not anticipated. However, results showed that when all deliveries were considered, mean labor length for doula supported women (7.4 hours) was significantly shorter than mean labor length (9.6 hours) for control women. A striking finding was that only 13% (25) of
labors in the control group were unmedicated, while 55% (116) of the women in the supported group had unmedicated labors.

The Houston study also demonstrated unexpected positive benefits for the newborns of supported mothers. While there were no group differences in Apgar scores or need for resuscitation, significantly fewer infants in the doula supported group required an extended hospital stay due to an abnormal medical course (e.g., sepsis evaluation for possible infection, hyperbilirubin, meconium staining). In addition to the potentially negative physical outcomes suggested by an abnormal medical course, the authors point out the potentially negative psychological outcome of longer mother-infant separations due to extended infant evaluations.

Limitations of Prior Studies of Doula-Supported Childbirth

While findings of the beneficial effects of doula supported labor and delivery are quite compelling, several weaknesses and unanswered questions in the above studies limit their generalizability and theoretical utility. First, the previous studies were conducted only with low-income samples. While both the Guatemalan and the Houston studies demonstrated the positive impact of a doula on women and infants from a low SES population, the question of whether or not doulas can be equally effective with a middle-class sample was not previously answered. In a recent study that assessed the impact of continuous one-to-one professional support (by lay midwives called "monitrices") during labor and delivery on perinatal outcomes, Hodnett and Osborn (1989)
demonstrated significantly improved maternal outcomes for a middle class sample who "...by virtue of their sociodemographic characteristics, prenatal education, and obstetrical risk status, are already most likely to have low levels of physical and psychosocial morbidity resulting from childbirth" (p. 295). The women with monitrice support were less likely to use pain medication or have episiotomies and more likely to labor and deliver in the same room than women who did not have monitrice support. No group differences were found in length of labor or quality of labor pain. However, the absence of a comparison group of low SES mothers in the Hodnett and Osborn (1989) study make it impossible to assess a differential impact of supportive labor intervention.

In an attempt to replicate the Guatemalan doula studies with a community sample in the United States (60% were on medicaid), Pascoe (1989) found that mothers who had no support had much longer labors than mothers with constant support (provided by relatives, friends, or "birth companions"). Underscoring the significance of demographic variables (such as SES), the results of a multiple regression equation showed that race (with 15% Estimated Variance; EV) entered prior to labor support (7% EV), marital status (4% EV), and dilation at presentation (6% EV) in predicting duration of labor. However, several methodological problems limited the validity of the study's findings; only 7 mothers were in the "no support" group, compared to 54 subjects in the supported group.
Furthermore, Pascoe (1989) treated pooled data from 3 different communities as one population — ignoring the variance in hospital practices which could relate directly to the outcome variables.

The findings of a number of other (non-experimental) studies which show relationships between SES and labor and delivery or postpartum adaptation suggest that one might expect differences in the effects of the doula as a function of social class. Norr et al. (1977), for example, found that higher SES significantly related to greater enjoyment of childbirth. Higher SES mothers were also found to have more prepartum preparation and more help from their husbands during labor and delivery. Grossman, Eichler, and Winickoff (1980), on the other hand, reported that SES had an effect only on the postpartum adaptation of experienced mothers (i.e. lower SES related to greater anxiety and depression), but did not seem to affect new mothers' adaptation.

A second sampling limitation of prior doula intervention studies is that they examined the effects of a doula on labor and delivery only for samples of women with no other supportive companions. However, as the most common practice in this country is for women to be accompanied by a male partner (Gallup Poll, 1983) it is necessary to examine the impact of a doula in supporting a couple through the childbirth experience. Inquiry into the effectiveness of a doula in supporting a couple is also important given evidence that a male partner may be a limited sole source of support. For example, anthropological and historical
studies have noted the general rarity of male presence at childbirth and the limited roles prescribed to males when they have been included (e.g. physically supporting the laboring woman) (Ford, 1945; Heggenhaugen, 1980). Others have described inadequate preparation of the male for what is, at best, a poorly defined role. Prospective fathers may be under as much stress and in need of support as the mother-to-be (Grossman et al., 1980; Shereshefsky & Yarrow, 1973), and, thus, may not be able to provide adequately for their partners. Despite these observations, the presence of a male partner is of importance. Most women want their partners at the birth and, for the most part, find their presence helpful (Bertsch, Nagashima-Whalen, Dykeman, Kennell, and McGrath, 1990; Klein, Gist, Nicholson, & Standley, 1981; McKe, 1980). Thus, it is particularly important to assess the efficacy of a doula’s support to a laboring woman and her partner and to determine whether such support ultimately benefits maternal adjustment more than the support of a male partner alone.

Bertsch et al. (1990) observed and compared the labor support behaviors of a small sample of fathers (at a Cleveland hospital) with a subsample of doulas who were part of the Houston study described above (Kennell et al., 1989; Kennell et al., 1991). They found that fathers’ behavior differed significantly from doulas’ behaviors on all measured variables. Though fathers demonstrated a higher frequency of handholding during early labor than did doulas, they were physically more distant from the mothers than were doulas
during the portions of early and late labor in which the mothers were in discomfort, and they had a more limited repertoire of comforting behaviors. Doulas also spent a greater percentage of time physically comforting the mothers (rubbing, stroking, clutching, holding) and talking to them than did fathers. When fathers did talk, their primary verbalizations were comforting phrases, with very few instructive or explanatory phrases ("coaching"). Furthermore, doulas were present during 100% of early and late labor, as opposed to fathers who were present 78% of early labor time and 92% of late labor (but asleep 7% of that time). While this study highlights marked differences in the support behavior of male partners versus doulas, the two groups were observed independently, which precludes addressing the issue of whether or not a doula can support a couple through labor and delivery and, perhaps, positively influence the support behaviors of the male partner.

Only one experimental study has assessed the husband’s role in the context of studying the impact of professional support during labor and delivery. Hodnett and Osborn (1987) found mixed results in their study of support by "professional monitrices" (lay midwives); more husbands in the intervention group used physical comfort measures than control husbands, but fewer provided instruction/information or advocacy behaviors. Experimental husbands were almost unanimous in praising the helpfulness of the monitrice. However, there were no group differences in husbands'
feeling of involvement in the childbirth experience or in perceived support. Hodnett and Osborn (1987), however, did not assess the impact of the intervention on marital satisfaction, nor did they take the potential moderating effect of prenatal marital quality into account - both factors which are critical to understanding the influence of the male partner on a woman's experience and perceptions of childbirth and new motherhood.

The generalizability of prior research on the effects of doula support during labor and delivery is also limited by the failure to study outcomes beyond the early neonatal period. A longitudinal framework which incorporates both prenatal and postpartum assessments is necessary to gain a better understanding of the benefits and the limitations of an intervention which is focused on a single, albeit critical, phase of the transition to parenthood. It would be particularly instructive to determine whether support of a doula can ameliorate the stresses of the postpartum period - a time of psychological vulnerability for many women. In addition, most studies which have employed a prospective, longitudinal framework for studying the transition to parenthood have examined the impact of prenatal factors on the experience of childbirth or on postpartum adjustment, but they have not assessed how prepartum factors might interact with the childbirth experience to influence postpartum outcomes.

An additional drawback of prior doula studies is the lack of emphasis on psychosocial outcomes variables. Hodnett and Osborn
(1987) did include several psychosocial measures (expected and perceived personal control, anxiety, type of prenatal education, and commitment to unmedicated birth) in their study of the impact of monitrice support on childbirth outcomes and found some support for a model of "person-environment interaction during childbirth" (p. 16). Hodnett and Osborn (1987), however, only assessed perinatal outcomes and postpartum (retrospective) perceptions of the birth experience, and they did not include psychological variables which would reflect postpartum maternal adjustment or which would be likely to change as a function of a supportive intervention.

The inclusion of psychological measures as outcome variables would also address a final limitation of prior studies of doula support; the lack of focus on the process underlying the intervention’s effect and the potential specificity of the intervention’s impact (i.e. differential responsiveness to the intervention). That is, what is it about the doula intervention that engenders positive effects, do some women benefit more than others, and, if so, what factors account for this differential response? The mechanisms which underlie the beneficial effects of doula support - physical and/or psychological - are not well understood. Klaus et al. (1986) and Kennell et al. (1991) speculated that the doula’s presence may reduce maternal anxiety which could, in turn, reduce uterine muscle contractions. Lederman, Lederman, Work, and McCann (1978) have reported that
stress-related biochemical measures, such as increased adrenaline concentrations and epinephrine, are significantly correlated with maternal anxiety and prolonged labor. Others, however, have reported nonsignificant correlations between self-reported maternal anxiety and labor length and perinatal complications (Beck et al., 1980; Norbeck & Tilden, 1983). The question of whether and how support by a doula impacts on maternal anxiety is still unanswered.

Other studies have demonstrated relationships between prenatal psychological factors (such as maternal role identification and attitudes), social support (for example, relationships with husband and mother) and perinatal outcomes (such as progress in labor and type of delivery), suggesting that the impact of a doula may be moderated by factors other than maternal anxiety (Kapp, Hornstein, & Graham, 1963; Lederman, Lederman, Work, & McCann, 1979; Molfese et al., 1987; Norbeck & Tilden, 1983). Furthermore, in attempting to understand the mechanisms which underlie a doula's impact, it is important to consider individual differences in responsiveness to the intervention. Does the intervention benefit some women and not others and, if so, what factors contribute to this differential responsivity? Answers to these questions can help elucidate and define the nature and specificity of the intervention's impact, as well as guide future intervention endeavors.
The Present Study

The present study assesses the impact of a supportive intervention during labor and delivery on the postpartum psychological adaptation of new mothers. This assessment of psychological adaptation adds to an ongoing research project (Kennell & McGrath, 1987) designed to refine and extend prior studies on doula supported labor and delivery by including both lower and middle SES subjects, male partners of laboring women, and prenatal and postpartum assessments.

The present study examines the impact of a labor support intervention on three areas of maternal postpartum psychological adjustment: mood, self-evaluation, and marital/relationship satisfaction. Evidence that each of these areas has been found to be vulnerable in new mothers and, for some women, could be positively impacted by a doula's support will be presented next. First, the broader conceptual rationale for the proposed intervention effects will be discussed, followed by a closer look at each of the outcome variables hypothesized to be sensitive to the doula intervention.

Factors Assumed to Underlie Effects of Doula Intervention

Social Support. A substantial body of research has indicated that social support can often reduce or buffer the adverse physical and psychological effects of stressful life events (Cobb, 1976; Cohen & Wills, 1985; Thoits, 1986). Of the numerous definitions and conceptualizations of social support, a few are particularly
relevant to understanding the type and efficacy of support provided by a doula.

First, regarding the definition of social support, most theorists have agreed on three, often interrelated, types of social support; emotional, informational, and instrumental support (Cobb, 1976; House, 1981). Emotional support helps a person to feel cared for, valued and understood; informational support provides information and advice which enables a person to better cope with a stressful situation; and instrumental support provides concrete, direct aid (Mercer, 1986; Thoits, 1986). Heller, Swindle, and Dusenbury (1986) added a fourth factor—appraisal support—which can be viewed as feedback and information which tells people how they are performing or coping in their particular role and circumstances (Mercer, 1986).

Each type of social support may enhance adjustment to general life circumstances (Russell & Cutrona, 1984; Weiss, 1974). It follows, then, that a supportive intervention which provides several types of support during a stressful experience such as labor and delivery will be more likely to have beneficial effects. While hospital staff may provide some of these support components, they generally focus on the medical aspects of labor and delivery, supply primarily informational support, or may be too overworked to adequately or consistently meet other supportive needs. Furthermore, male partners may lack the knowledge and experience necessary to provide aid and find that their helpfulness is
diminished by their own needs for support during the experience. In contrast, a doula functions in all four support capacities, providing her continued presence, encouragement and reassurance (emotional support), explanations, guidance and advice (informational support), physical comfort such as holding, massaging, providing cool compresses (instrumental support), and feedback based on her professional and personal experiences with childbirth (appraisal) (Hodnett & Osborn, 1987).

Theoretical conceptualizations of the mechanisms of social support may better our understanding of how a doula may be a uniquely effective source of support as well as providing a framework for understanding individual differences in responsiveness to the intervention. Hobfoll, Nadler, and Leiberman (1986) have suggested a model of "ecological congruence" to describe the importance of a "fit" between situational demands and available resources. They emphasize that in order to be beneficial, provided resources (i.e. interventions) must be ecologically congruent with the demands of the particular situation as well as with the individual's needs, values and personal resources. Similarly, Cutrona (1990) has articulated a support paradigm called the "optimal matching model" which emphasizes the importance of specifying the type of support which is most beneficial in ameliorating or preventing the consequences of different kinds of stressful events.
Several recent studies have addressed the significance of the resource-stress-intervention relationship. For example, in studying the development of maternal depression following various birth outcomes (premature delivery, delivery by c-section, normal delivery, or spontaneous abortion), Hobfoll and Lieberman (1987) found that "the benefit of intimacy with spouse was seen as being dependent on situational demands and environmental constraints" (p. 18), suggesting that a spouse's support was a beneficial resource in the face of some stressors but not others.

A study by Affleck, Tennen, Rowe, Roscher, and Walker (1989) also demonstrated the importance of considering the interactions between a person's particular needs or resources and the help offered to them. In studying the effects of a supportive intervention program designed to aid new mothers of high risk infants in the transition from hospital to home care, they found the most positive results for those mothers who were in the most need of support (as measured by "need-for-support" items of a social support inventory). Mothers' responsiveness to the intervention and their sense of competence and perceived control were significantly predicted by the interaction between experimental condition and need for support. Moreover, the investigators found that mothers who indicated a low level need for support were negatively impacted by the program. Studies such as these underscore the importance of identifying the resources which are critical in healthy adjustment to various types of stressful
events, of developing interventions which "fit" both the need and the stressor, and of assessing the interactions between resources and interventions on desired outcomes.

Thoits (1986) conceptualizes social support as "coping assistance" in that it can help a distressed person "to change the situation, to change the meaning of the situation, to change his/her emotional reaction to the situation" and by doing so, to "eliminate or alter problematic demands or . . . control the feelings of anxiety or depression usually engendered by those demands" (p. 417). Moreover, Thoits (1986) maintains that one of the most critical conditions for the seeking, acceptance and effectiveness of assistance in coping with a stressful situation is an empathic understanding (based on similarities of situational experience) between the helper and the distressed person. Once again, a doula may be particularly suited ("ecologically congruent" or "optimally matched") to provide this necessary component of support.

Hobfoll et al. (1986), Cutrona (1990), and Thoits (1986) criticize prior research on social support and stress-buffering which has, for the most part, neglected the issue of the appropriateness and efficacy of various sources of support, particularly via experimental intervention studies. The present study examines the differential impact of routine hospital care and labor partner support versus doula support on maternal postpartum adjustment. In addition, it was hoped that the longitudinal
framework would facilitate examination of the role of mothers' "resources" which may be significant moderating factors in the social support process. That is, in addition to the proposition that doula support may be a particularly suitable intervention for the stress associated with childbirth, it may be particularly beneficial for those women who are lacking in resources which are salient in adjustment to new motherhood. Prepartum levels of one such resource - "perceived support" - will be examined to better understand such intervention effects. This construct is defined as "the perceived availability and adequacy of supportive ties" (Barrera, 1986, p. 417) and has emerged as a critical variable in determining the impact of support on distress and health.

Relationship With Mother. In addition to conceptualizing the doula's function as a general social support intervention, a doula can also be viewed as serving a very specific (and well-matched) type of support role - that of a nurturing maternal figure who may provide a "therapeutic" function as well as a supportive one. In this light, examining the role of new mothers' relationships with their own mothers in their psychological adjustment to motherhood may contribute to our understanding of another mechanism by which a doula might have a beneficial impact. A woman's relationship with her own mother has been cited by some theorists as being a central factor in her adjustment to new motherhood (Benedek, 1970; Chodorow, 1978; Deutsch, 1945; Lederman, 1984; Rubin, 1967, 1984). Chodorow (1978) and Benedek (1970) emphasized that a positive sense
of self as mother is rooted in a positive identification with one's own mother and an internalization of her qualities. They maintained that the possibility of a more difficult adjustment to motherhood can also be based in this identification, especially if it is burdened by unresolved conflicts from the past which are then triggered by the new mother's experiences with her own child.

While women in the transition to motherhood are vulnerable to the impact of parental relationships, their "dynamic turmoil" may also allow for "both greater openness to change and more intense need for therapeutic relationships...." (Cramer & Stern, 1988, p.44). Fraiberg and her colleagues (1980) demonstrated that a nurturing, therapeutic relationship could, in some cases, effectively alleviate the parenting problems engendered by repressed early mother-child conflicts; what they termed "ghosts in the nursery." Leifer (1980) found that when first-time mothers were faced with their infant's helplessness and dependence, "an often intense need to be taken care of or 'mothered' oneself was felt" (p.59). A doula's therapeutic function is obviously limited by the prescribed time she spends with the mother-to-be and by the primary focus on the impending birth. However, it is conceivable that the presence and availability of a nurturing, maternal (and yet objective) figure at such a critical juncture in the transition to motherhood could prevent or moderate the impact of the stresses of labor and delivery on postpartum adjustment.
The mother-daughter relationship may affect maternal postpartum adjustment in several ways, thereby moderating the doula's impact. Main, Kaplan, and Cassidy (1985) have maintained that the process of parental identity formation is influenced by "internal working models of attachment" which are based on representations of early attachment experiences. These models reflect the cognitive and affective "rules" which govern a person's appraisals of and behavioral experience with current attachment relationships. In his review of social support, Barrera (1986) maintained that there is a substantial theoretical basis demonstrating the relevance of attachment relationships to the support-health connection. In other words, the mother-to-be's perceptions of her relationship to her own mother could influence her perceptions of and responsiveness to a doula's support, thereby moderating the impact of the intervention on postpartum adjustment.

According to Rubin (1984), relationships between mothers and daughters which have often been strained during adolescence are usually renewed and reworked during the transition to motherhood. During this period, the woman's mother is assumed to be the most salient model for "replication" - a crucial developmental step in the formation of maternal identity which entails a search for and trying on of various maternal behaviors and attitudes which are valued by society (Rubin, 1984). A woman's rapprochement with her mother following the birth is also an important factor in her adaptation to new motherhood (Leifer, 1980). However, as Lederman
(1984) maintains, "reconciliation is more difficult to achieve. . . .
if the [woman's] mother is unavailable, critical, or unsupportive" (p. 80). Perhaps by virtue of her being available, praising, and supportive, a doula could serve a supportive or therapeutic function which might enhance mother-daughter relations, thereby impacting on the new mother's overall psychological adaptation. This could be particularly important for women who have poor relationships with their mothers and, thus, lack this vital resource in the transition to parenthood.

Lederman and her colleagues (1979, 1984) empirically demonstrated that greater conflict in the concurrent mother-daughter relationship was significantly related to a more negative childbirth experience (e.g. higher anxiety levels and slower labor progress) as well as to more difficult postpartum adaptation (e.g. lower confidence and identification in the motherhood role). She identified four components of the mother-daughter relationship which are salient during the transition to motherhood: (1) availability of the mother, (2) mother's reactions to the pregnancy, especially her acceptance of the new baby and the acknowledgement of her daughter as a mother, (3) respect for the daughter's autonomy, and (4) willingness to reminisce with her daughter about her own childbearing and childrearing experiences. Regarding this last component, Levy and McGee (1973) found that "the perception of her mother's own childbearing experience . . . was a significant indicator for assessing a woman's feelings toward
her own childbirth" (p. 179). A doula's appraisal support may be particularly important if the mother-to-be has lacked the opportunity for positive comparison and feedback from her own mother.

