POSTPARTUM DEPRESSIVE SYMPTOMS: THE INFLUENCE OF WOMEN'S INNER-SELF, SPIRITUAL, AND SOCIAL RESOURCES

by

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ABSTRACT

Limited progress has been made toward the development of holistic and theoretically informed models of postpartum depression (PPD). Researchers have ignored the spiritual dimension and paid little attention to interrelationships among qualities of women's specific interpersonal relationships, personality processes, and PPD. The primary purpose of the study was to test a theoretical model of postpartum depressive symptoms.

Women (N = 203) in the Fraser Valley Health Region of British Columbia who gave birth to a live child were sequentially recruited by public health nurses and completed two mail-out questionnaires at 1- and 8-weeks postpartum. Causal modelling was used to test a theoretically-based model of PPD. Women's spiritual and social resources and depressive symptoms at 1-week postpartum were hypothesized to have direct and indirect effects on depressive symptoms at 8-weeks postpartum (DS8).

The first of the major study findings revealed that depressive symptoms at 1-week postpartum and self-esteem were the strongest predictors of DS8. Depressive symptoms at 1-week postpartum negatively influenced the quality of women's relationship with their spouses and female friends and were associated with a diminished sense of social support and self-esteem. Conflict with spouses/partners and female friends had similar and negative effects on DS8, marked negative effects on the perceived supportiveness of these relationships, and a negative influence on DS8 through diminished global perceived social support and self-esteem. Spousal conflict was also directly related to lower self-esteem. Lack of confidence in God's forgiveness had a direct negative effect, of the same magnitude as did conflict with spouses and female friends, on DS8. Aspects of spirituality were significant in the lives of a majority of the women; 72% experienced some sense of closeness to God and 59% expected God's wisdom and guidance with parenting.

Results indicate a need to identify women who feel very depressed in the first week after delivery. Early interventions may be more effective if they aim to protect and bolster women's self-esteem and encourage them to obtain appropriate counselling for relational conflict. Practitioners should explore possible spiritual concerns and assist women in finding spiritual support as needed. The role of female friends in women's lives merits further study. Properties of interpersonal relationships, such as trust, commitment, and intimacy may be more potent predictors of PPD than social support, and should be examined in theoretical models that include personality and spiritual factors.

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This thesis is dedicated to my public health nursing manager

Pat Whitehead.

I will always be grateful to you

For the good years in the Mission Health Unit.

For your contribution to our sense of community in the workplace.

For the way you valued the gifts each nurse brought.

For the way you listened to our stories of joys and sorrows, triumphs and defeats.

For the way you encouraged us to balance our work-lives and home-lives,

And to take care of our patients and ourselves.

You have given me a "forever gift."

Draw if thou canst the mystic line

Severing rightly His from thine,

Which is human, which is divine.

(Ralph Waldo Emerson)

CHAPTER 1: INTRODUCTION

Women are at increased risk for depression after the birth of their babies.[1, 2] Approximately 13% of postpartum women across diverse countries and cultures experience depressive symptoms that vary in onset, severity, and duration.[1, 3, 4] This means that every year with the arrival of a new infant about 42,000 women in Canada[5] (4,700 women in British Columbia[6]) experience painful emotional distress and anxiety that impedes their ability to meet the complex demands of new motherhood. In spite of increased contact with the health-care system during the postpartum period, mothers suffering with PPD symptoms are often not identified[7-9] and the failure to initiate preventive or timely therapeutic intervention is a common occurrence.[10]

In recent years more attention has been paid to the potential serious and long-term deleterious effects of untreated PPD.[10-12] Lack of treatment can lead to persistence of depression for one or more years[13] and is a precursor of subsequent episodes of depression for some women.[14, 15] Family relationships are jeopardized as marital discord and increased rates of marital disintegration are associated with PPD.[13, 14, 16-18] Responsive interactions between a mother and her infant and a mother's ability to nurture a secure attachment relationship with her infant are impaired by the mother's low mood.[13, 14, 19-21] If the depressed mother provides the primary environment for the child, the critical period of early childhood cognitive, emotional and social development is adversely influenced.[17, 22-27] Long-term sequelae for children are associated with their mothers' postnatal depression. Researchers have reported that infants of depressed mothers are relatively more tense, less content, and become upset more quickly under stress.[20] Moreover, children of depressed mothers in their second year of life demonstrate significantly lower scores on measures of cognitive development, communicative engagement and attachment to the mother, and also display behavioural difficulties.[20] Even more extended

effects have been revealed in a number of longitudinal studies of childhood problems associated with mothers' postpartum depression. For example, children at five years of age show more behavioural disturbances compared with control children,[25] sons of depressed mothers show more behavioural problems in kindergarten,[27] and boys score significantly lower on standardized tests of intelligence at 5 years of age.[26] Results such as these highlight the potential serious consequences of untreated postpartum depression for individuals, families and society as a whole.