While it is possible that a doula could positively affect maternal adaptation via her maternal role, it is also conceivable that the "doula as mother" might negatively impact some women for whom a conflictual relationship with their own mother hinders their acceptance of nurturance or colors their perceptions of the doula's support. Leifer (1980) described how such factors influenced some new mothers' desire for maternal support; "a complex range of emotions regarding the mother also colored the women's feelings about obtaining help from her. Some women harbored negative reactions to their mother's maternal capacities or were anxious about becoming like them. For others, competitive feelings surfaced and their need for the baby to be their own, and not the mother's, was often remarkably strong" (p. 89). It is equally plausible, however, that despite a conflictual mother-daughter relationship, the doula could be identified with any other positive nurturing figure in the mother-to-be's past or present experience, thereby engendering a positive responsiveness to the intervention.

In sum, based on evidence concerning the impact of social support and relationship with mother on the psychological adjustment of new mothers, it was expected that the presence of a trained female support companion (doula) during labor and delivery
would enhance maternal psychological adaptation and, furthermore, be particularly beneficial for women who were lacking in these two important resources. Prior research has also suggested that several postpartum outcomes, particularly maternal mood, maternal self-evaluations, and marital/relationship satisfaction, would be especially sensitive to the effects of doula intervention during the childbirth experience. These outcome variables are considered in the following section:

Outcomes Hypothesized to be Sensitive to the Doula Intervention

Maternal Mood. One of the most frequent maladaptive outcomes of new motherhood is depressed mood which usually peaks during the first few postpartum months but may persist throughout the first year following the birth. Various studies have estimated the incidence of postpartum depressed mood to range between 7% and 30%, with the most consistent findings of rates between 12-20% (Hopkins, Marcus, & Campbell, 1984; O'Hara, Neunaber, & Zekoski, 1984; Paykel, Emms, Fletcher, & Rassaby, 1980). Such mild to moderate depressive symptoms can be distinguished from the more common (50% to 80% prevalence estimate), transient (usually lasting 24 to 48 hours) dysphoria called "maternity blues" which occurs following the birth (Pitt, 1973; Yalom, Lunde, Moos, & Hamburg, 1968). The potential importance of assessing the impact of doula intervention on maternal mood is heightened by recent studies which have demonstrated a negative impact of mild to moderate symptoms of

To my knowledge, no published studies have systematically assessed the impact of support during labor and delivery on the development of postpartum depressed mood. However, links between mothers' labor and delivery experiences and depressed mood have been reported by a number of investigators, suggesting the potential impact of the support of a doula during this critical phase of the transition to parenthood. Mercer (1986), for example, reported that a number of the subjects in her study of first-time mothers who experienced depression at 1-month postpartum reported that "they were working out feelings about their birth experience and were depressed about that" (p. 128). In Grossman et al.'s (1980) study of pregnancy, birth and parenthood, women who judged themselves to "have done well" during labor and delivery felt significantly less depressed at two months postpartum. Oakley (1980) found that early "post-natal blues" were associated with mothers' dissatisfaction with labor and with epidural analgesia. Leifer (1980) also reported that the labor and delivery experience had an impact on maternal depression; "depressive reactions were set off in situations where the woman felt that her own needs had not been adequately responded to by the husband, the nursing staff, or the physician" (p. 60).

Studies which have linked the etiology of postpartum depression to deficits in social support (Cutrona, 1984; Cutrona &
Troutman, 1986; Fleming et al., 1988) suggest that the social support component of the doula intervention may be particularly effective at preventing or ameliorating depressive symptomatology. Social support (or lack of it) has, in fact, been the factor most consistently linked to postpartum depression in a growing body of empirical literature (Gotlib, Whiffen, Wallace, and Mount, 1991).

It is also hypothesized that doula support could have an impact on maternal depressed mood via the therapeutic benefit of the maternal role of the doula. Several investigators have suggested that a conflicted relationship with one's mother is a risk factor in the development of postpartum depression (Cicchetti & Aber, 1986; Cutrona, 1984; Brockington & Kumar, 1982). Kumar and Robson (1984) demonstrated this connection empirically, finding that current difficulties in women's relationships with their mothers (assessed in early pregnancy) were significantly related to postnatal depression. Using an instrument called The Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), Gotlib, Mount, Cordy, and Whiffen (1988) and Gotlib et al. (1991) found that mothers with negative perceptions of the early parenting they received (especially those with significantly lower scores on perceived "maternal caring") were more likely to have developed postpartum depression. Furthermore, the level of perceived maternal caring assessed at 3 days postpartum predicted depression 30 months later (Gotlib et al., 1988).
Despite the few studies which have peripherally addressed the impact of labor and delivery experience on maternal depression, there is a clear lack of experimental research which examines the effectiveness of supportive interventions on the development of maternal depression (Hopkins et al., 1984). Furthermore, given the evidence and theoretical assertions of the importance of social support and of the mother-daughter relationship in the development of postpartum depression, it will be important to consider the role of these two resources in moderating the impact of the doula intervention on postpartum adaptation.

**Self-Evaluation.** A second variable hypothesized to be affected by doula support is that of mothers' self-evaluations regarding their new maternal role. As discussed earlier, a major task in the transition to parenthood is the reworking of one's intrapsychic and social identity to incorporate a new sense of self as parent (Benedek, 1970; Chodorow, 1978; Rubin, 1984). In delineating the gaps in our understanding of the parental self-concept, Partridge (1988) pointed to a lack of information on the influence of various birth circumstances (e.g. labor and delivery experience) and their reciprocal influence on intrapsychic factors, such as depression, self-esteem, and patterns of early parenting.

While there have been no previous studies on the impact of a supportive intervention during labor and delivery on the self-evaluations of new mothers, there are theoretical and empirical grounds for expecting such intervention effects. In Rubin's (1984)
treatise on maternal identity and experience, she maintained that the complex processes which a mother-to-be goes through during pregnancy in developing and promoting her maternal identity are "severely stressed" during childbirth, as she confronts physical pain and the reality of what the child she has fantasized about will be. Rubin (1984) emphasized that at that point, "the affiliative support system, particularly husband and mother, has to be augmented by a knowledgeable and skilled support system" (p. 10). As discussed, a doula - as both a social support resource and as a maternal figure - may provide intervention which is both sensitive to and congruent with the development of a positive maternal "self-concept."

The present study will assess three dimensions of maternal self-evaluation which Lederman, Weingarten, and Lederman (1981) have identified in their study of postpartum adaptation: gratification from the labor and delivery experience, confidence in ability to cope with tasks of parenthood, and satisfaction with parenthood and infant care. These dimensions were shown to be salient factors in Lederman and Lederman's (1987) study of the adaptation of multiparous women. It is quite conceivable that the self-evaluations of first-time mothers would also be vulnerable to the impact of childbirth (as a new and anxiety-provoking experience) and sensitive to the effects of support.

Prior research on maternal adaptation also suggests that the Lederman et al. (1981) self-evaluation variables included in the
present study may be impacted on by a supportive intervention. First, regarding gratification from the labor and delivery experience, Bennett, Hewson, Booker, and Holliday (1985) found that women’s perceptions of support during labor and delivery were significantly related to their postpartum ratings of overall satisfaction with the childbirth experience. Furthermore, these satisfaction ratings were particularly low for women who reported an "inability to cope" as the worst aspect of their labor and delivery experience, suggesting the potential importance of the "coping assistance" (Thoits, 1986) provided by a doula. Mercer, Hackley, and Bostrom (1983) found that women’s positive perceptions of their birth experience related significantly to greater mate and network support during labor and delivery, as well as to various labor and delivery outcomes (e.g. use of anesthesia, spontaneous versus medically augmented labor and delivery). Lederman’s (1984) finding that women’s prenatal fears and concerns about childbirth were related to their self-reported anxiety during labor suggests that prenatal self-evaluations specifically related to labor and delivery should also be assessed as they may sensitize and moderate a woman’s response to the doula’s intervention.

With respect to the second aspect of self-evaluation, confidence in ability to cope with tasks of parenthood, Williams et al. (1987) empirically supported their assertion that parenting confidence is a central aspect ("the linchpin") of maternal postpartum adaptation. They found that prenatal expectations of
confidence in parenting was predictive of postpartum mother-infant attachment and maternal emotional state. Moreover, parenting confidence measured at one month postpartum was significantly related to parenting confidence two years later, as well as being predictive of the quality of the marital relationship. The parenting confidence construct was found to be a more compelling and influential factor in postpartum adaptation than was a measure of global self-esteem.

Cutrona and Troutman (1986) identified social support as an important factor in the development of parenting confidence. They found that women with high levels of prenatal social support reported higher levels of self-confidence in their mothering abilities at 3 months postpartum. Social support affected maternal postpartum adaptation primarily through the influence of their subjects' "self-efficacy" beliefs about themselves as parents (Cutrona & Troutman, 1986). In the present study, a woman who gains more confidence in her ability to cope with labor and delivery as she is supported by a doula's appropriate encouragement and appraisal may have a head start on coping confidently and effectively with the challenges of the postpartum period. Particularly apropos to the impact of the doula's maternal functions, Shereshefsky and Yarrow (1973) reported that a variable which measured first-time mothers' "perceptions of experience in being mothered" was significantly related to their postpartum self-confidence.
With regard to the third maternal self-evaluation variable, satisfaction with parenthood and infant care, Crnic, Greenberg, Ragozin, Robinson, and Basham (1983) found that perceptions of both intimate and community support had significant impact on maternal satisfaction with parenting; mothers with more support and less stress reported significantly more pleasure in their infants and greater satisfaction with parenting. Studying first-time mothers’ perceptions of childbirth, Mercer et al. (1983) found that the mothers’ appraisals of the birth experience had significant positive correlations with their gratification in the maternal role and with actual mothering behaviors at one year postpartum. A mother-to-be who is nurtured and emotionally replenished by a doula may be better able to nurture her own baby, providing a greater sense of enjoyment and gratification from the experience (Fraiberg, 1980).

Lederman (1984) found significant relationships between prenatal maternal self-evaluations and stress and anxiety during labor and delivery. Two factors closely related to the development of maternal self-concept - "identification of a motherhood role" and "acceptance of pregnancy" - correlated consistently and significantly with progress throughout labor. Lederman's (1984) analysis also indicated that "a good relationship with one's mother . . . is associated with a reasonable degree of self-confidence regarding motherhood and with less fear and anxiety in pregnancy and childbirth" (p. 14). Taken together, these findings not only
support the hypothesis that labor and delivery support could impact on maternal self-evaluation, but they also underscore the importance of assessing the mediation of such prenatal maternal self-evaluations on the intervention's effects.

**Marital/Relationship Satisfaction.** A third aspect of postpartum adaptation which could potentially benefit from supportive intervention during labor and delivery is marital/relationship satisfaction. A consistent finding in the literature on the transition to parenthood is that marital satisfaction declines significantly following the birth of a first child (Belsky, Spanier, & Rovine, 1983; Ruble, Fleming, Hackel, & Stangor, 1988). This finding is particularly important in light of a well-documented association between a positive marital relationship and a woman's overall postpartum adaptation. Studying first-time mothers, Shereshefsky and Yarrow (1973) found that marital adjustment was significantly related to nearly all of their twelve maternal adaptation scales. Numerous other studies have demonstrated a relationship between marital satisfaction and lower levels of depression (Dimitrovsky, Perez-Hirschberg, & Itskowitz, 1987; Gotlib et al., 1991; Grossman et al., 1980; O'Hara et al., 1984; Paykel et al., 1980) and distress (Stemp, Turner, & Noh, 1986), and more positive maternal attitudes and mother-infant interaction (Crnic et al., 1983).

Most studies which have examined the relationship between the labor and delivery experience and marital satisfaction have focused
on prenatal or concurrent assessments of the marriage, rather than
on the impact of the childbirth experience on postpartum marital
adjustment. Lederman et al. (1979, 1984), for example, found that
a positive (prenatal) relationship with the husband was
significantly related to shorter labor length. Other investigators
demonstrated associations between greater marital closeness, less
pain, and more enjoyment during childbirth (Norr et al., 1977).
Grossman et al. (1980) found that, for first-time mothers in
particular, satisfaction with the marriage, as reported prenatally,
was the single most important factor in determining positive
adaptation to the labor and delivery experience.

Grossman et al. (1980) also examined the relationship between
labor and delivery experience and postpartum marital satisfaction.
Pregnancy and birth-related factors were found to have a much
greater emotional impact on postpartum marital adjustment for
first-time mothers than for experienced mothers. More positive
experiences during labor and delivery were significantly related to
better marital adjustment at two months postpartum. For women who
had complications in labor and delivery, Grossman et al. (1980)
found that one of the most adverse effects of their experience was
the feeling of being unsupported by the husband. In concluding
that "... marital adjustment seems to be jostled considerably by
the first pregnancy and birth" (p. 99), Grossman et al. (1980)
emphasized the importance of providing both first-time prospective
parents - mother and father - with educational and emotional support.

Despite the significance - and vulnerability to stress - of the marital relationship during the transition to parenthood, to my knowledge, no previous studies have directly examined the impact of labor and delivery support on this aspect of adjustment. Also, as noted earlier, the previous group of studies on doula support did not include male partners. As the present study will examine whether or not a doula can have beneficial effects in supporting a woman and her partner through childbirth, it is hypothesized that the intervention could potentially benefit the marital relationship. It is important to note that the construct of marital satisfaction has generally not been applied to women in lower SES populations, who are more likely to be unmarried than women in middle or upper SES groups. It is presumed here, however, that lower SES women's satisfaction with male partner relationships is just as significant in providing the type of support which is so important during labor and delivery and the transition to parenthood - and just as vulnerable to the stresses and demands of this period.

A doula could have a beneficial impact on marital/relationship satisfaction indirectly, by promoting a woman's more positive view of the labor and delivery experience (including her views of her partner's participation), and/or more directly, as a function of the support the doula provides to the male partner.
himself. A woman who, for example, feels positive about her partner's involvement in the labor and delivery experience, might continue to feel closer to him in the weeks and months following their shared experience. Likewise, a partner who is helped to feel more effective at supporting the mother-to-be through labor and delivery might be more inclined and able to provide support during the postpartum period, at a time when such support has been found to be so critical to satisfaction with intimate relationships.

Several descriptions of fathers' roles and needs during labor and delivery would suggest that a doula could effectively provide support to both the male and his laboring partner and possibly enhance marital/relationship satisfaction in this way. In a descriptive study of first-time fathers, McKee (1980) noted that the medical and institutional aspects of childbirth often reduce the father's role to a peripheral one, contrary to their expectations or desires. MacLaughlin and Taubenheim (1983) studied first-time fathers' needs during the childbirth experience and found that both class-prepared and unprepared fathers reported similar needs: explanation and information about what was happening to their wives, the opportunity to nurture their wives during labor, behavioral guidelines as to their participation, a desire to be able to depend on staff (for example, a nurse) should they be unable to help their wives, receiving emotional support and acknowledgement of their feelings from birth attendants, and the desire to maintain a degree of control during their wives' labor.
As one of the most common suggestions made to prospective fathers by childbirth educators is to act as an advocate of his wife's labor and delivery desires (Campbell & Worthington, 1982), unexpected complications (e.g. the administration of unwanted medication or c-section) could lead to women feeling let down by or placing blame on their husbands or male partners.

Grossman et al. (1980) found that throughout their assessments, the men's capacity to support and respond to their wives was related to their own feelings of being nurtured by their mothers. Shereshefskey and Yarrow (1973) also emphasized the importance of the mother-son relationship during the transition to parenthood; "first pregnancy is a time when feelings about separation are intensified, when infantile conflicts between the father and his own parents are reactivated, and dependency needs are heightened" (p. 112). Perhaps in observing the doula's maternal ministrations and feeling nurtured by her emotional support, the male partners will be better able to provide for the laboring women as well as deriving more personal gratification from the experience. In the previously discussed Hodnett and Osborn (1987) experimental study of "monitrice" support, husbands in the experimental group did, indeed, provide their wives with physical comfort more than did control group husbands.

**Hypotheses**

The primary purpose of the present study is to assess the impact of a supportive intervention during labor and delivery on
postpartum maternal psychological adjustment. It is hypothesized that supportive intervention will result in experimental subjects' lower levels of postpartum depressed mood, more positive self-evaluations regarding their new motherhood role, and more positive marital/relationship satisfaction.

The study will also evaluate individual differences in responsiveness to the intervention provided by the doula, taking into account the integral role of salient resources in optimizing the support-health connection. Measures of perceived social support and of the mother's relationship with her own mother will be included in order to evaluate how prepartum personal and social resources (Hobfoll et al., 1986) may affect responsiveness to the intervention. Furthermore, both low and middle SES subjects will be included in order to study the potential differential effects of class differences in the adjustment to first-time motherhood and in responsiveness to supportive intervention.

It is hypothesized that subjects who have fewer prenatal resources (low levels of perceived support and poor relationship with mother) will be more likely to benefit from the doula intervention, showing enhanced postpartum mood, postpartum self-evaluations, and postpartum marital/relationship satisfaction. Prenatal levels of depressed mood, self-evaluations regarding motherhood, and marital/relationship satisfaction will also be measured to assess and control for their potential role in moderating the effects of the intervention on postpartum outcomes.
CHAPTER II

Method

Subjects

Demographic Characteristics

Subjects were 188 nulliparous women recruited during their third trimester who were experiencing normal pregnancies and planning on delivering at Case Western Reserve University's MacDonald Hospital for Women. Subjects in the present study are a sub-sample of an estimated population of 700 subjects who will be recruited over the next few years for a larger study on the perinatal effects of support for couples during labor and delivery (Kennell & McGrath, 1987).

Both low SES and middle SES subjects were recruited. Of the 188 subjects, 127 were private physician patients recruited from local childbirth classes, and 61 were staff physician patients, recruited from the MacDonald Hospital Prenatal Clinic. The Clinic provides staff service care for women who cannot afford private obstetric care or whose care is funded by Medicaid. The 127 middle SES subjects will be referred to as the "private" group, while the 61 low SES subjects will be referred to as the "staff" group.

Table 1 presents the demographic characteristics of subjects and their male partners. Comparisons between staff and private subjects and between experimental and control groups will be presented in the Results section. Subjects ranged in age from 18 to 41 years, with a mean age of 26.92 years (SD = 5.26). Sixty-two
Table 1
Means, Standard Deviations, and Frequencies: Demographic Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mothers</th>
<th></th>
<th>Fathers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M(^a)</td>
<td>SD</td>
<td>M(^a)</td>
<td>SD</td>
</tr>
<tr>
<td>Age</td>
<td>26.92</td>
<td>5.26</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(188)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Non-White</td>
<td>38.3</td>
<td>--</td>
<td>35.0</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>(188)</td>
<td></td>
<td>(183)</td>
<td></td>
</tr>
<tr>
<td>Education Level</td>
<td>5.34</td>
<td>1.18</td>
<td>5.36</td>
<td>1.32</td>
</tr>
<tr>
<td></td>
<td>(179)</td>
<td></td>
<td>(175)</td>
<td></td>
</tr>
<tr>
<td>Employment Status:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Employed</td>
<td>52.5</td>
<td>--</td>
<td>85.5</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>(179)</td>
<td></td>
<td>(172)</td>
<td></td>
</tr>
<tr>
<td>Occupation Level</td>
<td>6.89</td>
<td>1.72</td>
<td>6.44</td>
<td>2.19</td>
</tr>
<tr>
<td></td>
<td>(96)</td>
<td></td>
<td>(139)</td>
<td></td>
</tr>
<tr>
<td>Marital Status:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Married/ Cohabiting</td>
<td>73.6</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(178)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Income Level</td>
<td>4.54</td>
<td>1.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(153)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects included in a particular calculation, accounting for missing data.
\(^a\) All values in these columns are means, except where percentages are indicated under Variables.
percent of the subjects were White. Based on the Hollingshead 7-point index (1975), their mean education level was 5.34 (SD = 1.18), which represents "partial college" education, and they ranged from "less than seventh grade" to "graduate/professional." Approximately half (52.5%) of the women were employed at the time of recruitment, and their mean Hollingshead (1975) occupation level* was 6.89 (SD = 1.72), bordering the level 7 "minor professionals, small business owners" with a full scale range of 1 ("menial service workers") to 9 ("higher executives, major professionals").

Almost 3/4 of the subjects (73.6%) were married or cohabitating with a male partner. Sixty-five percent of the male partners were White. Their mean Hollingshead education level was 5.36 (SD = 1.32), which indicates partial college education. Education levels ranged from 1 to 7. Most of the male partners were employed (85.5%), with a mean Hollingshead occupation level of 6.44 (SD = 2.19), representing level 6 "semi-professionals, technicians." The mean family income level of 4.54 (SD = 1.48) falls between the "$15-18,000 per year" (level 4) and "over $18,000 per year" (level 5) categories.

* Due to a data coding error, maternal occupation levels could only be assessed for 96 of the subjects, including 7 staff subjects. The maternal occupation variable will, therefore, not be included in any analyses beyond the descriptive level.
Labor Support

While the initial recruitment criteria called for subjects who would be accompanied by a male partner during labor and delivery, it was found that many of the staff patients did not meet this requirement. Thus, subjects who anticipated primary labor support by a relative or friend were also included. In the staff subject group, 41% (n = 25) were primarily supported by male partners, 42.6% (n = 26) by their own mothers, 13.1% (n = 8) by female relatives, and 3.3% (n = 2) by female friends. Nearly all (99.2%) of the private patients were supported by male partners, with the exception of one subject who indicated her mother as primary support.

About one third of the staff patients also had "secondary" support persons, 16.4% (n = 10) of whom were their male partners, 13% (n = 8) subjects' mothers, and 14.8% (n = 9) were other female relatives or friends. In the private patient group, the one subject who had her mother as primary support, also had her male partner as secondary support. Two other private subjects (1.6%) had the secondary support of their mothers.

Attrition

Frequency and reasons of attrition. Table 2 presents data on the frequency and reasons for attrition. During the period of
### Table 2

**Frequencies of and Reasons for Exclusion or Attrition from Study**

<table>
<thead>
<tr>
<th>Attrition Reason</th>
<th>Whole Group (n = 289)</th>
<th>Staff Patients (n = 96)</th>
<th>Private Patients (n = 193)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (n)</td>
<td>Frequency (n)</td>
<td>Frequency (n)</td>
</tr>
<tr>
<td>No notification of admission</td>
<td>5.5% (16)</td>
<td>5.2% (5)</td>
<td>5.7% (11)</td>
</tr>
<tr>
<td>No doula Available</td>
<td>1.7% (5)</td>
<td>1.0% (1)</td>
<td>2.1% (4)</td>
</tr>
<tr>
<td>Refused Doula or Withdrew</td>
<td>2.1% (6)</td>
<td>1.0% (1)</td>
<td>2.6% (5)</td>
</tr>
<tr>
<td>Premature Delivery</td>
<td>0.7% (2)</td>
<td>--</td>
<td>1.0% (2)</td>
</tr>
<tr>
<td>Admitted &gt; 5 cm</td>
<td>2.4% (7)</td>
<td>2.1% (2)</td>
<td>2.6% (5)</td>
</tr>
<tr>
<td>Planned C-section</td>
<td>2.8% (8)</td>
<td>--</td>
<td>4.1% (8)</td>
</tr>
<tr>
<td>Did not return Postpartum Questionnaires</td>
<td>10.4% (30)</td>
<td>19.8% (19)</td>
<td>5.7% (11)</td>
</tr>
<tr>
<td>Other</td>
<td>1.7% (5)</td>
<td>2.1% (2)</td>
<td>1.5% (3)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>27.3% (79)</strong></td>
<td><strong>31.3% (30)</strong></td>
<td><strong>25.4% (49)</strong></td>
</tr>
</tbody>
</table>

**Note.** Percentages reflect the proportion of attrition subjects out of each group presented in the table columns (whole, staff, private).
recruitment, intervention, and postpartum data collection\textsuperscript{*}, a total of 289 women who were planning on delivering at MacDonald Hospital for Women were admitted as subjects and completed prenatal questionnaires (96 staff and 193 private patients). Of these 289 subjects, 27.3% (n = 79) were dropped from or dropped out of the study, including 30 staff patients (31.3% of recruited staff patients) and 49 private patients (25.4% of recruited private patients).

The subjects who participated at the intervention level (as doula or control patients) but did not return their postpartum questionnaire set (10.4%, n = 30 of all recruited subjects) will be referred to as the "drop-out" attrition group. In this group, 19.8% who did not return their postpartum questionnaires were staff patients, and 5.7% were private patients. The distribution of experimental status in this drop-out group was fairly even, with 46.7% (n = 14) Doula subjects and 53.3% (n = 16) Control subjects.

As can be seen in Table 2, only 6 subjects (2.1%; 5 private, 1 staff) either withdrew from the study prior to intervention or refused to have a doula once they had been assigned experimental group status. The remaining 43 subjects, who will be referred to as the "excluded" attrition group, were excluded from further participation in the study due to the following reasons: failure

\textsuperscript{*} As the present study is part of a larger, ongoing project, the cutoff date for including subjects in the present sample was determined by practical ("cost-benefit") considerations as well as by the need for adequate statistical power.
to notify the study of their admission to the hospital or to be identified by a chart-flagging back-up system (5.5%, n = 16); Cesarean sections without labor (planned for medical reasons after having been initially recruited) (2.8%, n = 8); admission to the hospital with cervical dilation greater than 5 centimeters (indicating progressed labor, with significantly less time for implementing the intervention) (2.4%, n = 7); no doula available in time to fully implement the intervention (1.7%, n = 5); delivery prior to 37 weeks gestation (7%, n = 2); and exclusion due to mistakes in recruitment (1.7%, n = 5), such as being multiparous or medically at-risk and having been erroneously recruited.

Of the remaining 210 subjects in the sample, 22 were excluded from further analyses because of excessive missing data, leaving the 188 subjects who comprise the present sample (65% of the original 289 subjects).

**Comparisons between attrition groups and remaining subjects.**

Table 3 presents the available demographic data on the group of drop-out subjects (no postpartum questionnaires), the excluded group (no intervention), and the 188 subjects who remained in the study. T-tests and chi-square analyses were conducted to detect significant differences between these three groups. As presented in Table 3, those groups who do not share a common subscript were significantly different from each other. It is of note that demographic data were not always available for all of the subjects.
Table 3
Comparisons between Excluded Subjects, Drop-out Subjects (No Postpartum Questionnairea), and Subjects Remaining in Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Excluded Subjects (n = 43)</th>
<th>Drop-out Subjects (n = 30)</th>
<th>Remaining Subjects (n = 188)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M or %</td>
<td>SD</td>
<td>M or %</td>
</tr>
<tr>
<td>SES: % Staff</td>
<td>23.3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>63.3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>32.4&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Maternal Age</td>
<td>27.86&lt;sup&gt;b&lt;/sup&gt;</td>
<td>23.40&lt;sup&gt;b&lt;/sup&gt;</td>
<td>26.92&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Race: % Non-White</td>
<td>61.5&lt;sup&gt;c&lt;/sup&gt;</td>
<td>39.1&lt;sup&gt;cd&lt;/sup&gt;</td>
<td>38.3&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Education Level</td>
<td>5.48&lt;sup&gt;e&lt;/sup&gt;</td>
<td>4.50&lt;sup&gt;e&lt;/sup&gt;</td>
<td>5.34&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Employment Status: % Employed</td>
<td>80.8&lt;sup&gt;f&lt;/sup&gt;</td>
<td>23.8&lt;sup&gt;h&lt;/sup&gt;</td>
<td>52.5&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
<tr>
<td>Marital Status: % Married/</td>
<td>84.6&lt;sup&gt;i&lt;/sup&gt;</td>
<td>22.2&lt;sup&gt;h&lt;/sup&gt;</td>
<td>73.6&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
<tr>
<td>Paternal Education</td>
<td>5.48&lt;sup&gt;g&lt;/sup&gt;</td>
<td>4.86&lt;sup&gt;g&lt;/sup&gt;</td>
<td>5.36&lt;sup&gt;g&lt;/sup&gt;</td>
</tr>
<tr>
<td>Paternal Employment: % Employed</td>
<td>91.3&lt;sup&gt;h&lt;/sup&gt;</td>
<td>85.7&lt;sup&gt;h&lt;/sup&gt;</td>
<td>85.5&lt;sup&gt;h&lt;/sup&gt;</td>
</tr>
<tr>
<td>Paternal Occupation</td>
<td>6.71&lt;sup&gt;i&lt;/sup&gt;</td>
<td>5.55&lt;sup&gt;i&lt;/sup&gt;</td>
<td>6.44&lt;sup&gt;i&lt;/sup&gt;</td>
</tr>
<tr>
<td>Income Level</td>
<td>4.39&lt;sup&gt;j&lt;/sup&gt;</td>
<td>4.09&lt;sup&gt;j&lt;/sup&gt;</td>
<td>4.54&lt;sup&gt;j&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects included in each calculation, accounting for missing data. For each variable, groups that significantly differ have no common subscript.
in the attrition groups, and that the number of subjects included in each calculation are indicated in parentheses.

**Drop-out versus excluded attrition groups.** First, examining the two attrition groups, there were significantly more staff patients in the drop-out group (63.3%) than in the excluded subjects group (23.3%), $\chi^2(1, 73) = 11.85, p < .001$). These two groups also differed significantly on four of the demographic variables; maternal age ($t(71) = -3.61, p < .001$), maternal education level ($t(35) = -2.78, p < .01$), maternal work status ($\chi^2(1, 47) = 15.25, p < .001$), and marital status ($\chi^2(1, 44) = 17.13, p < .001$). These findings indicated that the subjects who dropped out at the postpartum point were significantly younger and less educated than the excluded subjects, and significantly fewer were employed or married/cohabitating than the subjects who had been excluded prior to intervention. The two attrition groups did not differ significantly on maternal race, on any of the paternal variables, nor on income level.

**Attrition groups versus remaining subjects.** Looking first at the differences between the remaining subjects and those who dropped out at the postpartum point, again there was a significant difference in the ratio of staff and private patients, with the drop out subjects having a significantly higher proportion of staff patients than private patients as compared to the remaining subjects ($\chi^2(1, 218) = 10.62, p < .001$). The drop-out group differed significantly from the remaining subjects on the same
demographic variables as they did compared with the excluded subjects, indicating they were significantly younger than remaining subjects ($t(216) = 3.37$, $p < .001$) and less educated ($t(193) = 2.73$, $p < .01$), and had, as a group, fewer employed subjects ($x^2(1, 200) = 6.20$, $p < .01$) and fewer married/cohabitating subjects ($x^2(1, 196) = 20.13$, $p < .001$). The drop-out subjects did not differ from the remaining subjects on race, income, or on any of the paternal variables.

The group of excluded subjects, who had not received the intervention, differed significantly from the remaining subjects on only two demographic variables; race ($x^2(1, 230) = 5.09$, $p < .05$) and work status ($x^2(1, 205) = 7.36$, $p < .01$). That is, there was a significantly greater ratio of non-White subjects in the excluded group than in the remaining sample, and a much greater frequency of the excluded subjects were employed than in the remaining group.

**Procedure**

Figure 1 presents the sequence of recruitment and data collection. Subjects were recruited during their third trimester of pregnancy and were followed through 8 to 10 weeks postpartum. Research assistants presented the study as an investigation of couples' needs during labor and delivery which would entail the possible random assignment of a labor support companion (a doula) to the mother-to-be and her male partner. The doula was described as a woman experienced in the practical aspects of childbirth who
## Figure 1

### Study Design and Data Collection Schedule

<table>
<thead>
<tr>
<th>TIME</th>
<th>Low SES Nulliparous Women</th>
<th>Middle SES Nulliparous Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>uncomplicated pregnancy</td>
<td>uncomplicated pregnancy</td>
</tr>
<tr>
<td></td>
<td>at least 18 years old</td>
<td>at least 18 years old</td>
</tr>
<tr>
<td></td>
<td>planning to labor &amp; deliver with partner</td>
<td>planning to labor &amp; deliver with partner</td>
</tr>
</tbody>
</table>

**Recruitment**
- At Prenatal Clinic (staff patients)
  - informed consent
  - demographics
  - social support
  - relationship with mother
  - mood
  - self-evaluations
  - relationship satisfaction

**Arrival at hospital**
- (arrival at hospital)
  - in active labor
  - accompanied by partner

**Random Assignment**

<table>
<thead>
<tr>
<th>CONTROL (NO DOULA)</th>
<th>EXPERIMENTAL (DOULA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>low SES</td>
<td>low SES</td>
</tr>
<tr>
<td>mid SES</td>
<td>aid SES</td>
</tr>
</tbody>
</table>

**Postpartum Assessment**
- (by mail or at clinic, for low SES)
  - mood
  - self-evaluation
  - relationship satisfaction

*Major outcome variables (pre and post-intervention measures)*
would provide support throughout the labor and delivery experience but would not provide or interfere with medical care.

Subjects were informed that participation in the study entailed completing a set of prenatal questionnaires as well as additional questionnaires following the birth (for part of the larger study not presented here) and again at approximately 8 weeks postpartum. Male companions were also asked to fill out questionnaires at these times as part of the larger study. Subjects were provided with $25 compensation for participation in the study. Informed consent was obtained at the initial recruitment phase (see Appendix A). Subjects were assured that they would receive all the usual hospital services and care, that there would be no risk to their infant, and that they could withdraw from the study at any time.

Enrolled subjects were provided with the phone number of an on-call research assistant who they were instructed to notify prior to leaving for the hospital to deliver. Subjects' hospital charts were also flagged to provide a back-up system of notification when the woman was in active labor, had a labor partner present, and had been admitted to the hospital for labor and delivery.

Assignment to the Doula or No-Doula control group was made on a random basis. Assignments were recorded in envelopes which were shuffled and then sequentially numbered. The envelopes were opened to reveal group assignment at the time of hospital admission. Separate sets of envelopes were used for private and staff patients.
in order to assure equal distribution of experimental and control assignment in both the low- and middle-SES groups.

Subjects in the control group received routine obstetric care and completed the postnatal questionnaires. For subjects in the Doula group, one of four on-call doulas was notified by the research assistant and proceeded to the hospital immediately, remaining with the subject and her labor support partner throughout labor and delivery (see Appendix B for doula support training guidelines).

Subjects who were recruited at the Prenatal Clinic were either met at their 6-8 week postpartum check-up to complete questionnaires or arrangements were made with them, as with the private patient subjects, to receive and return questionnaires by mail. Follow-up and reminder calls were made to subjects to enhance the return rate.

**Measures**

Sample questionnaires are included in Appendix A.

**Prepartum Resources (Predictor Variables)**

**Demographic Variables.** A sample of the demographic data sheet which subjects completed at the prepartum assessment is included in Appendix A.

**Social Support.** The Social Provisions Scale (SPS; Russell & Cutrona, 1984) was used to measure subjects' prepartum levels of perceived social support. The SPS is a 24-item self-administered questionnaire developed to measure six types of social provisions
originally described by Weiss (1974): (1) Attachment, (2) Social Integration, (3) Reassurance of Worth, (4) Reliable Alliance, (5) Guidance, and (6) Opportunity for Nurturance (definitions can be found in Appendix A). Russell and Cutrona (1984) likened the definitions of these social provisions to those of different types of social support (such as emotional and instrumental support). The SPS has been used in studies which demonstrated a relationship between deficits in social support provisions and postpartum depression (Cutrona, 1984; Cutrona & Troutman, 1986).

Subjects rate each item on a 4-point scale ranging from strongly disagree to strongly agree. A total score and scores for each social provision are derived (with high scores indicating that subject is receiving that provision from current social relationships). Internal consistency coefficients for the total score have ranged from .85 to .92 across a number of populations (Cutrona, 1986). Reliability coefficients for the individual provision scales, based on two samples, range from .61 to .92. Test-retest coefficients ranged from .37 to .66, which the authors suggest may reflect the inconsistency of social support over time (Russell & Cutrona, 1984). Factor analyses have shown moderate intercorrelations among the six social provisions scales as well as indications of each scale’s unique contribution. Validity has been demonstrated by significant relationships with other measures of social relationships and networks, and, consistent with Weiss’ theoretical ideas, social provisions scores have been found to be
predictive of loneliness, depression, and health status (Russell & Cutrona, 1984).

**Relationship with Mother.** A subscale of the Lederman Prenatal Self-Evaluation Questionnaire (LSQ-PN; Lederman, 1984) was used as a measure of subjects' perceptions of current relationship with mother. The LSQ-PN was developed to assess the psychosocial adaptation of primiparous women to pregnancy and expectant parenthood for a study investigating the relationship of maternal prepartum adaptation to anxiety and labor progress during childbirth. The questionnaire in its entirety consists of seven subscales derived from 79 statements for which subjects choose one of four response categories (ranging from Not At All to Very Much So) to reflect their feelings.

The "Relationship with Mother" subscale consists of 10 items and has an internal reliability coefficient of .92 (Lederman, 1984). A correlation of .57 has been found between the subscale and independent clinical interview ratings of the same dimension (Lederman, Lederman, & Haller, 1981).

**Postpartum Adaptation (Outcome Variables)**

**Maternal Mood.** The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) was used to assess postpartum maternal mood. The BDI is a 21-item, self-report questionnaire which taps affective, cognitive, behavioral, and somatic symptoms of depression. One item regarding weight loss was omitted for the present study. Each item on the questionnaire is
scored from 0 to 3, with the higher number reflecting the highest level of depressive symptoms on that item and a zero indicating minimal or no symptoms. Item scores are then summed to a total score which can range from 0 (no depressive symptoms) to 63 (maximum level of depressive symptoms). Scores in the 10-20 range are generally considered to reflect mild to moderate levels of depression, with scores above 20 indicating more severe symptoms of depression.