Whereas the costs of untreated PPD are high there are numerous community-based treatment approaches that are relatively low in cost but have been shown to be effective in the treatment of PPD. Studies of short courses of cognitive behavioural counselling, alone or in conjunction with antidepressant medications,[28] psychoeducational group work with the involvement of women's partners,[29] and interpersonal psychotherapy, have demonstrated the distinct responsiveness of PPD to brief courses of treatment. These studies also indicated that untreated PPD does not remit on its own in the short term.

In addition to treatment of PPD, the search for effective prevention and early intervention approaches has been given higher priority in recent years. Ideally, primary preventive initiatives aimed at preventing the *incidence* of PPD should target women prenatally and even preconception when known social and personal risk factors can be identified.[30] However, secondary preventive interventions are applicable in the early postpartum phase of childbearing to reduce the *prevalence* of PPD.[30] For those health-care professionals working primarily with postpartum women, preventive approaches would involve the early identification of depressive symptoms before the onset of diagnosable clinical disorder. Measures to identify and reduce modifiable risk factors and enhance protective factors related to the onset or exacerbation of depressive symptoms would be used.[31, 32] Primary care physicians, social workers, mental

health practitioners, and nurses are among the health-care professionals that are positioned to make significant progress in prevention and early intervention. Yet, to date significant progress towards effective preventive programming in the community has been limited.

Need for the Study

Holden described community-based initiatives in which British health visitors (similar to Canadian community or public health nurses), played a central part in the identification of depressive symptoms in postpartum women and the provision of supportive interventions resulting in diminished symptoms.[33] Crucial to the success of this work and the development of community programming is knowledge about the role of modifiable risk and protective factors associated with the development of PPD.[31] Unfortunately, a lack of this important knowledge at the clinical level hinders evidence-based practices and the systematic and early detection of PPD.

The PPD literature burgeons with studies examining factors associated with PPD. Lack of consistent evidence for the influence of physiological and biological factors has led to broader investigations of psychological, social, and other contextual factors. Prenatal anxiety and depression, maternity blues, marital relationship, and social support are among the risk and protective factors consistently associated with PPD.[4, 34] However, review of the literature indicates that little research has investigated the mechanisms linking these risk factors to PPD.[35, 36] The need for theoretical models of PPD, risk factors that are clearly defined, and testable hypotheses is well acknowledged.[1, 13, 37-42] One of the few models of PPD found in the literature has proved useful to Milgrom and her colleagues both for research and clinical practice.[13] It is a biopsychosocial model that addresses a comprehensive list of known risk factors and draws on theories of stress and coping as well as cognitive-behavioural theories of depression to explain

the roles of these factors in PPD. Missing from this model, however, is the spiritual dimension of women's lives. In fact, the religious/spiritual aspect is missing from the PPD literature as a whole.

Although spirituality in women's lives has been systematically observed,[43] only one study was found to provide evidence that aspects of spirituality and transcendence have importance to childbearing women. In their investigation of prayer and health during pregnancy, Levin et al. assessed frequency of prayer in their analysis of 266 interviews conducted in the immediate puerperium as a part of the Galveston Low Birth Weight Survey.[44] They reported that 48% of the women prayed for their babies at least daily, and those most concerned about their pre-pregnancy health prayed most frequently. Although the authors' findings offered little more than the observation of a positive association between perceived poor health and frequency of prayer, they revealed that almost one half of these women employed prayer as a specific response to stress. However, the importance of spirituality to childbearing women has not been established.