The BDI has been used extensively in both research and clinical settings and has been employed in many studies of postpartum depression, either on its own or in combination with other measures (Atkinson & Rickel, 1984; Field et al., 1984, 1985; Hopkins, Campbell, & Marcus, 1987; O'Hara et al., 1984; Paykel et al., 1980). It has been found to be highly reliable and well validated. In addition to Beck et al.'s (1961) initial report of a .93 split-half reliability coefficient, a recent meta-analysis of the BDI's internal consistency (on samples reviewed for 1961-1986), yielded mean coefficient alphas of .81 and .86 (Beck, Steer, & Garbin, 1988). This recent review also reports high concurrent validity with four other well-researched depression measures as well as strong construct validity.

The BDI was also used to assess prepartum levels of maternal mood.

Self-Evaluation. The Lederman postpartum Self-Evaluation Questionnaire (LSQ-PP; Lederman, et al., 1981) was used to assess
subjects' postpartum self-evaluations. The complete questionnaire consists of 82 items which generate seven subscales, scored in the same manner as the LSQ-PN. Three subscales were used to assess subjects' postpartum self-evaluations (number of items in each subscale and Cronbach's reliability coefficients for 3-day and 6-week postpartum administrations follow in parentheses): (1) Satisfaction with Infant/Infant Care (10 items, alphas = .77 and .76), (2) Confidence in Motherhood Role/ Tasks (14 items, alphas = .80 and .74), and (3) Gratification from Labor and Delivery (13 items, alphas = .80 and .87) (Lederman & Lederman, 1987; Lederman et al., 1981). Questionnaire data was validated against clinical ratings obtained from interviews with mothers; congruence was high between the two assessments of Gratification from Labor and Delivery ($r = .65$), moderate for Confidence in Motherhood Role/Tasks ($r = .41$), and lower for the Satisfaction with Infant/Infant Care scale (unreported). Intercorrelations between the three subscales ranged from .34 to .50 (Lederman et al., 1981).

Five subscales of the Lederman Prenatal Self-Evaluation Questionnaire (LSQ-PN; Lederman, 1984) were used to assess prepartum maternal self-evaluations which have been shown to be related to maternal anxiety during labor (Lederman, 1984; Lederman, Lederman, Kutzner, & Haller, 1982) and, thus, may moderate the impact of doula intervention on postpartum adaptation. The following two sub-scales pertain to self-evaluations of maternal role (number of items and Cronbach's reliability coefficients
follow in parentheses): (1) Acceptance of Pregnancy (14 items, alpha = .90), and (2) Identification of a Motherhood Role (15 items, alpha = .79). Three subscales relate to prenatal fears and concerns about labor: (3) Preparation for Labor (10 items, alpha = .80), (4) Fear of Pain, Helplessness, and Loss of Control in Labor (10 items, alpha = .75), and (5) Concern for Well-Being of Self and Baby (10 items, alpha = .83).

Intercorrelations among the five subscales as reported by Lederman, Lederman, and Haller (1981) range from .21 to .54, with the highest correlations between the two maternal role subscales (.54) and within the group of three labor-related subscales (.35 to .52) and lower correlations between these two groups (.21 to .36). Correlations representing the congruence between the subscales and ratings of the same dimensions based on clinical interviews range from .36 to .83.

Marital/Relationship Satisfaction. The Dyadic Adjustment Scale (DAS; Spanier, 1976) was used to measure prenatal and postpartum perceptions of marital satisfaction. As many of the staff subjects were unmarried but involved in primary relationships, the DAS also served as a measurement of subjects' satisfaction with their relationships with a male partner (who would be with them during labor and delivery). This variable will be referred to as "relationship satisfaction" in further analyses.

The DAS is a 32-item self-administered questionnaire which assesses the quality of the relationship, including four
empirically validated components of dyadic adjustment; satisfaction, consensus, cohesion, and affectional expression. Internal consistency for the DAS (total score) as reported by Spanier (1976) is .96, while the alpha coefficients for the four subscales are .94, .90, .81, and .73, respectively. Construct validity has been demonstrated by high correlations between the DAS and the Locke-Wallace Marital Adjustment Scale (Locke & Wallace, 1959). Regarding criterion-related validity, all items of the DAS have been shown to significantly discriminate between married and divorced subjects (Spanier, 1976). The DAS has been used in prior studies of the transition to parenthood (Belsky et al., 1983; Belsky, Lang, & Rovine, 1985) and has proven to be a sensitive instrument in evaluating change and stability in marital satisfaction over time (Belsky et al., 1985).
CHAPTER III

Results

Descriptive analyses will be presented prior to examining the central hypotheses of the study. First, descriptive statistics and significance tests of group differences on demographic and prenatal study variables will be presented for doula versus control groups and then for staff versus private patients. These preliminary examinations of group differences are necessary in order to detect variables which could confound the results of the primary analyses of intervention effects. That is, variables which are found to differ significantly between experimental and control group subjects prior to the intervention must be controlled for in the regression analyses. Furthermore, the resource framework of the present study suggests that there may be significant differences between the low and middle SES subjects which could impact on their responsiveness to the intervention. Thus, preliminary descriptive analyses address whether or not the staff and private groups differed on demographic and study variables, and these results serve as a guide for the primary analyses of intervention effects.

Following the group differences section, correlations between demographic, prenatal, and postpartum study variables will be presented, in order to assess the nature and extent of intercorrelated data and to aid in interpretation of the results of the regression analyses. Reliability analyses which were conducted on several measures used in the study will also be presented.
Prenatal Group Differences

Descriptive statistics (means, standard deviations, and frequencies) were tabulated for the entire sample as well as separately for the two experimental (doula versus control) groups and the two SES (staff versus private) groups. T-tests and chi-square analyses were used to test for pre-intervention group differences in demographic variables and prepartum measures of outcome variables.

The distribution of SES subjects within the two experimental groups was nearly equal; 49.2% (n = 30) of the staff patients were randomly assigned to the control group, and 50.8% (n = 31) to the doula group, while 52% (n = 66) of the private patients were in the control group, and 48% (n = 61) were doula subjects ($\chi^2(1, n = 188) = .04, NS$).

Doula versus Control Patients

Demographic Variables. Table 4 presents means, standard deviations, and frequencies on demographic data, presented separately for doula and control patients. Results of t-tests and chi-squares on these variables are also presented. The two groups differed significantly on only one demographic variable; maternal education level, with a slightly higher level for control patients ($M = 5.51$) than for doula patients ($M = 5.17$), $t(177) = 1.96, p < .05$. Based on Hollingshead (1975) coding, education Level 5 represents partial college or specialized training, and Level 6 is
Table 4
Experimental Group Comparisons: Means, Standard Deviations, and Frequencies on Demographic Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Doula Patients (n = 92)</th>
<th>Control Patients (n = 96)</th>
<th>p-value&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M&lt;sup&gt;a&lt;/sup&gt;</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Age</td>
<td>26.87</td>
<td>5.26</td>
<td>26.96</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Non-White</td>
<td>40.2</td>
<td>--</td>
<td>36.5</td>
</tr>
<tr>
<td>Education Level&lt;sup&gt;c&lt;/sup&gt;</td>
<td>5.17</td>
<td>1.24</td>
<td>5.51</td>
</tr>
<tr>
<td>Employment Status:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Employed</td>
<td>47.2</td>
<td>--</td>
<td>57.8</td>
</tr>
<tr>
<td>Occupation Level&lt;sup&gt;c&lt;/sup&gt;</td>
<td>6.91</td>
<td>1.56</td>
<td>6.87</td>
</tr>
<tr>
<td>Marital Status:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Married/ Cohabitating</td>
<td>74.2</td>
<td>--</td>
<td>73.0</td>
</tr>
<tr>
<td>Paternal Education&lt;sup&gt;c&lt;/sup&gt;</td>
<td>5.36</td>
<td>1.33</td>
<td>5.36</td>
</tr>
<tr>
<td>Paternal Employment:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Employed</td>
<td>85.7</td>
<td>--</td>
<td>85.2</td>
</tr>
<tr>
<td>Paternal Occupation&lt;sup&gt;c&lt;/sup&gt;</td>
<td>6.44</td>
<td>2.05</td>
<td>6.44</td>
</tr>
<tr>
<td>Income&lt;sup&gt;c&lt;/sup&gt;</td>
<td>4.55</td>
<td>1.51</td>
<td>4.52</td>
</tr>
</tbody>
</table>

<sup>a</sup> All values in these columns are means, except where percentages are indicated under Variables.

<sup>b</sup> Significance values are for staff versus private group differences.

<sup>c</sup> Levels of education, occupation, and income are based on Hollingshead (1975) 7-point index.
college graduation. There were no other significant differences between the experimental groups on the demographic variables.

**Prenatal study variables.** Table 5 presents the whole, doula, and control group means and standard deviations of prenatal measures of the three outcome variables and the two resource variables to be included in the primary analyses. Results of t-tests to determine the significance of experimental group comparisons on these variables are also presented. The doula and control groups did not differ significantly on any of the prenatal measures of the outcome variables; depressed mood, self-evaluations, or relationship satisfaction. Doula subjects did, however, have significantly lower social support perceptions than did control subjects (82.04 vs. 84.54, t(180) = 1.94, p < .05), and their lower relationship with mother scores approached significance (32.46 vs. 34.02, t(175) = 1.64, p < .10).

**Postpartum study variables.** Table 5a presents the whole, doula, and control group means and standard deviations of the postpartum outcome measures. These scores are presented for descriptive purposes only, as the statistical significance of the impact of the intervention on control versus doula patients will be analyzed in the multiple regression analyses which follow.

**Staff versus Private Patients**

**Demographics.** Table 6 presents means, standard deviations, and frequencies on demographic data, presented separately for staff and private patients. T-tests and/or chi-square analyses which
Table 5  
Experimental Group Comparisons on Prenatal Study Variables:  
Means, Standard Deviations, and t-values

<table>
<thead>
<tr>
<th>Variable</th>
<th>Whole Sample (n = 188)</th>
<th>Doula Patients (n = 92)</th>
<th>Control Patients (n = 96)</th>
<th>t^a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Depressed Mood</td>
<td>8.13</td>
<td>4.87</td>
<td>8.43</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>(185)</td>
<td></td>
<td>(91)</td>
<td></td>
</tr>
<tr>
<td>Self-Evaluations</td>
<td>199.16</td>
<td>18.00</td>
<td>198.06</td>
<td>16.34</td>
</tr>
<tr>
<td></td>
<td>(180)</td>
<td></td>
<td>(86)</td>
<td></td>
</tr>
<tr>
<td>Relationship Satisfaction</td>
<td>148.06</td>
<td>15.52</td>
<td>146.79</td>
<td>16.60</td>
</tr>
<tr>
<td></td>
<td>(149)</td>
<td></td>
<td>(71)</td>
<td></td>
</tr>
<tr>
<td>Relationship With Mother</td>
<td>33.25</td>
<td>5.33</td>
<td>32.46</td>
<td>6.48</td>
</tr>
<tr>
<td></td>
<td>(177)</td>
<td></td>
<td>(86)</td>
<td></td>
</tr>
<tr>
<td>Social Support</td>
<td>83.33</td>
<td>8.72</td>
<td>82.04</td>
<td>9.20</td>
</tr>
<tr>
<td></td>
<td>(182)</td>
<td></td>
<td>(88)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects included in a particular calculation, accounting for missing data.

^a Doula versus Control group comparisons.

b Relationship satisfaction scores are only for male-supported subjects.

* p < .10
** p < .05
Table 5a
Experimental and Control Group Means and Standard Deviations on Postpartum Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Whole Sample (n = 188)</th>
<th></th>
<th>Doula (n = 92)</th>
<th></th>
<th>Control (n = 96)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Depressed Mood</td>
<td>5.03</td>
<td>4.1</td>
<td>5.29</td>
<td>4.1</td>
<td>4.79</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td>(185)</td>
<td></td>
<td>(90)</td>
<td></td>
<td>(95)</td>
<td></td>
</tr>
<tr>
<td>Self-Evaluations</td>
<td>131.45</td>
<td>10.3</td>
<td>131.78</td>
<td>9.9</td>
<td>131.14</td>
<td>10.7</td>
</tr>
<tr>
<td></td>
<td>(182)</td>
<td></td>
<td>(88)</td>
<td></td>
<td>(94)</td>
<td></td>
</tr>
<tr>
<td>Relationship Satisfaction</td>
<td>150.90</td>
<td>18.2</td>
<td>149.71</td>
<td>18.5</td>
<td>151.99</td>
<td>17.99</td>
</tr>
<tr>
<td></td>
<td>(148)</td>
<td></td>
<td>(71)</td>
<td></td>
<td>(77)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects included in a particular calculation, accounting for missing data.

a Postpartum self-evaluation scores are based on the LSQ-PP, which is comprised of three subscales (versus five prenatal subscales) and thus will be transformed to z-scores for further analyses.

b Relationship Satisfaction scores are only for male-supported subjects.
Table 6
SES Group Comparisons: Means, Standard Deviations, and Frequencies on Demographic Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Staff Patients (n = 61)</th>
<th>Private Patients (n = 127)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Maternal Age</td>
<td>21.75</td>
<td>3.58</td>
</tr>
<tr>
<td>Maternal Race:</td>
<td>93.4</td>
<td>--</td>
</tr>
<tr>
<td>% Non-White</td>
<td>(61)</td>
<td>(127)</td>
</tr>
<tr>
<td>Maternal Education(^c)</td>
<td>4.25</td>
<td>0.79</td>
</tr>
<tr>
<td>(56)</td>
<td>(123)</td>
<td></td>
</tr>
<tr>
<td>Maternal Employment:</td>
<td>8.9</td>
<td>--</td>
</tr>
<tr>
<td>% Employed</td>
<td>(56)</td>
<td></td>
</tr>
<tr>
<td>Marital Status:</td>
<td>21.4</td>
<td>--</td>
</tr>
<tr>
<td>% Married/</td>
<td>(56)</td>
<td></td>
</tr>
<tr>
<td>Cohabitating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paternal Education(^c)</td>
<td>4.02</td>
<td>0.88</td>
</tr>
<tr>
<td>(54)</td>
<td>(121)</td>
<td></td>
</tr>
<tr>
<td>Paternal Employment:</td>
<td>58.8</td>
<td>--</td>
</tr>
<tr>
<td>% Employed</td>
<td>(51)</td>
<td></td>
</tr>
<tr>
<td>Paternal Occupation(^c)</td>
<td>3.75</td>
<td>1.39</td>
</tr>
<tr>
<td>(24)</td>
<td>(115)</td>
<td></td>
</tr>
<tr>
<td>Income(^c)</td>
<td>3.50</td>
<td>2.38</td>
</tr>
<tr>
<td>(42)</td>
<td>(111)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects included in a particular calculation, accounting for missing data.
\(^a\) All values in these columns are means, except where percentages are indicated under Variables.
\(^c\) Levels of education, occupation, and income are based on Hollingshead (1975) 7-point index.
were performed to determine if the two SES groups differed on
demographic data revealed significant differences on all variables. 
With all significance levels at \( p < .001 \), the staff patient group
was found to be substantially younger than private patients \((t(186) = 12.72)\), with fewer White subjects \( (x^2(1, n = 188) = 112.77)\), had
lower levels of education \((t(177) = 10.72)\), fewer were employed
\( (x^2(1, n = 179) = 59.57)\), fewer were married \( (x^2(1, n = 178) = 110.59)\), and they had lower incomes \((t(42.87)^* = 3.84)\). Similar
differences were found for paternal level of education, employment
status, and occupation level.

**Prenatal study variables.** T-tests were also conducted
between the two SES groups to determine if the two differed on
prenatal measures of outcome variables or resource variables. 
These results are presented in Table 7. Staff patients' prenatal
self-evaluation scores were significantly lower than private
patients \((193.59 \text{ vs. } 201.54, t(178) = 2.76, p < .01)\), as were their
prenatal social support perceptions \((79.80 \text{ vs. } 84.99, t(92.96)^* = 3.59, p < .001)\). The two groups did not significantly differ on
prenatal level of depressed mood, relationship satisfaction, or
relationship with mother scores.

---

* Degrees of freedom are based on a separate variance estimate
which is used when a significant F-value indicates that the
standard deviations on this variable were statistically different
for the two groups.
Table 7
SES Group Comparisons on Prenatal Study Variables: Means, Standard Deviations, and t values

<table>
<thead>
<tr>
<th>Variable</th>
<th>Staff Patients (n = 61)</th>
<th>Private Patients (n = 127)</th>
<th>t^a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Depressed Mood</td>
<td>8.26</td>
<td>6.04</td>
<td>8.07</td>
</tr>
<tr>
<td></td>
<td>(60)</td>
<td></td>
<td>(125)</td>
</tr>
<tr>
<td>Self-Evaluations</td>
<td>193.59</td>
<td>18.42</td>
<td>201.54</td>
</tr>
<tr>
<td></td>
<td>(54)</td>
<td></td>
<td>(126)</td>
</tr>
<tr>
<td>Relationship Satisfaction^b</td>
<td>141.23</td>
<td>25.23</td>
<td>149.37</td>
</tr>
<tr>
<td></td>
<td>(24)</td>
<td></td>
<td>(125)</td>
</tr>
<tr>
<td>Relationship With Mother</td>
<td>33.08</td>
<td>7.30</td>
<td>33.35</td>
</tr>
<tr>
<td></td>
<td>(59)</td>
<td></td>
<td>(118)</td>
</tr>
<tr>
<td>Social Support</td>
<td>79.80</td>
<td>9.63</td>
<td>84.99</td>
</tr>
<tr>
<td></td>
<td>(58)</td>
<td></td>
<td>(124)</td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects included in a particular calculation, accounting for missing data.
^a Staff versus Private group comparisons.
^b Relationship Satisfaction scores are only for male-supported subjects.

*** p < .01
**** p < .001
Correlations

Demographic and Postpartum Outcome Variables

Table 8 presents the correlations between the demographic variables and the postpartum outcome variables (mood, self-evaluations, and relationship satisfaction). In light of the significant differences between staff and private patients on these variables (as delineated above), the correlations are presented separately for the staff and private groups as well as for the sample in its entirety. Correlations with relationship satisfaction are, however, only presented for the whole sample due to the small number of staff subjects who had male partner support during labor and delivery (n = 25).

Mood. For the whole group, only one significant relationship was found - that between maternal race and mood \( r = -0.19, p < 0.01 \), indicating higher postpartum depressed mood for white subjects (coded lower than non-white subjects). When examining the correlations between mood and the demographic variables for staff subjects only, there were no significant relationships, although correlations with both maternal education \( r = -0.22 \) and maternal work status \( r = 0.22 \) approached significance \( p < 0.10 \), indicating a tendency for higher postpartum depressed mood among staff patients who had lower levels of education and who were unemployed (coded higher than employed status). For private patients, two significant correlations indicated higher depressed mood for subjects whose male partners were unemployed \( r = 0.22, p < 0.05 \) or
Table 8
Correlations Between Prenatal Demographics and Postpartum Outcome Variables: Whole Group, Staff, and Private Patients

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Depressed Mood</th>
<th>Self-Evaluations</th>
<th>Relationship Satisfaction^c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Whole</td>
<td>Staff</td>
<td>Private</td>
</tr>
<tr>
<td>Maternal Age</td>
<td>.07</td>
<td>-.16</td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td>(185)</td>
<td>(58)</td>
<td>(127)</td>
</tr>
<tr>
<td>Maternal Race</td>
<td>-.19***</td>
<td>-.03</td>
<td>-.12</td>
</tr>
<tr>
<td></td>
<td>(185)</td>
<td>(58)</td>
<td>(127)</td>
</tr>
<tr>
<td>Maternal Education</td>
<td>.03</td>
<td>-.22**</td>
<td>-.05</td>
</tr>
<tr>
<td></td>
<td>(176)</td>
<td>(53)</td>
<td>(123)</td>
</tr>
<tr>
<td>Maternal Work Status</td>
<td>.04</td>
<td>.22^c</td>
<td>.15^c</td>
</tr>
<tr>
<td></td>
<td>(176)</td>
<td>(53)</td>
<td>(123)</td>
</tr>
<tr>
<td>Marital Status</td>
<td>-.07</td>
<td>.14</td>
<td>.11</td>
</tr>
<tr>
<td></td>
<td>(175)</td>
<td>(53)</td>
<td>(122)</td>
</tr>
<tr>
<td>Partner Education</td>
<td>.00</td>
<td>-.19</td>
<td>-.13</td>
</tr>
<tr>
<td></td>
<td>(172)</td>
<td>(51)</td>
<td>(121)</td>
</tr>
<tr>
<td>Partner Work Status</td>
<td>-.04</td>
<td>-.11</td>
<td>.22**</td>
</tr>
<tr>
<td></td>
<td>(169)</td>
<td>(48)</td>
<td>(121)</td>
</tr>
<tr>
<td>Partner Occupation</td>
<td>-.09</td>
<td>.03</td>
<td>-.20***</td>
</tr>
<tr>
<td></td>
<td>(138)</td>
<td>(23)</td>
<td>(115)</td>
</tr>
<tr>
<td>Income</td>
<td>-.04</td>
<td>-.04</td>
<td>-.18^c</td>
</tr>
<tr>
<td></td>
<td>(151)</td>
<td>(49)</td>
<td>(111)</td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects.

^x p < .10
^** p < .05
^*** p < .01
^**** p < .001
in lower level occupations \((r = -.20, p < .05)\). Also for private patients, the relationships between postpartum mood and maternal work status \((r = .15)\) and income \((r = -.18)\) approached significance \((p < .10)\), indicating a tendency toward higher depressed mood among private subjects who were unemployed and who had lower family incomes.

**Self-Evaluations.** First, for the whole group, there were two significant correlations; one indicating higher self-evaluations for younger subjects \((r = -.15, p < .05)\), and the other indicating higher self-evaluations for unmarried subjects \((r = .20, p < .01)\). Examining the correlations only for staff subjects, one significant relationship was revealed, also indicating higher self-evaluations for unmarried subjects. It may be noteworthy that within the staff patient population, a relatively small percentage of the subjects were married \(21.4\%\). Within the private patient group, there were no significant relationships between demographic variables and the postpartum self-evaluation scores.

**Relationship satisfaction.** As mentioned previously, correlations with relationship satisfaction are presented only for the group in its entirety, given that only 25 of the staff subjects had male partner support during labor and delivery (and, clearly, the impact of the intervention on relationship satisfaction can only be assessed on those subjects who had their male partners present). Five significant correlations between demographic variables and postpartum relationship satisfaction indicated higher
relationship satisfaction for White subjects \( r = -.21, p < .01 \), married subjects \( r = -.33, p < .001 \), subjects whose partners had higher education levels \( r = .25, p < .01 \) as well as higher levels of occupation \( r = .31, p < .001 \), and subjects who had higher family income levels \( r = .24, p < .01 \). The relationship between maternal education and postpartum relationship satisfaction approached significance \( r = .15, p < .10 \), indicating a trend toward higher satisfaction scores for subjects with higher levels of education.

**Prenatal and Postpartum Study Variables**

Table 9 presents the correlations between prenatal and postpartum study variables for the whole sample. As can be seen, these variables were highly intercorrelated, with only one non-significant correlation (between prenatal relationship satisfaction and postpartum self-evaluations).

Table 10 presents correlations for both staff and private patients (with the staff group represented in the upper half of the matrix and private patients below the diagonal). Relationship satisfaction correlations are not presented separately for staff and private patients due to the low number of staff subjects who were male-partner supported during labor and delivery. In general, the variables are highly intercorrelated for both staff and private patients. For the private patients, all but two relationships are significant. In the staff sample, four correlations were non-significant, though two of these are moderate in comparison to the
Table 3
Correlations Between Prenatal and Postpartum Study Variables: Whole Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Prenatal Depressed Mood</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>(2) Prenatal Self-Evaluations</td>
<td>-0.52***</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>(3) Prenatal Relationship Satisfaction</td>
<td>-0.48***</td>
<td>0.24**</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>(4) Prenatal Social Support</td>
<td>-0.27***</td>
<td>0.43***</td>
<td>0.40***</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>(5) Prenatal Relationship with Mother</td>
<td>-0.27***</td>
<td>0.40***</td>
<td>0.23**</td>
<td>0.25***</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>(6) Postpartum Depressed Mood</td>
<td>0.45***</td>
<td>-0.33***</td>
<td>-0.21**</td>
<td>-0.19**</td>
<td>-0.34***</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>(7) Postpartum Self-Evaluations</td>
<td>-0.21***</td>
<td>0.50***</td>
<td>0.14</td>
<td>0.18**</td>
<td>0.33***</td>
<td>-0.28***</td>
<td>--</td>
</tr>
<tr>
<td>(8) Postpartum Relationship Satisfaction</td>
<td>-0.30***</td>
<td>0.22*</td>
<td>0.77***</td>
<td>0.37***</td>
<td>0.23**</td>
<td>-0.39***</td>
<td>0.18*</td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects included in each correlation. Correlations with relationship satisfaction scores are presented only for subjects who had male partner support during labor and delivery.

* p < .05
** p < .01
*** p < .001
Table 10
Correlations Between Prenatal and Postpartum Study Variables:
Staff and Private Groups a

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Prenatal Depressed Mood</td>
<td>--</td>
<td>-.61***</td>
<td>-.35**</td>
<td>-.40**</td>
<td>.50***</td>
<td>-.12</td>
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<tr>
<td></td>
<td></td>
<td>(53)</td>
<td>(57)</td>
<td>(58)</td>
<td>(57)</td>
<td>(57)</td>
</tr>
<tr>
<td>(2) Prenatal Self-Evaluations</td>
<td>-.50***</td>
<td>--</td>
<td>.27</td>
<td>.55***</td>
<td>-.38**</td>
<td>.45*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(124)</td>
<td>(51)</td>
<td>(52)</td>
<td>(51)</td>
<td>(51)</td>
</tr>
<tr>
<td>(3) Prenatal Social Support</td>
<td>-.22*</td>
<td>.48***</td>
<td>--</td>
<td>.42***</td>
<td>-.46***</td>
<td>.09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(123)</td>
<td>(123)</td>
<td>(56)</td>
<td>(55)</td>
<td>(55)</td>
</tr>
<tr>
<td>(4) Prenatal Relationship with Mother</td>
<td>-.15</td>
<td>.33***</td>
<td>.13</td>
<td>--</td>
<td>-.43***</td>
<td>.27*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(116)</td>
<td>(117)</td>
<td>(116)</td>
<td>(56)</td>
<td>(56)</td>
</tr>
<tr>
<td>(5) Postpartum Depressed Mood</td>
<td>.47***</td>
<td>-.38***</td>
<td>-.17*</td>
<td>-.31***</td>
<td>--</td>
<td>-.23</td>
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<tr>
<td></td>
<td></td>
<td>(125)</td>
<td>(126)</td>
<td>(124)</td>
<td>(118)</td>
<td>(55)</td>
</tr>
<tr>
<td>(6) Postpartum Self-Evaluations</td>
<td>-.27**</td>
<td>.56***</td>
<td>.31***</td>
<td>.36***</td>
<td>.28**</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(122)</td>
<td>(123)</td>
<td>(121)</td>
<td>(115)</td>
<td>(124)</td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are the number of subjects included in each correlation.

a Portion of matrix above the diagonal represents staff patient correlations, while the lower half of the matrix represents the private patient group.

* p < .05
** p < .01
*** p < .001
others and may not have achieved significance due to the smaller sample size of the staff patients.

**Reliability Analyses**

Reliability analyses were conducted on the sub-scales used to measure relationship with mother and self-evaluations, as they were derived from questionnaires which have previously been used in their entirety, rather than as separate measures. A subscale of the Lederman Prenatal Self-Evaluation Questionnaire (Lederman, 1984) was used as a measure of subjects’ perceptions of current relationship with mother. An internal reliability analysis was performed on the "relationship with mother" measure for the present study, based on the 178 subjects who had complete data on all 10 items. The overall reliability coefficient (Cronbach’s Alpha) was found to be .90.

Reliability analyses were also conducted for each of the three Lederman subscales comprising the study’s postpartum self-evaluation measures (Lederman, et al., 1981; Lederman, 1984). The internal reliability coefficients (Cronbach’s alphas) for each subscale – which together comprise the postpartum self-evaluation measure – were: .74 for Satisfaction with Infant/Infant Care (n = 186), .77 for Confidence in Motherhood Role.Tasks (n = 188), and .81 for Gratification from Labor and Delivery (n = 186). The Alpha for the combined "postpartum self-evaluation" scale was .64 (n = 183), which is lower than the individual subscales of which it is comprised due to the reduction in number of items (i.e. 3 "items"
or subscales, versus 10-14 "items" which make up the individual sub-scales).

The internal consistency analyses performed on the present sample for each of the subscales which comprise the "prenatal self-evaluations" measure yielded the following Cronbach's alpha coefficients: .86 for Acceptance of Pregnancy (n = 185), .75 for Identification of a Motherhood Role (n = 185), .83 for Preparation for Labor (n = 189), .79 for Fear of Pain, Helplessness, and Loss of Control in Labor (n = 186), and .85 for Concern for Well-Being of Self and Baby (n = 182). The Alpha for the total prenatal self-evaluation scale (made up of the five subscales) was .77 (n = 181), which is, again, lower than the individual subscale Alphas which are made up of 10-15 items each.

Analyses of Intervention Outcomes

Hierarchical multiple regression models were constructed to analyze the additive and interactive effects of experimental condition and prenatal resources on mothers' postpartum adaptation.

First, three separate regressions - one for the entire group, one for staff patients and one for private patients - were conducted for two of the three outcome variables - depressed mood and self-evaluations. Staff and private patients were examined separately given the preliminary findings of significant differences on demographic variables and prenatal measures of outcome variables (Tables 6 and 7). Separate regression analyses for staff and private patients were not conducted for the
relationship satisfaction outcome variable given that the number of cases of staff patients with male partner support during labor and delivery (n = 25) was too low to maintain adequate statistical power for separate analyses. For each regression, the following variables were entered:

**step 1:** demographic variables (those found to correlate significantly or nearly significantly (p < .10) with the dependent variable for that equation within that particular group - see Table 8)

**step 2:** the prenatal measure of the dependent variable for that equation (prenatal level of depressed mood, prenatal self-evaluations, prenatal relationship satisfaction)

**step 3:** prenatal resources (perceived social support and relationship with mother)

**step 4:** experimental group classification ("dummy coded" 1 for doula subjects, 0 for control subjects)

**step 5 and step 6:** interaction terms of experimental group by each of the two prenatal resources, first entered simultaneously and then, if significant, with separate entries to determine independent contributions.

This order of entry was chosen, first, to control for the potentially confounding effects of demographic background variables found to have significant relationships with outcome variables and to significantly differ between the two SES groups and, second, to assess (and control for) the independent role of prenatal resources in predicting postpartum depressed mood, self-evaluations and relationship satisfaction prior to inspecting the main effects of the doula intervention and the effects of the interactions between
intervention and prenatal resources. As prenatal and postpartum measures of the same variable are likely to be highly related to each other (particularly with a relatively short pre to post time span), early entry into the equation (step 2) of the prenatal measure of the outcome variable allowed for controlled assessment of the independent and interactive effects of resources and intervention. When interaction of experimental group and resources were entered separately (steps 5 and 6) to determine their independent contribution to significant interaction effects, the interaction with social support was entered first, followed by relationship with mother, given that relationship with mother can be subsumed under social support — as a more specific type of support.

**Depressed Mood**

It was first hypothesized that the doula intervention would have a significant impact on subjects' postpartum mood. That is, "experimental group" would significantly contribute to the prediction of postpartum depressed mood. Secondly, it was hypothesized that subjects' prenatal resources (social support and relationship with mother) would moderate the impact of experimental group on postpartum depressed mood; that is, subjects' with lower prenatal resources would benefit more from the intervention (i.e. show a greater change — in a positive direction — in depressed mood scores) than subjects' who have high resource levels.
Multiple Regression Analyses

Table 11 presents the results of the regressions on postpartum depressed mood for the entire group, and, separately, for the staff and private patient groups.

**Entire sample.** First, in the regression using the entire sample, the demographic variable found to correlate significantly with the outcome variable (maternal race), prenatal level of depressed mood, and prenatal resources (social support and relationship with mother) were each significant predictors of postpartum depressed mood, accounting for a total of nearly 30% of the variance. That is, based on correlations presented in Table 8, higher levels of prenatal depressed mood, lower levels of perceived social support, and less positive relationship with mother were significantly predictive of higher postnatal depressed mood.

Contrary to hypothesis, experimental group did not add to the prediction of postpartum depressed mood for the sample as a whole. Entry of interaction terms of experimental group by prenatal resources also proved to be nonsignificant. Thus, when examining the sample in its entirety, having a doula’s support did not appear to impact significantly on the subjects’ levels of postpartum depressed mood.

Next, regression analyses on the staff and private samples were performed separately given the preliminary findings of significant differences between the two groups on demographic and prenatal variables. When separated as such, the analyses revealed
### Table 11
Multiple Regression Analyses Predicting Postpartum Depressed Mood

<table>
<thead>
<tr>
<th>Step (Predictors)</th>
<th>Whole Group (n = 188)</th>
<th>Staff Patients (n = 61)</th>
<th>Private Patients (n = 127)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R^2$</td>
<td>$R^2$ Change</td>
<td>$R^2$</td>
</tr>
<tr>
<td>1. Demographics</td>
<td>.036</td>
<td>.036**</td>
<td>.056</td>
</tr>
<tr>
<td>2. Prenatal</td>
<td>.232</td>
<td>.196****</td>
<td>.277</td>
</tr>
<tr>
<td>Depressed Mood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Prenatal</td>
<td>.290</td>
<td>.058***</td>
<td>.407</td>
</tr>
<tr>
<td>Resources:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Support Mother</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Experimental</td>
<td>.291</td>
<td>.001</td>
<td>.423</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Interactions:</td>
<td>.293</td>
<td>.002</td>
<td>.590</td>
</tr>
<tr>
<td>Group X Resources</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*separate resource entries:*

- a) -Group X Support
  - .443 .02
  - .361 .006

- b) -Group X Mother
  - .590 .147****
  - .400 .339**

** p<.05
*** p<.01
**** p<.001
patterns which differed from the results described above for the sample as a whole.

**Staff patients.** First, for staff patients, it can be seen in Table 11 that prenatal depressed mood and prenatal resources contributed significantly to the postpartum depressed mood criterion (a combined 35% of the variance), while demographics (maternal work status, maternal education), which were entered first, did not. That is, staff subjects with higher levels of prenatal depressed mood and lower levels of prenatal resources (social support and relationship with mother) were more likely to have higher levels of postpartum depressed mood, independent of their work status or level of education.

Again, contrary to hypothesis, experimental group did not add significantly to the prediction of depressed mood when staff patients were examined separately. However, the addition of the interaction terms (experimental group X prenatal resources) to the prediction equation added nearly 17% variance ($p < .001$). In order to determine the independent contributions of the two prenatal resources (prenatal social support and relationship with mother), a regression was performed with separate entries of the interaction terms. The interaction of experimental group by relationship with mother contributed a significant .147 ($p < .001$) to the equation, bringing the total variance accounted for by the predictors to .59. Interaction of experimental group by prenatal social support was not significant.
Thus, while viewed independently, the doula intervention did not impact on staff subjects' postpartum depressed mood. However, when the subjects' level of relationship with mother was taken into account, the doula intervention did, indeed, impact on postpartum depression. The nature of this relationship is examined further in the exploratory analyses below which address the hypothesis that subjects with fewer resources (in this case, relationship with mother) would benefit more from the intervention than those with high prenatal resources. First, the results of the regression analyses for the private patients will be presented.

**Private patients.** Also seen in Table 11, a similar pattern emerged in the regression analysis using only the private patient group. First, demographics (maternal work status, income, paternal work status and occupation), prenatal level of depressed mood, and prenatal resources (social support and relationship with mother) made significant contributions to the prediction of postpartum depressed mood, separately and combined, to account for a total 35% of the variance. That is, subjects with higher levels of prenatal depressed mood and lower levels of prenatal resources were, as would be expected, more likely to have higher levels of postpartum depressed mood. Based on the pattern of intercorrelations presented in Table 8, the significant contribution of the demographic variables also suggests a stronger prediction of postnatal depressed mood for subjects who were unemployed, whose
male partners were unemployed or in lower skilled jobs and who had lower incomes than subjects less likely to be depressed postpartum.

Experimental group, on its own, did not significantly contribute to the prediction of postpartum depressed mood. However, as in the case of the staff patients, the entry of the interaction term (experimental group X prenatal resources) did add a significant .045 to the equation ($p < .05$). When entered separately, results showed that the interaction of experimental group with relationship with mother was a significant contributor to the equation ($p < .05$), whereas, the interaction with prenatal social support was not.

The significance levels of the interactions suggest that for some subjects in both SES groups, the impact of the doula intervention on postpartum depressed mood may have been moderated by the relationship with mother resource. This finding seems particularly salient in the staff patient group, where the amount of variance accounted for by the interaction of experimental group by relationship with mother is greater than for the private patients (about 15% versus 4%, respectively). These relationships are explicated below.

**Analyses of Significant Interaction Effects**

In order to explore the role that "relationship with mother" played in individual differences in responsiveness to the doula intervention, experimental subjects were first categorized as either high or low on the resource variable (above or below the
median split of relationship with mother scores). Next, the direction and magnitude of changes in depressed mood mean scores from the prenatal to postpartum point were examined within these two resource level groups (high or low). Paired t-tests were conducted to assess the significance of change from prenatal to postpartum mean scores. This was conducted in separate analyses for staff and private patients given that the significant interactions, as described above, emerged when regressions were performed on these two groups separately. Results are presented in Table 12 and illustrated in Figures 2 and 3.

**Staff patients.** In the staff patient sample, the hypothesized pattern of greater benefit for those doula subjects who were initially lower in resources than for those with high resources is supported. The BDI mean in the "low relationship with mother" group dropped significantly from 10.64 prenatally to 5.11 postpartum ($t(18) = 4.19, p < .001$), while the subjects with high "relationship with mother" scores dropped from a BDI mean of 7.40 prenatally to 4.78 postpartum, a nonsignificant change. Responsiveness to the doula intervention seemed to be greater for those staff subjects who reported poorer relationships with their mothers than for staff subjects who had more positive relationships with their mothers.