Whereas the mental health of diverse populations, particularly those experiencing life changing transitions, has been consistently linked to spiritual and religious variables,[45-47] the link between religiousness/spirituality and PPD within the transition to motherhood remains unexplored. This gap in the PPD research has been noted by Cox, a prominent British psychiatrist who has spent two decades of clinical and research work in perinatal and transcultural psychiatry.[48] Conceptualizing religion as part of culture, that is, the "sum of learned knowledge and skills—including religion and language—that distinguishes one community from another and which...[is passed] on in a recognizable form from generation to generation," [48, p. 10] Cox noted that the "childbirth life event and any associated mental health problems and disorders are deeply rooted in culture." [48, p. 9] Unfortunately, the consideration of

cultural factors, particularly in regard to religious traditions, has been applied to the study of others—to the developing, but not the developed world, and to minority populations, but not the majority populations. The cultural differences *within* have been overlooked in the study of PPD. [49]

Because social support is frequently found to be significant negative correlate of PPD in the literature[4] most researchers have included social support as a variable of interest in their study. The social support construct continues to hold interest as a potentially modifiable risk/protective factor for community-based interventions and programming. The popular stress buffering explanation for the effects of social support, however, has been challenged by a few investigations showing a positive association between social support and depressive symptoms[50, 51] and others finding no significant stress moderating effects.[39, 41] For example, two investigators who measured women's social support by an account of actual help received to alleviate the stress of childcare and household work, reported that this support was positively correlated with depressive symptoms.[50, 51] These results may be due to the mobilization of support under stressful circumstances,[1] but may also be related to negative consequences of social support or attenuated social support[52] because of certain qualities of the personal relationship between supporters and support recipients. In fact, Morgan et al.'s work on postnatally distressed women and their partners revealed that relational dynamics complicated the giving and receiving of support as well as its meaning, especially to new mothers.[53] Therefore, some authors have proposed that a promising approach to understanding how social

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[1] Intuitively, these findings could be explained by way of a simple causal mechanism—women who are depressed receive, or mobilize additional practical help. Gender differences however, indicate that this association is more complex. Whereas receiving help was *negatively* associated with postpartum depressive symptoms in fathers in the Leathers et al. sample, it was *positively* associated with depressive symptoms measured at the same time for their spouses.

support is linked to psychological outcomes lies in the study of close personal relationships—their qualities and their meaningfulness to support recipients.[54-56]

Unfortunately, in studying social support the emphasis has been typically placed on the *support* aspect of the construct while the *social* aspect has been neglected.[57] In other words, social support has been examined in terms of its structure and functions with comparatively less attention paid to the social relationships from which support emerges. Additionally, the literature reflects a tendency to use global measures of social support, that is, support from members of one's social network in general, rather than from particular social relationships. In a criticism of this approach to conceptualizing and measuring social support, Sarason pointed out that "global measures of support generally used in the field are often relatively weak predictors of health outcome, because they call upon the respondent to give an overall or impressionistic view of the help perceived to be available without taking into account the meaning transmitted to the recipient as a consequence of positive and negative aspects of his or her relationship with the support provider."[56, pp. 542-543]

Although one relationship, namely the spousal relationship, has been given considerable attention in the study of social support and PPD, there is little knowledge about other personal relationships that may be important to childbearing women, the social support they provide, or their impact on postpartum women's mental health. Researchers have postulated that "particular types of personal relationships, such as family and friends may differ widely with regard to their supportive features."[52, p. 571] Thus, there is a need to disaggregate global support into its component relationships and assess the quality of each of these relationships. The value of evaluating postpartum women's relationships with their spouses/partners, mothers, mothers-in-law and female friends with children in terms of understanding the development of PPD has yet to be demonstrated.

Social support has been frequently studied in the context of pregnancy and the postpartum period, but self-esteem has been less well studied as a risk factor for PPD. Self-esteem has been associated with general depression,[58, 59] though it did not appear in O'Hara and Swain's[4] or Beck's[34] meta-analysis of risk factors for PPD. Recently, however, a few researchers have examined the role of self-esteem in PPD and found it negatively correlated with PPD[41] as both a significant predictor of PPD and mediator of the effects of everyday stressors and quality of relationships on PPD.[60] These preliminary results and the suggestion that self-esteem is an intervening variable in social support,[61] emphasizes the need to further examine the role of self-esteem.

Substantial evidence has accumulated in the PPD literature to indicate that depression in pregnancy is one of the strongest predictors of depressive symptoms in the postpartum period.[4, 34, 37-40, 62-66] There is also some evidence that depressive symptoms in the first week or two after the birth of the baby, commonly called maternity blues, are strongly correlated with PPD later in the postpartum period.[67, 68] Although maternity blues are increasingly recognized as a risk factor for PPD, no studies were found that examined the effects of early depressive symptoms on postpartum women's interpersonal relationships, self-esteem, or global perceived social support as potential indirect effects in the development of PPD. Knowledge of how early depressive symptoms may be related to PPD is important for health-care professionals in the primary health-care setting who customarily see women in the very early days postpartum. What has been traditionally dismissed as a case of the postpartum blues may be a potential risk factor in the development of PPD. This understanding would direct practitioners toward more sensitive and accurate assessments to identify these mothers and intervene appropriately.

Purpose of the Study

The purpose of this study was to develop and test a model of theoretically proposed relationships among women's inner-self, social and spiritual resources, and depressive symptoms at 1-week postpartum and the power of this model to predict depressive symptoms at 8-weeks postpartum. The social resources in the model were conflict and social support associated with four specific interpersonal relationships. The spiritual resources included variables tapping eight specific domains of religiousness/spirituality. Based on the social cognitive theoretical perspective of social support, the social and spiritual variables were hypothesized to have both direct and indirect effects on depressive symptoms at 8-weeks postpartum. The postulated indirect effects of these variables were mediated by two cognitive or intrapersonal variables—global self-esteem and a global measure of perceived social support. The variable depressive symptoms at 1-week postpartum was also postulated to have a direct influence on depressive symptoms at 8-weeks postpartum as well as indirect effects on women's social resources and intrapersonal resources.

There were two secondary objectives. The first was to add knowledge of the spiritual dimension of postpartum women's lives to the large body of knowledge about the biopsychosocial dimensions and thereby encourage a more holistic perspective in research and practice related to PPD. The second objective was to conduct the study so that community health-care practitioners and academic faculty at the local level worked collaboratively to accomplish the research project.

Significance of the Study

This study was conducted within a Canadian primary care practice setting and involved health-care professionals who are positioned to utilize the study findings in the development of psychosocial interventions, clinical practice, policy formation, and resource allocation. Models

of prevention, early identification, and treatment for PPD require sound and comprehensive knowledge of risk and protective factors including spiritual factors and early depressive symptoms. Better understanding of the nature of support provided by women's specific interpersonal relationships is essential to the development of interventions aimed at increasing support for postpartum mothers. Believing that strengthening social support holds promise as a strategy to promote the physical and mental health of various populations, Stewart and Tilden called on nursing researchers to contribute to the conceptualization and study of social support through nursing research in practice settings.[69] They highlighted the need for models that emphasize the multi-faceted nature of social support. This study investigated aspects of social support that have not yet been thoroughly examined in this population and added the spiritual dimension, a yet unexplored aspect of postpartum women's experience.

CHAPTER 2: LITERATURE REVIEW

The following literature review is divided into four major sections. In the first section the postpartum depression (PPD) literature is reviewed to identify conceptual issues, defining characteristics, risk factors, and methodological issues. The next section focuses on social support and PPD followed by a review of self-esteem and PPD. Finally, the religiousness/spirituality literature is reviewed. In the absence of publications linking spirituality to PPD, the goal of this part of the review is to identify various domains of spirituality, the conceptualization and measurement of spirituality variables, and findings linking religion/spirituality to health outcomes.

To ascertain what is known about PPD a search for published literature was conducted using the Medline and CINAHL (Cumulative Index of Nursing and Allied Health Literature) databases. Keywords and combinations used included postpartum and postnatal depression. To gain an overview of the knowledge development in the field of PPD since Pitt's seminal work in the late 1960's,[70] articles limited to English language references were searched from 1966 to the present. Relevant studies were read and annotated by key aspects of PPD such as risk factors and predictors as well as by key methodological characteristics such as sample size, research design, data collection methods, instruments, and PPD measurement.

The PsychInfo, Family Studies, and Sociological Abstracts electronic databases were also searched using the keywords and combinations of postpartum (postnatal) depression, social support, close personal relationships, spiritual, spirituality, and religion. This part of the search was limited to English language literature between the years 1987-2001. Only one study was displayed in the electronic search using combinations of spirituality/religion and PPD, therefore a search of CINAHL and Medline using "spirituality" and "religion" as keywords was conducted to retrieve key articles that defined relevant terms and linked these concepts to health.