**Private patients.** As illustrated in Figure 3, in the private patient sample the hypothesized pattern is not apparent in the examination of BDI means for subjects low and high on the resource.
Table 12  
**Prenatal and Postpartum Depressed Mood Scores of Doula Subjects With Low and High Levels of Relationship with Mother Resource**

<table>
<thead>
<tr>
<th>Level of Relationship With Mother Resource(^a)</th>
<th>Staff Group</th>
<th>Private Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prenatal BDI</td>
<td>Postpartum BDI</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>10.64</td>
<td>5.11****</td>
</tr>
<tr>
<td>(SD)</td>
<td>6.55</td>
<td>4.24</td>
</tr>
<tr>
<td>(n)</td>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>7.40</td>
<td>4.75</td>
</tr>
<tr>
<td>(SD)</td>
<td>5.11</td>
<td>3.77</td>
</tr>
<tr>
<td>(n)</td>
<td>8</td>
<td>29</td>
</tr>
</tbody>
</table>

*Note.* Significance levels refer to change from prenatal to postpartum BDI scores (paired t-tests).

\(^a\) Above or below median split on measure of relationship with mother.

\(** \) \( p < .05 \)

\(**** \) \( p < .001 \)
Figure 2. Prenatal and Postpartum Depressed Mood Scores of Doula Staff Subjects with Low and High Levels of Relationship with Mother Resource

BDI Scores

- **HIGH RELM**
- **LOW RELM**

Significance levels are indicated:
- $p = .001$
- NS (not significant)
Figure 3. Prenatal and Postpartum Depressed Mood Scores of Doula Private Subjects with Low and High Levels of Relationship with Mother
Both the low resource and the high resource groups' BDI scores dropped significantly (and approximately the same in magnitude of change) from prenatal to postpartum measurement.

**Self-Evaluations**

It was hypothesized that experimental group would contribute significantly to the prediction of postpartum self-evaluations, indicating a positive intervention effect. Second, doula subjects with low prenatal resources (social support and relationship with mother) were predicted to benefit more from the intervention (greater increase in postpartum self-evaluation scores) than subjects with high prenatal resources.

**Multiple Regression Analyses**

Table 13 presents the results of the regressions predicting postpartum self-evaluations for the entire group, staff, and private patients.

**Entire sample.** In the first regression, using the entire sample, demographics (maternal age and marital status) and prenatal self-evaluations were each significant contributors to the prediction of postpartum self-evaluations, accounting for a total of 32% of the variance ($p < .001$). That is, subjects' prenatal self-evaluation scores were significant predictors of their postpartum self-evaluations (i.e. high prenatal scores were strong predictors of high postpartum self-evaluations as low prenatal scores were predictive of low postpartum scores). The correlations between the three demographic variables entered and the outcome
Table 13
Multiple Regression Analyses Predicting Postpartum Self-Evaluations

<table>
<thead>
<tr>
<th>Step (Predictors)</th>
<th>Whole Group (n = 188)</th>
<th>Staff Patients (n = 61)</th>
<th>Private Patients (n = 127)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R^2$ Change</td>
<td>$R^2$ Change</td>
<td>$R^2$ Change</td>
</tr>
<tr>
<td>1. Demographics</td>
<td>.042</td>
<td>.042**</td>
<td>---</td>
</tr>
<tr>
<td>2. Prenatal</td>
<td>.322</td>
<td>.280****</td>
<td>.310</td>
</tr>
<tr>
<td>Self-Evaluations</td>
<td></td>
<td></td>
<td>.130***</td>
</tr>
<tr>
<td>3. Prenatal</td>
<td>.336</td>
<td>.014</td>
<td>.316</td>
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<tr>
<td>Resources:</td>
<td></td>
<td></td>
<td>.006</td>
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<tr>
<td>-Support</td>
<td></td>
<td></td>
<td>.350</td>
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<tr>
<td>-Mother</td>
<td></td>
<td></td>
<td>.038**</td>
</tr>
<tr>
<td>4. Experimental</td>
<td>.342</td>
<td>.006</td>
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<tr>
<td>Group</td>
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<td>.363</td>
</tr>
<tr>
<td>5. Interactions:</td>
<td>.434</td>
<td>.092****</td>
<td>.411</td>
</tr>
<tr>
<td>Group X Resources</td>
<td></td>
<td></td>
<td>.095**</td>
</tr>
<tr>
<td>separate resource</td>
<td></td>
<td></td>
<td>.545</td>
</tr>
<tr>
<td>entries:</td>
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<td></td>
<td>.182****</td>
</tr>
<tr>
<td>a) -Group X Support</td>
<td>.431</td>
<td>.089****</td>
<td>.371</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.055**</td>
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<td></td>
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<td>.543</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>.180****</td>
</tr>
<tr>
<td>b) -Group X Mother</td>
<td>.434</td>
<td>.003</td>
<td>.411</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.040*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.545</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.002</td>
</tr>
</tbody>
</table>

* p<.10
** p<.05
*** p<.01
**** p<.001
measure also suggest that subjects who were older and were married/cohabitating were somewhat more likely to have lower postpartum self-evaluation scores.

Prenatal resources (social support and relationship with mother) did not add significantly to the prediction of postpartum self-evaluation scores, nor did experimental group. However, when the interaction term of experimental group by resources was entered, a significant .092 variance \( p < .001 \) was added to the equation. This interaction effect suggests that the subjects' prenatal resources moderated the impact of the intervention on their postpartum self-evaluations. To determine which of the two resources had a significant interaction effect, a regression with separate entries of intervention by resource terms followed. As seen in Table 13, the results indicated that the prenatal social support resource significantly interacted with experimental group (change in \( R^2 = .089, p < .001 \)), whereas relationship with mother was not significant. This finding of the significant interaction of prenatal social support and the intervention will be further explicated in the analyses below. First, the results of the separate staff and private sample regressions will be presented.

Staff patients. The pattern of findings for the separate regression on staff subjects was similar to that found for the entire group. The demographic variable (marital status) and prenatal self-evaluations together contributed a significant .31% of the variance \( p < .01 \) in the prediction of postpartum self-
evaluation scores. That is, staff subjects who had high prenatal self-evaluations were more likely to have high postpartum scores. Also, based on the correlation patterns, the significant contribution of the marital status variable suggests that staff subjects who were not married/cohabitating were somewhat more likely to have higher postpartum self-evaluations than the few staff subjects (n = 12) who were married/cohabitating. As in the analysis on the sample in its entirety, prenatal resources (social support and relationship with mother) and experimental group were nonsignificant predictors of postpartum self-evaluations of staff subjects.

While experimental group did not independently contribute to the prediction of staff subjects' postpartum self-evaluations, the group by resource interaction effect was significant, accounting for .095% of the variance (p < .05), suggesting that the level of staff subjects' prenatal resources moderated the impact of the doula intervention on their postpartum self-evaluations.

A regression with separate resource entries was then conducted to determine the independent contribution of the two resources in their significant interaction with experimental group. When examined in this manner, interactions of experimental group by both social support and relationship with mother approached significance (.055 and .04, respectively, p < .10). That is, both the level of prenatal social support and relationship with mother tended to moderate the impact of having a doula.
**Private subjects.** In the regression using only the private patient sample, no demographic variables were entered into the prediction equation, as there were no significant correlations with the outcome variable (the established criteria for entry of demographic variables). Prenatal self-evaluations contributed a total of nearly 31% variance ($p < .001$) to the equation. Again, this finding indicates that, prior to considering the impact of prenatal resources or the intervention on postpartum self-evaluations, how the private patients evaluated themselves prenatally was highly predictive of their postpartum self-evaluations. The addition of prenatal resources to the equation was significant (.038 additional variance accounted for, $p < .05$), indicating that private subjects' with higher prenatal social support and/or relationship with mother scores were more likely to have higher postpartum self-evaluations. The addition of experimental group was nonsignificant.

The final entry, the interaction term of prenatal resources by experimental group, did prove to be a highly significant predictor of private patients’ postpartum self-evaluations, despite the nonsignificant contribution of the intervention independent of resources. Approximately 18% additional variance ($p < .001$) was accounted for by the interaction term, again suggesting that the level of prenatal resources moderated the impact of the doula intervention on subjects’ postpartum self-evaluations.
Given this significant interaction effect, a regression with separate resource entries followed and revealed that the private subjects’ prenatal social support levels were the primary contributors to the significant interaction effect, while the interaction with relationship with mother resource added a negligible amount of variance to the prediction of postpartum self-evaluations.

**Analyses of Significant Interaction Effects**

In order to further explore the meaning of the significant interactions between intervention and prenatal resources in predicting postpartum self-evaluations, doula subjects were again categorized as either high or low in prenatal social support and relationship with mother (above or below the median split on that resource measure), and their prenatal and postpartum self-evaluation scores were examined for directionality and magnitude of change. Self-evaluation scores were first transformed to z-scores for these comparisons given the different scales comprising the prenatal and postpartum measures. Table 14 presents this data for the entire group, staff, and private subjects, with high-low splits only on resources which interacted significantly with intervention in the regressions.

**Entire sample.** First, for the entire group of doula patients, the direction of change from prenatal to postpartum self-evaluation scores supports the hypothesis that subjects with lower resource levels (in this case, social support) would benefit more
Table 14
Prenatal and Postpartum Self-Evaluation Scores\(^a\) of Doula Subjects With Low and High Levels of Relationship with Mother and Social Support Resources

| Level of Resource\(^b\) | Whole Group | | Staff Group | | Private Group | |
|-------------------------|-------------|-----------------|-------------|-----------------|-------------|
|                         | Pre | Post | Pre | Post | Pre | Post |
| Low Social Support \(^c\) |     |      |     |      |     |      |
| \(M\)                  | -.40 | .14*** | -.58 | .03*** | -.30 | -.23 |
| \(SD\)                 | .83  | .99   | .76  | .99   | .89  | 1.02 |
| \(n\)                  | 43   |       | 16   |       | 27   |       |
| High Social Support \(^c\) |     |      |     |      |     |      |
| \(M\)                  | .31  | .14   | -.03 | .13   | .39  | .15  |
| \(SD\)                 | .86  | .92   | 1.05 | 1.00  | .81  | .92  |
| \(n\)                  | 38   |       | 7    |       | 31   |       |
| Low Relationship \(^c\) With Mother |     |      |     |      |     |      |
| \(M\)                  | -.56 | .07** |     |      |     |      |
| \(SD\)                 | .91  | 1.13  |     |      |     |      |
| \(n\)                  | 14   |       |     |      |     |      |
| High Relationship \(^c\) With Mother |     |      |     |      |     |      |
| \(M\)                  | -.12 | -.18  |     |      |     |      |
| \(SD\)                 | .72  | .83   |     |      |     |      |
| \(n\)                  | 8    |       |     |      |     |      |

Note. Significance levels refer to change from prenatal to postpartum Self-evaluation scores (paired t-tests).

\(^a\)transformed to z-scores.
\(^b\)Above or below median split on social support or relationship with mother.
\(^***\) p<.05
\(^****\) p<.01
\(^*****\) p<.001
from the intervention than subjects with high resources. As illustrated in Figure 4, experimental subjects low in social support increased significantly in their self-evaluation scores (from z-score of -.40 to .14, p < .01), whereas subjects with high social support showed a slight drop in scores (.31 to .14, NS).

**Staff patients.** Staff subjects with low levels of prenatal resources also seemed to benefit more from the doula intervention than did subjects who had high resource levels (see Figures 5 and 6). First, with regard to the role of social support, staff subjects in both the high and low resource groups showed a positive change in their self-evaluation scores. However, as predicted, the magnitude of change in the low social support group was greater (from -.58 to -.03, p < .01) than for subjects in the high social support group (from -.03 to .13, NS). Staff subjects in the "low relationship with mother" group (Figure 6) also showed a significant increase in their self-evaluation z-scores from -.56 to .07 (p < .05), while "high relationship with mother" subjects' scores dropped slightly (from -.12 to -.18, NS).

**Private patients.** Figure 7 presents the changes in the self-evaluation scores of the private subjects with low and high levels of social support. While neither group's mean scores changed significantly from prenatal to postpartum measurement, the direction of change follows the predicted pattern of differential responsiveness to the intervention. That is, private subjects with low levels of social support showed an increase in self-evaluation
Figure 4. Prenatal and Postpartum Self-Evaluation Scores of Doula Subjects (Whole Group) with Low and High levels of Social Support
Figure 5. Prenatal and Postpartum Self-Evaluation Scores of Doula Staff Subjects with Low and High levels of Social Support Resource

z Scores

-0.03

NS

0.13

-0.03

-0.58

p < .01

HIGH SUPPORT

LOW SUPPORT
Figure 6. Prenatal and Postpartum Self-Evaluations of Doula Staff Subjects with Low and High Levels of Relationship with Mother Resource

z Scores

PRENATAL  POSTPARTUM

HIGH  LOW

-0.12 NS  0.07
-0.56  -0.18
-1

p < .05
Figure 7. Prenatal and Postpartum Self-Evaluations of Doula Private Subjects with Low and High levels of Social Support Resource

Z Scores

PRENATAL          POSTPARTUM

-1               1

0.39 NS

0.15

-0.3 NS

-0.23

HIGH SUPPORT  LOW SUPPORT
scores, while those in the high social support group had a decline in mean self-evaluation scores.

**Relationship Satisfaction**

Table 15 presents the results of the regression on postpartum relationship satisfaction. Separate regressions on staff and private patient groups were not conducted given the reduced number of cases (and thus the inherent loss of statistical power) in the staff patient group when considering only subjects who were supported by male partners during labor and delivery (n = 25). The regression presented is based only on male partner-supported mothers (comprised of 126 private patients and 25 staff patients). Staff versus private status (SES) was included in the demographics entry given that separate regression analyses on the two groups were not conducted.

**Multiple Regression Analysis**

The demographic variables (SES, maternal race and education, paternal education, occupation and family income) which were entered first, contributed significantly to the prediction of postpartum relationship satisfaction (p < .01). Correlations of these variables to the outcome measure suggest that subjects who were in the private sample, who were White, had higher education, higher income, and whose male partners were in higher level occupations were more likely to have higher postpartum relationship satisfaction scores. Prenatal relationship satisfaction was a highly significant predictor (p < .001) of postpartum relationship
Table 15  
Multiple Regression Analyses Predicting Postpartum Marital/Relationship Satisfaction

<table>
<thead>
<tr>
<th>Step (Predictors)</th>
<th>Whole Group (n = 151)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R^2$</td>
</tr>
<tr>
<td>1. Demographics</td>
<td>.149</td>
</tr>
<tr>
<td>2. Prenatal</td>
<td>.671</td>
</tr>
<tr>
<td>Relationship</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
</tr>
<tr>
<td>3. Prenatal</td>
<td>.679</td>
</tr>
<tr>
<td>Resources:</td>
<td></td>
</tr>
<tr>
<td>-Support</td>
<td></td>
</tr>
<tr>
<td>-Mother</td>
<td></td>
</tr>
<tr>
<td>4. Experimental</td>
<td>.679</td>
</tr>
<tr>
<td>Group</td>
<td></td>
</tr>
<tr>
<td>5. Interactions:</td>
<td>.684</td>
</tr>
<tr>
<td>Group X Resources</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Subjects who did not have male partner support during labor and delivery were excluded from these analyses.*

*** $p < .01$

**** $p < .001$
satisfaction, contributing 52% of the variance beyond that explained by the demographic variables. The higher the prenatal satisfaction, the more likely subjects were to have high postpartum relationship satisfaction. There were no significant experimental group main effects or significant interactions of group with prenatal resources in predicting postpartum relationship satisfaction.

Summary of Findings

To summarize, the doula intervention did not have any significant main effects on postpartum adaptation independent of the level of prenatal resources. However, significant interaction effects were found for both staff and private patients in predicting postpartum depressed mood and for the entire group as well as staff and private in predicting postpartum self evaluations. In general, the hypothesized pattern of results—that subjects with fewer prenatal resources, who were perhaps most at risk, would benefit more from the intervention than subjects who had high prenatal resources—was supported. The nature of the individual roles played by subjects’ perceived social support and their relationships with their own mothers in contributing to differential responsiveness to the doula intervention will be discussed further in the discussion section.
CHAPTER IV

Discussion

The primary purpose of the present study was to assess the impact of supportive intervention by a trained female labor companion (doula) during labor and delivery on the postpartum adaptation of first-time mothers. Central hypotheses were two-fold; first, it was hypothesized that the doula intervention (independent of subject characteristics) would positively benefit subjects with regard to three areas of adjustment which have been found to be vulnerable in the transition to motherhood - mood, maternal self-evaluations, and marital/relationship satisfaction. This hypothesis was not supported. The doula intervention, on its own, did not add significantly to the prediction of the three outcome variables.

The second hypothesis was that the subjects' levels of two salient prenatal resources - perceived social support and relationship with their own mothers - would moderate the impact of the intervention on postpartum adaptation. That is, subjects with lower resources were expected to benefit more from the intervention than subjects who came into the situation with high resources. This hypothesis was, for the most part, supported by the findings: with regard to both postpartum depressed mood and postpartum maternal self-evaluations, but not to marital/relationship satisfaction, subjects' resource levels did significantly moderate the impact of the doula intervention.
While prior studies of doula intervention have demonstrated the positive impact of a doula's support on various perinatal physical outcomes (Kennell et al., 1988; Kennell et al., 1989; Klaus et al., 1986; Sosa et al., 1980), the results of the present study suggest that, for some women, postpartum psychological adaptation can also be positively affected by the intervention. Significant interaction findings indicated that the doula intervention was beneficial for some women - those who were lacking in certain resources - and not for others. These results are consistent with other investigators' assertions that supportive intervention must not only be "ecologically congruent" (Hobfoll, et al., 1986) and "optimally matched" (Cutrona, 1990) to effectively combat a particular stressor, but must also be attuned to the specific needs and resources of an individual. The two resources which were considered in the present study - perceived social support and relationship with mother - emerged as salient factors in some women's negotiation of the transition to parenthood.

The specific pattern of findings for the three outcome variables differed from each other, suggesting variations in the dynamics and specificity of the doula's impact on postpartum depressed mood, self-evaluations, and marital/relationship satisfaction. The results also highlight the differential role of prenatal resources and socioeconomic status in predicting postpartum outcomes. Findings for each of these variables will now
be reviewed, followed by discussion of their broader meanings and implications.

Review of Findings

Depressed Mood

When examining the sample as a whole (both SES groups combined), the doula did not appear to have an impact on depressed mood, either in terms of main effects or interactions. However, significant interactions between resource level and the intervention in predicting postpartum depressed mood did emerge when the private and staff patient data were examined separately, underscoring the importance of carefully considering the influence of socioeconomic differences in response to intervention.

For both SES groups, relationship with mother proved to be a significant resource factor in moderating the impact of the intervention on the development of postpartum depressed mood. On the other hand, perceived social support, the more broadly defined support resource of the two, did not play a significant role. For staff patients, the role of the relationship with mother resource was highly significant, while for the private subjects a much smaller interaction effect was demonstrated. Examination of the changes in mean BDI scores for experimental subjects with either high or low scores on the relationship with mother variable also supported the finding, particularly for staff subjects. Their drop from a pre-intervention mean BDI score of almost 11 points (a score of 10 is often considered a cut-off for moderate depression) to a
postpartum 5.11 (even lower than the postpartum mean score of the high resource group) confirmed the benefit of doula support for those staff subjects who had poor relationships with their own mothers.