References cited within these articles were then selected. In addition, the author was invited to review and select key articles from 1990-2001 in a nurse researcher's extensive database on spirituality and health. To locate studies investigating pertinent social support factors, citations from bibliographies of previously located articles were used to track additional references in an ancestry approach. Finally, the University of British Columbia Library was also hand-searched in key topic/disciplinary areas (e.g., psychiatry) for recent books by authors known for their focused research programs in PPD as well as depression in general populations of women.

Postpartum Depression

Conceptual Issues

In spite of intensive research activity over the past three decades, scientists have not agreed on a definition for PPD and conceptual ambiguity persists. Biomedical models of PPD, primarily from obstetrical and psychiatric perspectives, have dominated PPD research with a psychological perspective gaining predominance recently. From an obstetrical perspective, PPD is conceptualized in terms of disturbances in physiological and biochemical mechanisms, and medical events surrounding pregnancy and birth. From a psychiatric perspective, PPD is conceptualized in terms of diagnostic criteria (to define cases/non-cases) and of classifications of disorder (to define PPD as distinct from other mental illnesses). From a psychological perspective, PPD is conceptualized as a disorder resulting from both biochemical and psychosocial factors. Researchers within all of these perspectives tend to define PPD in dichotomous terms (i.e., who is depressed and who is not) and to investigate possible etiological factors.[35]

Even within the psychiatric paradigm, the defining characteristics of PPD remain controversial. There is considerable variation across studies related to onset and

symptomatology. For example, with respect to onset, the fourth edition of the Diagnostic and Statistical Manual of Psychiatric Disorders (DSM-IV) has defined PPD as an affective disorder with onset occurring within four weeks postpartum.[71, 72] In contrast, the Marcé Society (the International Organization for Postpartum Disorders) has defined the onset of PPD as being within one year of delivery.[18] Depression with onset during (rather than following) pregnancy is, nevertheless, labelled *postpartum* depression by many authors. Similar controversy exists with regard to the symptomatology of PPD. Distinctions between depressive and anxiety symptoms have not been clearly made. The distinctive symptom profile of PPD versus postpartum blues, as well as PPD versus general depression (i.e., depression occurring outside of the childbearing phase in women's lives) has not been established.

Recently, nurses and other scientists have challenged the biomedical and psychiatric perspectives and have offered alternative conceptualizations of PPD. For example, Affonso suggested that future nursing research should consider an alternative conceptualization of depression in childbearing women. Rather than defining PPD in dichotomous terms, she recommended understanding postpartum depressive symptoms as emotional responses on a pregnancy-postpartum adaptation continuum ranging from emotionally healthy to symptoms of distress to possible clinical depression.[35] Other authors also have recommended the conceptualization of PPD in terms of varying levels of distress or dysphoria in transition to motherhood.[36, 73-76]

In summary, PPD remains a concept that has been described as a "confusing mosaic"[77] and is inconsistently defined. It is often not clear what phenomenon is being measured by researchers: anxiety or depression; prenatal depression with symptoms continuing into the postpartum or postpartum onset depression; a recurrence of non-childbearing episodes of depression or a first experience of depression with postpartum onset. In addition, there are

contradictory views about the basic nature of PPD. The resulting lack of conceptual

clarity hinders synthesis of what is known to date, and impedes knowledge development in the

field.

The following literature review largely reflects the medical view of PPD due to its

predominance in the field, but includes literature representing non-medical perspectives. It also

reflects an attempt to synthesize findings without obscuring the obvious conceptual difficulties

and contradictions that exist.

Postpartum Depression: Part of a Continuum of Mood Disorders

Postpartum depression (PPD) is most commonly described in the literature as a cluster of

affective and somatic symptoms falling in the mid-range of severity between two other subtypes

of postpartum mood disorders, postpartum psychosis and postpartum blues. Postpartum

psychosis, considered the most severe of the disorders, occurs in approximately 1 to 2 women

per 1,000 births with highest risk for onset being within the first three weeks following

delivery.[3, 78, 79] In their review for the DSM-IV, Purdy and Frank described the onset of

postpartum psychosis as precipitous with mothers displaying florid symptoms of agitation, mood

lability, loss of interest (even in their infant), and disorientation, especially confusion.[79]

Hallucinations and delusions are usually associated with childbirth or the baby, and infanticidal

intentions and behaviour may be present.[36] Risk of harm to both mother and infant necessitates

immediate psychiatric management. Factors associated with postpartum psychosis include a

prior personal history of mood disorder (especially bipolar disorder), a family history of bipolar

disorder and in particular, a prior personal history of a postpartum episode of mood disorder with

psychotic features.[79]