Maternal Self-Evaluations

When considering the role of resources in moderating the impact of the intervention on maternal self-evaluations, a different pattern emerged. First, significant interactions between intervention and resource levels were detected in all three regressions - those for the whole sample and, separately, for the two SES groups. However, in this case, perceived social support seemed to be a more consistent moderator in the prediction of postpartum self-evaluations, as it emerged as a significant interaction factor in all three regressions. For private patients in particular, perceptions of social support seemed to play an important role in moderating the doula's effects.

When levels of perceived social support were considered, the self-evaluation scores for the whole group of doula subjects and the staff group alone did change (from prenatal to postpartum) in the predicted direction. That is, the doula subjects with low social support showed a significant positive increase in self-evaluation scores as compared to the high support subjects whose scores did not change significantly. When the actual self-evaluation scores were examined for the private patient high and low social support groups, neither the high nor low resource group
showed self-evaluation changes which reached significance. However, the direction of change from pre- to postpartum was in the hypothesized direction, as subjects with low social support showed a positive increase in their scores following the intervention, while the high social support group did not. Subjects in the high resource group actually showed a post-intervention decline in their self-evaluation scores, though this was not statistically significant.

**Marital/Relationship Satisfaction**

Contrary to hypothesis, the doula intervention did not emerge as a significant predictor of postpartum marital/relationship satisfaction beyond the contributions of demographics and prenatal relationship satisfaction. Experimental group status did not add to the prediction equation either independently (i.e. as a significant main effect) nor as a function of subjects’ levels of perceived social support or relationships with their own mothers (i.e. as significant interaction effects). Subjects’ prenatal satisfaction with their relationships with husbands or male partners proved to be a highly significant factor in determining their postpartum relationship satisfaction, accounting for 52% of the variance. Studying couples’ adjustment to first-time parenthood, Wright, Henggeler, and Craig (1986) also found that of all the individual, environmental, and marital factors which they investigated, the best predictor of postpartum marital adjustment was prenatal marital quality.
Salient Issues: The Role of Responsivity and Resources

Taken together, the findings of the present study highlight several issues which are important in gaining a better understanding of the complexities of new mothers' transition to parenthood and of providing intervention designed to combat the stressors of this period. These issues include those pertaining to the role of responsivity to intervention, the differential role of social support and relationship with mother as resources in the transition to motherhood, and the potentially differential meaning of these resources within the two SES groups.

Responsivity to Intervention

First, as "responsivity to intervention" has emerged as an important focus of the present study, it is important to consider some of the processes whereby resources and responsivity interact and, in turn, influence postpartum outcomes. That is, what is it about an individual's "low resources" which moderates the impact of the doula intervention, ultimately engendering a greater benefit from the intervention? There are (at least) two perspectives - that of the receiver and that of the giver - which must be considered.

A recipient of intervention, particularly during a stressful event, and more particularly when equipped with inadequate resources, might be especially eager, open, and responsive to receiving help. Affleck et al. (1989) addressed this issue of differential responsivity with regard to their findings that
mothers of medically at-risk infants who were most in need of social support benefited from their intervention ("consultant" provided support), while those who were not in need of support were negatively impacted by the program. They suggested that mothers who were most in need of support were perhaps more attentive to the consultants' suggestions, as reflected in the consultants' ratings of these subjects' more responsive style of interaction with their medically at risk infants (as compared to the mothers who reported less need for support). Not surprisingly, the more needful mothers also seemed to express their distress more often, and they more actively sought information and comfort. Affleck and colleagues (1989) also illuminate the "other side of the story" by describing the impact of these help-seeking behaviors on the help-givers; "consultants spent more time listening to these mothers' concerns and helping them find effective solutions to the problems that they identified as the causes of their distress" (p. 498).

A similar pattern of findings was demonstrated in an intervention study by Booth, Mitchell, Barnard, and Spieker (1989) designed to increase new mothers' social competence and mother-infant interaction; subjects who initially had low skills benefitted more from a social skills training program than mothers who began with higher skills. Moreover, they found that the low skills group's posttreatment social competence was related to the type of treatment provided; nurses who provided treatment to the
low skills group were more engaged in what they defined as therapeutic acts.

The doulas in the present study were aware of subjects' SES status (staff versus private) but were unaware of their resource levels as measured by the prenatal social support and relationship with mother questionnaires. It is certainly plausible, however, that by virtue of her professional and personal experience and empathic capacity, a doula could detect a woman who is lacking in such resources and may be in greater need of her support. Furthermore, the doulas were privy to observing and assessing the quality of subjects' interactions and affiliations - supportive or conflictual - with partners and family members, and their interventions were administered within this "subjective" context.

Just as a lack of resources may heighten responsivity to intervention, it is important to consider the dynamics involved in the provision and receipt of intervention in the case of high resource subjects. Pridham, Lytton, Chang, and Rutledge (1991) suggest that, perhaps by virtue of some women's higher education or advantaged demographic status, nurses or other providers or potential helpers might "leave them to their own devices" and provide less support, assuming that they are in need of less support. It is possible that in the present study, a doula's level of intervention may have been influenced by external indicators of "high resources" such as the presence of an active partner, relatives, friends, or attentive health care providers, or simply
by a subject's middle class SES status (known to the doulas). Furthermore, a woman who perceives herself to be adequately supported may not be as open to or active in eliciting a doula's support as a woman who has low resources.

**Differential Role of Resources**

The present findings suggest that women's perceptions of social support and their relationships with their own mothers have differential roles with regard to their impact on postpartum outcomes as well as to their potential meaning within the two SES groups. In general, the relationship with mother resource seemed to be a more consistent moderator of the prediction of postpartum depressed mood, while perceived social support was a more consistent factor in predicting postpartum maternal self-evaluations. In order to understand this dichotomy, one must consider the nature of the two outcome variables and how the two resources might be particularly salient to each, especially in light of the type of intervention which a doula provides.

The importance of the relationship with mother variable in moderating the impact of the intervention on postpartum depressed mood is consistent with prior theoretical and empirical work. Psychoanalytic theory has long emphasized the importance of object relations and the early mother-child relationship to the development of depression (Cicchetti & Aber, 1986; Deutsch, 1945). Several researchers and theorists have asserted that the quality of the mother-daughter relationship is a particularly important
variable during the transition to parenthood (Lederman, 1984; Leifer, 1980; Rubin, 1984). In recent studies, Gotlib et al. (1988, 1991) empirically established a significant link between women’s perceptions of maternal care during childhood and the development of postpartum depression. Although in the present study the concurrent relationship with mother was assessed and not the women's perceptions of early maternal care, it is likely that these two variables - though temporally disparate - are highly interrelated. Flaherty and Richman (1986) and Parker and Barnett (1988) did, indeed, establish statistically significant links between perceptions of satisfactory maternal care in childhood (using the same instrument employed by Gotlib and colleagues) and perceived support and satisfaction with intimate relationships in adulthood.

The present findings suggest that the relationship with one’s mother may represent a component of social support which is especially important during the transition to motherhood, particularly in ameliorating or preventing postpartum depressed mood. Moreover, the maternal aspects of a doula's support may provide a particularly powerful intervention for those women who are lacking in their relationships with their own mothers.

In attempting to understand the finding that, overall, the broader social support resource variable (as compared to the more specific relationship with mother variable) was a more consistent predictor of postpartum self-evaluations, it may be useful to
consider the content of the self-evaluations under investigation.

The self-evaluations studied here were those which related specifically to the women's new maternal role; gratification from the labor and delivery experience, confidence in ability to cope with tasks of parenthood, and satisfaction with parenthood and infant care. These self-evaluation dimensions, which were shown to be key outcomes in Lederman and Lederman's (1987) study of the postpartum adaptation of multiparous women, are clearly more specific, concrete, and, perhaps, more "externally" defined and influenced than a variable such as depressed mood, which can be more generalized, intangible, and "internally" defined and influenced. That is, while new mothers' depressed mood might more likely be affected by the quality of their significant attachment relationships - "working models of attachment" (Main et al., 1985) - and by their responsiveness to the "mothering" aspects of doula support, self-evaluations of the maternal role might be impacted more by the "functional" or "instrumental" (Cobb, 1976) aspects of the doula's support - that which provides information, education, and feedback regarding the efficacy of the mother during labor and delivery. Moreover, the findings indicate that these features of intervention might be particularly vital to those women who perceive themselves to be lacking in social support and guidance - from significant others, friends, professionals, or a broader social network. The increased confidence engendered by the doula's appraisal support and concrete help is likely to bring about more
positive self evaluations, particularly for women who lack the type of network and functional support tapped by the "perceived social support" questionnaire used in this study.

In addition to the pattern of findings related to the differential role of resources in the prediction of postpartum depressed mood versus maternal self-evaluations, a second pattern emerged which suggests a differential role of resources within the two SES groups. For staff patients, the quality of their relationships with their own mothers seemed to be a particularly consistent and salient source of support throughout the transition to motherhood, as well as a moderator of the impact of the doula on their postpartum adaptation (both mood and self-evaluations). For these lower SES women, most of whom were not married, the relationship with mother may provide a more pivotal support function during stressful periods (and, perhaps, in general) than it does for the middle SES women, who were married and may benefit from a wider network of support. This finding is consistent with an epidemiological study of social support during pregnancy and childbearing which documented that disadvantaged Black women most frequently identified their own mothers as the person most "responsible" for them during these periods (Boone, 1988). More importantly, however, the study revealed that while mothers' mothers were the most frequently mentioned source of support during the transition to motherhood, the quality of this support was often perceived as inadequate, particularly for women who had the poorest
birth outcomes. The present findings of a highly significant interaction effect for *staff* patients who had poorer relationships with their mothers (as compared to a much smaller effect for private patients) underscores the importance of providing supportive intervention to women who not only perceive less adequate support from their mothers, but who are seemingly *more reliant* on their mothers for the provision of support.

**Implications**

The present findings have several theoretical and practical implications pertaining to the relationship between socioeconomic status, risk-status, social support, and psychological health. First, it is important to acknowledge that even for women who are economically and socially disadvantaged and, therefore, considered at greater risk for maladaptive outcomes, there are marked variations in the quality and quantity of the social and emotional resources which individuals (or groups of individuals) bring to a stressful life transition. Resources which are established and nurtured by significant relationships with and support from others may make a difference in seeing even the most otherwise disadvantaged individuals through a stressful situation – such as labor and delivery and the transition to parenthood.

These findings also have implications for the practical, cost-benefit considerations of developing and providing preventive interventions to help new mothers weather the stresses of the perinatal period. Early identification (e.g. by health care
professionals) of individuals who are at greater risk due to deficiencies in the resources found to engender positive adaptation (i.e. perceived social support and relationship with mother), as well as the development of interventions - such as the services of a doula - which are "congruent" (Hobfoll and Lieberman, 1986) or "optimally matched" (Cutrona, 1990) with the stressor and the needs of individuals may provide effective strategies. The importance of taking into account the fit between intervention and need is further underscored by prior research findings of the negative effects of providing intervention to individuals who are not in need (Affleck et al., 1989), as well as by the present study's finding of a slight decline in the self-evaluation scores of experimental subjects with high resources.

Limitations

The findings of the present study must be considered in the context of several methodological limitations. First, due to external constraints, the present analyses were conducted on a partial data set; only 188 subjects out of a projected 700 subjects had completed data at the time of analyses. In general, a larger data set may have diminished the problems inherent in the recruitment of low SES staff subjects, who were more difficult to engage and then to keep in the study. Analyses on certain subsamples, such as male-partner supported staff patients, were precluded due to the reduced statistical power inherent in smaller sample sizes. Such limitations may have obscured potential
findings, such as a differential impact of the intervention on the relationship satisfaction of the two SES groups.

In addition, a larger sample size would have enabled certain exploratory analyses which may have contributed to fuller interpretation of findings. For example, when the actual self-evaluation scores for the high and low social support groups were examined in order to interpret significant interaction effects, neither the high nor the low resource group showed self-evaluation changes which reached significance, despite directional changes in the hypothesized direction. Significant changes in the expected direction may have been better detected in a finer split of resource level groups - that is, in a comparison of the lowest and highest resource groups (e.g. perhaps those subjects scoring in the lowest third or quarter, rather than a median split). However, such analyses would have required a larger sample size in order to maintain adequate numbers of subjects in each group and reasonable statistical power.

In addition to the limitations inherent in a partial data set, it is important to recognize the impact of attrition in the present study on the generalizability of findings and on addressing the role of resources in responsiveness to intervention. Both the 30 "drop-out" subjects (who did not return postpartum data) and the 43 "excluded" subjects (excluded prior to intervention) represent a significant proportion of subjects who differed from the remaining subjects on several demographic variables and who, thus, may also
have differed in their responsiveness to the doula intervention. In fact, subjects in these groups may have been particularly at risk for difficult postpartum adaptation, as, compared to the remaining subjects, they were significantly younger, less educated, unemployed, unmarried, or had been excluded for reasons including medical risk.

The attrition data may also point to a process of self-selection or sampling bias which could impact on the interpretation of findings. If, for example, those subjects who dropped out following intervention were actually those who had the lowest resources, the impact of the doula on low resource women would be obscured, suggesting that the doula was a beneficial intervention for a more moderately at-risk group of women - those who were, perhaps, optimally "primed" for intervention. That is, similar to studies of therapeutic change, the doula may optimally benefit subjects who are in enough distress to motivate full participation and increase responsivity to intervention, but not so distressed that involvement in the study or the intervention itself is perceived as an overwhelming demand or burden (thus leading to attrition). It will be important to examine any prenatal resource questionnaire data which is available for the attrition subjects.

A final limitation has to do with the absence of an important methodological component; the inclusion of objective observations of the actual intervention process. Unfortunately, it was not possible to videotape the doula and their subjects "in action."
In future investigations, however, this would be an invaluable tool for bettering our understanding of the give and take of the intervention process - with special attention to the nuances of interaction between doulas and low versus high resource subjects.

**Future Directions**

The completion of the data set will allow for continued investigation of the patterns of findings which emerged most strongly in the present study and of the additional questions generated by these findings. While the larger data set may provide the power necessary to detect overall benefits of doula support on postpartum adaptation - which were unconfirmed in the present study - it will also be important to confirm the present findings of the role of resources in moderating the impact of intervention.

As mentioned above, future studies should include observations of the doula intervention in order to better understand the process of "matching" intervention techniques with individual needs. For example, does a woman who feels unsupported or who has a poor relationship with her own mother respond differently to the doula, perhaps eliciting or being more open to her maternal, nurturing behaviors versus her provision of concrete information and feedback? In the context of the larger, ongoing investigation, doulas have completed detailed reports of each labor and delivery experience, including quantitative behavioral checklists and open-ended qualitative questions about their intervention techniques and the mothers' responsivity. This data
could, perhaps, address some of the process questions delineated above. So, too, could questionnaires given to both parents, inquiring about their own experiences and evaluations of the support they received during labor and delivery (see Appendix C for sample questionnaires and subject responses).

Assessment of partners' perceptions and responses to the doula intervention could shed light on the non-significant findings regarding the impact of intervention on marital/relationship satisfaction as well as enhance our understanding of how the partner's role and experience during labor and delivery affects maternal postpartum adaptation. For example, although the doulas' aims were to facilitate the partner in supporting the laboring woman, could the male partner have, instead, felt unsupported or displaced in some way by the doula, thereby reducing his capacity to provide support? Or, if the male partner's experience was positive, could there be indirect effects of doula support on maternal adaptation? That is, a male partner who benefits from the doula's support through labor and delivery may be better at supporting the new mother through the postpartum period, thereby positively influencing her mood and her evaluations of herself in the maternal role. In order to fully assess the impact of the intervention on marital/relationship satisfaction for both SES groups, it would be important to measure the pre- and postpartum satisfaction levels of the male partners, as well as inquiring
about their reactions to the childbirth experience and determining whether and how they benefited from the support of a doula.

The main finding of the beneficial impact of doula intervention for women with low resources generates additional questions which have implications for the development of "specificity models" in stress/support research, as well as for optimizing preventive interventions. Cutrona (1990) has emphasized the importance of matching supportive interventions to the support needs of individuals and has empirically demonstrated that different support components (e.g. network support versus esteem support) can predict adjustment to different types of stresses (e.g. new parenthood versus work stress). Perhaps, in future doula studies, it would be instructive to pose questions about potential relationships between deficiencies in specific types of perceived social support (e.g. the "attachment" versus "guidance" subscales of the SPS questionnaire) and individual differences in responsivity to the doula. The definition of "adjustment" to new parenthood could also be extended to encompass other outcomes which might be particularly sensitive to the types of support provided by the doula. For example, does provision of nurturance by a doula impact on new mothers' nurturing behavior toward their infants? Direct observations of mother-infant interaction in the first postpartum months could address this and other questions about the specific benefits of doula support.
What other variables, such as clinical factors or lack of other personal and social resources, increase vulnerability to maladaptive postpartum adaptation, but might also lead to greater responsivity to the doula intervention? Reduction of anxiety - in a generalized sense - has been suggested as a key factor in understanding the previously documented physical benefits of the doula intervention (Kennell et al., 1986, 1991). Levels of anxiety, especially about the labor and delivery experience and about new parenthood, should certainly be considered as potential moderators of the intervention's impact on postpartum psychological adaptation.

Given the strong predictive power of risk factors such as prenatal marital dissatisfaction or prenatal depressed mood in determining postpartum negative outcomes, it may also be useful in future intervention studies to consider these factors within a resource framework. That is, are women who are high or low in relationship satisfaction differentially responsive to the doula intervention as it affects postpartum depressed mood or self-evaluations? Similarly, but with particular clinical relevance, could a doula benefit those women who are most depressed prenatally? Preliminary analyses of subjects who had the highest prenatal depressed mood have, indeed, supported the assertion of increased responsivity to and positive benefit from the doula intervention and should be explored further with a larger sample.
It would also be instructive to clarify the inter-relationships between the physical and psychological outcomes of the doula intervention. For example, while the doula intervention is intended to reduce women's perinatal complications, such as cesarean sections, is it possible that even when such negative physical outcomes cannot be prevented, the doula could positively influence the psychological adaptation of these women who are, perhaps, at even greater risk for poor postpartum adjustment?

Finally, while the present study has extended the assessment period of prior doula research to the early postpartum months, it will be important to do longer-term follow up on the benefits of the doula intervention. Hobfoll and Lieberman (1987) have suggested that a potential problem with any intervention model is that "when the intensive-support period ends, they [the recipients of the intervention] . . . are left to their personal resources" (p. 25). Their descriptive term, "time-limited stress inoculation" does, however, suggest that a time-limited intervention (such as doula support) could have preventive or longer-lasting effects. This is consistent with the point of view that responsiveness to supportive intervention is most beneficial at the time of psychological crisis or life transition. The significant outcome variables of the present study - postpartum depressed mood and maternal self-evaluations - certainly have potential implications for the continued adaptation and mental health of mother and child. Longitudinal studies have, for example, reported lasting effects of
early postpartum depression, such as less positive or facilitating mother-child interaction at 19 months and lowered cognitive scores at the preschool age (cited in Murray, 1988). With regard to maternal self-evaluations, a longitudinal study of the transition to motherhood by Williams and his colleagues (1987) documented that adaptation to the maternal role and confidence in parenting measured at one month postpartum predicted parenting confidence, maternal role conflict, and marital quality two years later.