Postpartum blues, also termed maternity blues or baby blues, is considered the mildest of

the postpartum mood disorders. Symptoms of transient weepiness, mood instability, anxiety, and

irritability are characteristic in the first few days after childbirth, and generally resolve within 10 days to 2 weeks.[80] In her review of the literature, Beck reported that the incidence of postpartum blues varies from 10 to 75% across studies.[81] Strong research designs and precise measurement of maternity blues have been problematic because of a lack of standard methods and validated instruments. According to Beck, Kennerley's Blues Questionnaire was developed with systematic psychometric methods and represents an exception to previous instrument development. One hundred mothers were included in the process of determining the tool's construct validity including a cluster analysis of the scale's items. Interestingly, two clusters emerged; the "primary blues" were distinct from depression and they occurred much more frequently.[81, p. 295] These advances hold promise of a more precise understanding of the phenomenon of maternity blues and how it relates to both prenatal and postnatal depression.

Prevalence, Onset, and Duration of Postpartum Depression

Prevalence rates for depression in the first year after childbirth are within the 10-20% range.[82] Researchers have determined the prevalence of maternal depression at different times and periods in the perinatal phase using various tools to distinguish cases from non-cases. Of the self-report measures, the Edinburgh Postnatal Depression Scale (EPDS) is gaining increasing favour. Using the EPDS at approximately 6-weeks postpartum, researchers have found prevalence rates of 22.6% (cut point ≥ 10 points on a 30-point scale) in a community sample in Israel,[83] 11% (cut point ≥ 13) in an Irish sample,[84] 16% (cut point ≥ 10) in a small Canadian sample,[40] and 19.9% (cut point ≥ 12) in an American sample.[85] Other self-report tools with demonstrated reliability and validity such as the Beck Depression Inventory (BDI), the Center for Epidemiological Studies Depression Scale (CES-D), and the Depression Adjective Check Lists (DACL) have been used in the study of PPD producing a similar range of prevalence rates.

The effect of methodological differences on estimates of prevalence of PPD is an important consideration. O'Hara and Swain's meta-analysis of 59 studies with 12,810 subjects estimated a 13% overall prevalence of PPD.[4] The authors identified numerous methodological factors and tested them for their association with the variability in prevalence estimates. Two factors that were *not* significantly associated with the variation in reported prevalence rates were the number of days postpartum when the depression was measured (the point prevalence), and the nation in which the study was conducted. In contrast, measures of self-report were associated with higher prevalence estimates than interview measures, and variation in the period of time in which PPD was measured (the period prevalence) resulted in variable prevalence estimates. Assessments of prevalence over longer periods (e.g., the first 8-weeks postpartum) resulted in higher period prevalence rates than studies designed to study a narrower window (e.g., the first 4-weeks postpartum). Therefore, comparisons of prevalence rates across studies must be based on equivalent periods of observation.

Whiffen examined the validity of self-report measures and their concordance with standardized assessments and diagnostic systems in determinations of the prevalence of PPD.[1] She reviewed six studies collectively representing 620 randomly selected community-based women who were initially screened for PPD between 6 and 9-weeks postpartum with a self-report measure and then assessed with standardized diagnostic interviews. Diagnoses of minor as well as major depression were based on the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III) criteria or the Research Diagnostic Criteria (RDC). Results of her comparison of prevalence rates, based on self-report versus standardized diagnostic interviews supported her hypothesis that self-report measures underestimate depression in childbearing samples. Prevalence estimates based on self-report measures were 6.8% for cases of major and minor depression whereas prevalence rates resulting from diagnostic interviews were

13.0% (5.6% with major depression and an additional 7.4% with minor depression). She suggested that self-report measures might be less sensitive to minor depression than diagnostic interviews. Her results are contrary to O'Hara's observations that self-report measures resulted in prevalence estimates of 14% while interview measures were 12%.[4]