In their most recent report of the Houston doula study, Kennell et al. (1991) state, "Labor support is centuries old, but its advantages have now been validated in three controlled studies and its positive benefits should not be overlooked in the trend toward more and increasingly complex technology" (p. 2201). The findings of the present study add to those of prior doula studies, and, together, generate a compelling case for the use of continuous support during labor and delivery to prevent and ameliorate the potentially negative outcomes associated with childbirth, particularly for women who are most vulnerable.

Perhaps the words of two subjects in the present study, as written in their follow-up questionnaire, best convey the benefits of doula support:

I can’t say enough about our Doula. At first, I was skeptical about having a stranger with me during labor, but I quickly felt comfortable with her and after the entire delivery was over, I felt like she was family.
Her participation was critical to me - I don't know how I could've gotten through my rough labor and delivery without her. She was the most important person there for me along with my husband.

I think it helps a lot to have a support person with you during labor . . . . I don't think I would have pulled through without it.
REFERENCES


Hollingshead (1975). Four factor index of social status.


APPENDIX A: SAMPLES

UNIVERSITY HOSPITALS OF CLEVELAND
PATIENT CONSENT FOR INVESTIGATIONAL STUDIES

TITLE OF PROJECT:
Perinatal effects of support for couples during labor

DESCRIPTION OF STUDIES:

The purpose of this study is to learn more about the needs of couples during birth. If my partner and I agree to participate, we may or may not be assigned a labor companion. If we are randomly chosen to have the help of a labor companion, a woman experienced in the practical aspects of childbirth will be with us throughout labor and delivery. She will not be a part of the medical team and will not be involved in our medical care. Her job will be to give emotional support to my partner and me during labor and delivery. Also, a research associate may be assigned to be in the room for two 60-minute periods during labor to note the labor companion's behavior. The research associate will not interact with us and will not interfere with the care provided by the doctors and nurses, but will observe and make written notes about the course of labor. A cassette player and earphone will be used by the research associate as a timing device to signal the beginning and end of observation periods. No sounds, conversations or comments will be recorded. If we will be assigned a labor companion and if she will be observed will be decided in a random manner. We will be told if we are assigned a labor companion when we come to the hospital for delivery.

If we agree to participate, we will be asked to fill out questionnaires about ourselves. We will be asked to notify the research director by phone when labor begins. Following the delivery of our baby and again six weeks later, each of us will be asked to fill out questionnaires about ourselves and our labor and delivery experience. Completing the questionnaires will take about 30 minutes each time.

We understand that the study will provide information about caring for women and their partners during labor and delivery. Also, we understand that our obstetrician has already given approval for his or her patients to participate. Whether or not we choose to participate in the study, we will receive all the usual hospital services and care. There will be no risk to us or our baby during this study. Furthermore, we may withdraw from the study at any time.

John M. Kennell, M.D.

[Signature] has described to me what is going to be done, how it is going to be done, the risks, hazards and benefits involved, and will be available for questions at (216) 944-7757. I understand that my decision to participate or not to participate in this study will not alter my usual health care. I understand that in the event of injury or illness occurring to me resulting from the research procedures, University Hospitals will not provide free medical care or compensation for lost wages. Further information with respect to this topic is available from the Office of the Chief of Staff. I understand that by signing this consent form, I do not waive any of my legal rights nor does it relieve investigators or suppliers of liability, but merely indicates that I have been informed about the research study in which I am agreeing to participate. A copy of this form is available to me upon request.

Signature

Parent or Guardian Signature (if subject is a minor)

Witnessed by

(Signature of Project Investigator)

Age Date

Date

- 137 -
DEMOCRAPHICS

INSTRUCTIONS: Please complete all of the following items that apply.

1. MOTHER'S SOCIAL SECURITY NUMBER

2. MOTHER'S COUNTRY OF BIRTH:

3. MOTHER'S RACE:
   1. White
   2. Black
   3. Hispanic
   4. Asian

4. MOTHER'S EDUCATION
   1. Some High School
   2. High School Diploma
   3. Some College
   4. Associate Degree
   5. Bachelor Degree
   6. Master's Degree
   7. Doctorate Degree

5. MOTHER EMPLOYED
   1. Yes
   2. No

6. IF YES, NATURE OF HER WORK:

7. IF YES, HER MOST IMPORTANT DUTIES:

8. IF YES, BUSINESS OR INDUSTRY TYPE:

9. IF YES, IS SHE: (MARK ONE)
   an employee of a PRIVATE company, business or individual for wages, salary or commission
   1. PR
   a GOVERNMENT employee
   2. GOV
   self-employed in OWN business INCORPORATED
   3. INC
   working without pay in a family business or firm
   4. WP

(OVER)
10. MARITAL STATUS OF BABY'S PARENTS:
   1. single  
   2. married  
   3. co-habiting  
   4. separated  
   5. divorced  
   6. widowed

11. IS THE BABY'S FATHER INVOLVED: 1 Yes  2 No

12. FATHER'S RACE:
   1. White
   2. Black
   3. Hispanic
   4. Asian

13. FATHER'S EDUCATION:
   1. Some High School
   2. High School Diploma
   3. Some College
   4. Associate Degree
   5. Bachelor Degree
   6. Master's Degree
   7. Doctorate Degree

14. FATHER EMPLOYED: 1 Yes  2 No

15. IF YES, NATURE OF HIS WORK:

16. IF YES, HIS MOST IMPORTANT DUTIES:

17. IF YES, BUSINESS OR INDUSTRY TYPE:

18. IF YES, IS HE: (MARK ONE)

   an employee of a PRIVATE company, business or
   individual for wages, salary or commission 1. PR

   a GOVERNMENT employee 2. GOV

   self-employed in OWN business INCORPORATED 3. INC

   working without pay in a family business or
   farm 4. WP

19. FAMILY INCOME:
   1. under $8000/year  
   2. $8 - $12000/year  
   3. $12 - $15000/year  
   4. $15 - $18000/year  
   5. over $18000/year  
   6. unknown
PLEASE NOTE

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140-144, Prenatal Self-Evaluation Questionnaire

145-151, Lederman Subscales (prenatal)

152-154, The Social Provisions Scale

155-156, BDI

157-160, Dyadic Adjustment Scale (DAS)

161-165, Postpartum Self-Evaluation Questionnaire

166-172, Lederman Subscales (postpartum)

University Microfilms International
APPENDIX B

GUIDELINES FOR DOULAS

Previous experience with Doula training for studies in Guatemala, Tampa, and Houston indicate that the Doula fulfills several responsibilities in her role as a supportive labor companion. The focus of the Doula’s attention in this research is the couple: the Doula will be providing support to both the mother and her male partner (father of the baby). In order of importance the Doula’s responsibilities are:

1) Provide emotional support to the couple in an active way.

- the support must be individualized to the needs and wishes of each couple. The Doula must adjust her style to fit each couple and to change as their needs change through the course of labor. Be prepared for hostility, especially during the final stages of labor. The Doula should remain open and abide by the couple’s requests.

- the Doula should offer support to the male partner to give him the confidence and freedom to support the mother but not pressure him to do something that makes him feel uncomfortable. Include the partner whenever possible. Evaluate the degree of support needed and act on that evaluation.

- the Doula should be warm, supportive, caring, and willing to "mother" the laboring woman and her partner. The Doula must be free of prejudices. Provide sincere encouragement and positively reward their efforts at appropriate intervals (overdoing it will satiate them quickly and put you in a position of appearing insincere). Gently and gradually introduce physical contact to the mother (and male partner if appropriate). Rushing or overencouragement may be invasive thereby increasing tensions. The object is relaxation.

- the Doula should be able to step back and allow the couple to work as a team, keeping in mind that this is the couple's delivery and she's there for them. Know when to be involved and when to step aside. Respect the couple’s privacy; give them space especially when they request it. Knowing when they need it may also demonstrate your empathy.

- the Doula should serve as a role model for the male partner, encouraging and supporting his efforts to help the mother but without violating his personal style. Minimize stress and nervousness by demonstrating confidence and control.

- the Doula should be understanding and accepting of the woman’s pain and the couple’s fears, but also try to be a source of strength and confidence to help the mother stay in control. Maintain verbal and physical contact, transfer positive feelings, and encourage eye contact providing the woman with a distraction from pain and fears.

- by anticipating the progress of labor, the Doula should prepare the couple by telling them what to expect next. Be available to respond to questions and requests.
the Doula should maintain a positive attitude to relax and reassure the woman and her partner. Provide strong support in a loving way. When the turn of events becomes negative, point out positive past events. Make encouraging statements.

2) Provide emotional support by her constant presence throughout labor and delivery.
- the Doula explains to the couple that she will stay with them throughout their entire labor and delivery. Approach the couple with confidence and a soft spoken manner. If requested to do so, explain the purpose of the study, emphasizing companion support rather than Doula support.
- the Doula will be permitted short breaks for personal needs but she will tell the couple when she is leaving and when she will return. Introduce and maintain open communication with the couple.

3) Educate and inform the couple about obstetrical procedures.
- the Doula should be able to provide basic information about hospital procedures such as the use of intravenous fluids, internal and external monitoring, medication and anesthesia. Doulas may answer questions and supply information.
- the Doula will not try to teach specific childbirth techniques since it is unclear which techniques work best for any given couple. However, if the couple has practiced and is comfortable with a specific technique, the Doula will support them in these efforts.

4) Function as a liaison between patient and medical staff.
- the Doula should discuss with the couple their wishes and desires about the management of labor and delivery. This may be a good way to open communications with the couple and it may help the Doula customize her role to the desires of the couple.
- the Doula will not give medical advice or interfere in the medical staff's care in any way. All decisions are left to the couple. Doulas act as a resource rather than an advocate leaving decisions up to the couple.
- the Doula can serve as an advocate communicating the couple's needs and wishes to the medical and nursing staff. For instance, nurse has a question and couple engrossed in breathing through contraction, doula may communicate the answer for the couple.
- the Doula will aid the couple's decision making related to the management of labor and delivery, keeping the needs and wishes of the couple uppermost. Thus, responsibility for an outcome that does not match the couple's expectations can be placed on the Doula, rather than on the male partner or the laboring woman (e.g. the decision to accept medication or anesthesia or to consent to a cesarean delivery when a natural labor and delivery had been planned). The Doula must have "broad shoulders" and a humble attitude.
5) Interact in a professional and diplomatic manner with hospital personnel. Doula will maintain a professional attitude bearing in mind the needs of the couple and the continuing respectability of the research study.

Doula support is, by definition, personalized through a dynamic interaction with the couple. The Doula adjusts her care to the specific couple's needs. For this reason, the Doula training has been designed to specify minimum support standards and provide Doula trainees with a wide variety of techniques to use as needed during labor and delivery. In addition, basic information about hospital procedures, labor and delivery will be reviewed.

These "guidelines" were prepared using material from the research grant and summaries written by two experienced Doulas. Suggestions and modifications are welcome.
The responsibilities of a Doula are extremely hard to define since the type of support required varies from patient to patient. There are a few basic requirements that can be noted:

a.) genuine caring
b.) a positive attitude concerning labor, delivery and children in general
c.) the ability to evaluate both the physical and psychological needs of a patient
d.) the ability to follow through with the necessary support, thus ensuring as comfortable and trauma-free labor and delivery as possible

First, we must remember that most patients, regardless of prenatal training experience a feeling of uncertainty prior to the birth of their first child. This feeling is enhanced by several factors:

a.) the age of the patient
b.) financial position
c.) marital status
d.) her overall feeling of self worth

She is to a degree, humiliated by hospital procedures; at times, the attitude of hospital staff and is frightened and in pain.

Keeping in mind these factors, it is obvious that the patient is in an extremely vulnerable state. (Just as a young child is impressionable—so is a young girl or woman in labor, since she appears, at times, to revert back to a childish state.) She is defenseless, at everyone's mercy and can hopefully be made to realize the importance and pleasures of motherhood. During this period a Doula, or support person, can play a vital role. Someone now is needed to fill the gap between medical personnel and the nervous, concerned family member or companion. Not only can she help minimize stress, she can continually inject positive statements throughout the labor period, which may have a profound effect on both mother and baby preceding, during and following the baby's birth. The effectiveness of the Doula role depends on many factors:

a.) the length of time she spends with her patient
b.) medication given
c.) any complications that may occur
Attempting to transfer positive feelings, explaining, if possible, that special bond that only a mother can truly experience and most importantly showing genuine concern for her and her baby may help her to experience similar emotions. A baby’s attachment to its mother is natural; a mother’s attachment to her baby must sometimes be learned and nurtured. Support, at the right moment can be a very important step toward achieving a happy, healthy, long-lasting relationship or bond between mother and baby.

The following technique may be used as a guideline when approaching and supporting your patient:

1.) Approach patient with a smile and cheerful attitude. A soft-spoken manner may help her to feel more comfortable with you. Be able to relate to everyone. You cannot be offended by race, appearance etc.

2.) Give your patient a brief explanation of the study. Attempt to put your patient at ease. Assure her of your support.

3.) When working with your patient, be able to sense her needs and act accordingly. If a companion is present, the same applies. Evaluate the degree of support needed. If the companion support is not adequate, take over but always include the companion. This is their special time. You must know when to get involved and when you are not needed.

4.) Be available to respond to her requests, if possible. Do not become overbearing.

5.) Keep her in control by encouraging eye to eye contact, touching, constant verbal support and breathing techniques. Take her mind away from the pain center, enabling her to concentrate on something else.

6.) Acting as a Doula cannot be considered just a job. You must feel with your patient and for her. She will be able to sense your true feelings. A kind word or action at the right moment may be remembered long after. Possibly at a time when the mother is becoming disillusioned with her new role.

Addendum to paragraph concerning basic requirements of a Doula:

a.) The Doula must employ diplomacy while communicating with hospital staff on a professional level.
"I will be staying here with you from now on until your baby is born. My name is ________________.

I will not leave you except for a very few minutes every couple of hours to go to the bathroom or to get my lunch. I will always tell you when I will be back. Unless your baby is born before _______ o'clock when I go home, another woman (named ________________) will come to take my place. You will not be left alone.

We are not nurses or trained in any medical way but we are here to stay with you and help you. Please feel comfortable to say or do what you wish. Everything that happens here will be held in confidence.

I'll just sit here quietly by your side so I can learn how things are going. You feel free to rest or talk or whatever you wish to do."
APPENDIX C: DOULA REPORT & SUBJECT COMMENTS

Name of Doula ____________________________
Name of Couple ____________________________
Date ______________
Name of OB delivering ______________________
Length of labor ______________
Length of labor prior to admission ______________
CM dilated when admitted ______________
Vag. ______ C-Sec ________
EFM etx. ______
int. ______
non-elect. ______
CM dil. when continuous EFM began ______________
Scalp Gas ______
How did patient respond to EFM?
reassured ______
nervous ______
comments: ______________________________________

ROM ________ cm, how many CM? ________________
ROM ________ cm, how many CM? ________________
meconium ______ yes ______ no
If yes, from admission? ______
from ______ cm
applied because: ______________________________
Pitocin: induction ________________________ aug. ________ cm

Change in behavior after Pit?

Did couple attend CB classes? ______ yes ______ no
<table>
<thead>
<tr>
<th>Comfort Measures</th>
<th>Mom</th>
<th>Coach</th>
<th>Doula</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating</td>
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<td>Drinking</td>
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<td>Ice Chips/Popsicles</td>
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<td>Walking</td>
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<td>Position Changes</td>
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<td>Effleurage</td>
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<td>Massage</td>
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<td>Eye Contact</td>
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<td>Warm Compress</td>
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<tr>
<td>Slow Breathing</td>
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<tr>
<td>Faster Breathing</td>
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<tr>
<td>Closed Eyes</td>
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<td>Staring at focal pt.</td>
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<tr>
<td>Shower</td>
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<tr>
<td>Bed Bath</td>
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<td>Sleeping</td>
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<tr>
<td>T.V.</td>
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<tr>
<td>Phone/ screened / Family</td>
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<tr>
<td>Comments:</td>
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</tbody>
</table>

Position for pushing-all fours
- crouching
- semi-sit
- side lying

Wants:
- Analgesia
- Emotional Support
- Other

Was Vets deemed necessary (Doula perception)?
- Yes
- No

Electronic
- Yes
- No

Length of 2nd stage (hours)
Delivery:

Position for delivery: ___________ side

___________ dorsal

___________ squat/all fours

___________ sitting

Assistance:

___________ forceps

___________ vacuum

___________ pushing on abdomen by nurse/dr.

___________ none

Delivery room_____

Birthing room_____

Complications? ____________________________________________________________

How did Mom respond? Coach? Doula?

Maternal/Infant Interaction?

Paternal/Infant Interaction?

What, if anything, was difficult?

what did you feel good about?
Observations of couples reactions:

Nurse/Doula interaction:

Doula's feelings when it was all over:

Other comments:
SELECTED SUBJECT COMMENTS

Additional comments:

Fantastic program...

Additional comments: Lauren Holmes was excellent!!! The staff on Mac 3 made a long labor much easier. Doula program is an excellent idea!

Additional comments: Our doula was extremely helpful during the birth of our baby. She took away the majority of the stress and anxiety. I felt her as my new partner. I like to think of her as a friend as well as a helper.

Additional comments: During our stay, our doula was such a great help. She was very comforting and it was very beneficial for us to have her there.

Additional comments: Doula very helpful during delivery of baby. Encouraged quickly enough.

Additional comments: The doula was very helpful. Really empowered her being there.

Additional comments: Lauren (Lauren) was extremely helpful.

Additional comments: Please forward the enclosed note to... (Inserted text)

Additional comments: The doula helped tremendously because she could empathize.

Additional comments:
Additional comments:

I enjoyed having the doula throughout 17 hours of labor. Karen was giving both of us great support and help. She was fantastic. Thanks, Karen.

Additional comments:

Can't say enough good things about the staff in labor & delivery and our doula, Mena - see you again, fabulous!

Additional comments:

Doula very helpful to both myself & husband. Made experience a pleasant memory, offered much encour.

Additional comments:

Doula very helpful; & was nurse very rude - we made mistakes

Additional comments:

Our doula was wonderful, we can't thank her enough for all of her help! Great program!

Additional comments:

Without Mena, I don't think we would have done as good as we did.

Additional comments:

I think it helps a lot to have support person with you during labor. I am glad I was introduced. I am very happy I would have someone like you.

Additional comments:

The doula was great in getting things done & pushing. She knew just what to do & was very encouraging and just the right pressure.
Additional comments:

We would like to thank Pat (our doula) for her excellent support during our son's birth. Thanks, Pat!

Additional comments:

Having Karen as a doula made a world of difference for Tom and I. We felt she was an excellent support person for both of us. We agreed we could have had too much more (even) difficult labor and delivering had Karen not been there. If we have another child, we hope we'd be able to have a doula again! We'd recommend having one to anyone, especially first-time mothers.

Additional comments:

I can't say enough about our doula. There was never any question about having another child with her help. She really helped my comfort level rise and was vital in our initial delivery.

Additional comments:

Her participation was critical. I don't think we would have filmed the birth as smoothly if she hadn't been there. She was a true partner and was there throughout.

Additional comments:

At the end of the program it was so sad! But I can thrilled with the outcome. Thank you, Pat.