It is popularly believed that the risk of depression is higher for women in the postpartum period than for women in non-childbearing phases of their lives. Some authors have compared the incidence of depression in childbearing samples with samples of non-childbearing women to determine whether the postpartum period is associated with elevated risk for depression. Cooper et al. estimated that for non-psychotic depression the prevalence rate of 8.7% at 3 months postpartum ($N = 460$), was not dissimilar to the rate in a comparison group of non-puerperal women of similar age, parity, and social class in the community ($N = 313$).[86] Cox et al. reported no significant difference in 6-month period prevalence of RDC depression in their sample of 232 postnatal women compared with a control group of women ($N = 232$) matched for age, marital status, and number of children, who were not pregnant nor had a baby in the previous 12 months (13.8% and 13.4%, respectively). However, when Cox et al. narrowed their period prevalence from 6 months postpartum to the first 5 weeks after childbirth, they reported a threefold higher rate of depression compared to non-postpartum women.[87]

According to Whiffen, however, the samples in these studies were too small to have sufficient power to test for differences in prevalence rates. By pooling results from six studies ($N = 620$) that assessed PPD using DSM-III or the RDC criteria with randomly selected samples of community-based, 6-12 week postpartum women, she estimated that a total of 13% of the women met the criteria for either major (5.6%) or minor depression (7.4%). Using data from a large epidemiological study of 18,000 non-institutionalized American adults and comparing diagnosed depression in females of a similar age range as the postpartum women, she estimated

the rate of major depression to be 3.7%, a rate significantly lower than that in the postpartum group, $z = 2.27$, p < .05. In addition, Whiffen used findings from another study of a community sample of non-puerperal women ($N = 291$) for the rate of minor depression (2.7%). She found this rate to be significantly less than the rate of 7.4% observed in postpartum women, $z = 2.77$, $p < .01$, and confidently concluded, "Both major and minor depressions are more prevalent in the postpartum period than is typical among community samples of women."[1, p. 494]

The onset of PPD for a majority of women occurs within the first 3 months postpartum.[82, 88] In Cooper et al.'s longitudinal study, nearly one half of the identified cases of PPD had an onset within 3 months of delivery, and only one quarter had an onset between 6 and 12-months postpartum.[86] Steinberg and Bellavance reported that the peak onset of PPD was 9.5 weeks postpartum, and noted that their findings were consistent with other research teams that reported peak onset between 10-12 weeks postpartum with new cases continuing to appear up to 1 year following delivery.[18]

The duration of PPD, including its pattern of relapse, has not been clearly established. Although some authors have reported that symptoms resolve within 3 to 6 months in the majority of cases,[1, 86] others have reported the persistence of symptoms into the second year postpartum and beyond.[70, 82, 89] In her critique of the PPD literature, Romito observed, "The researcher finds a more or less conspicuous minority of depressed women for as long as she (he) is willing to continue the follow-up."[80, p. 8] Cooper and Murray assessed the differences in duration and recurrence of PPD over a 5-year period in two groups of primiparous women experiencing PPD. Women who had experienced a previous depression were more likely to have a longer episode of depression in the postpartum period as well as recurrences of depression unrelated to childbirth. Women for whom the PPD was a first occurrence of depression had a much shorter duration of PPD and were at increased risk for another PPD, but not for recurring

depression unrelated to childbirth.[90] Although Bell et al.'s findings are in agreement

with Cooper and Murray's regarding better outcomes for women experiencing depression for the

first time in the postpartum period, their follow-up over 8.8 years recorded, in contrast, a high

risk of subsequent non-puerperal relapse.[91] England et al. examined chronicity of PPD (defined

as illness persisting for at least two years) in a sample of case notes for 84 women treated as

outpatients in the UK. They found that 12.8% of these women had illness (major and minor

depression) persisting for at least two years. In their study, the only factor clearly associated with

chronicity was delay before adequate treatment was received. Women who had the shortest

duration of illness (< 6 months) had a significantly shorter interval prior to adequate treatment

than women with duration greater than two years, $t = 276.5$, $z = 3.42$, $p = .0003$.[15] Ballard et al.

highlighted another interesting facet of PPD related to its duration.[92] They found support for

the hypothesis that more persistent PPD (i.e., persisting to 6 months postpartum) has different

etiological factors than brief episodes of PPD (i.e., present at 6 weeks but resolved by 6 months).

To sum up, the evidence regarding the duration of PPD remains inconclusive. Questions have

been raised about the possibility that PPD may be numerous etiologically distinctive phenomena.

Postpartum Depression Symptoms

The symptom profile of PPD has been studied for its distinctiveness from other non-

puerperal depressions. Since symptoms are the basis of self-report measures, accurate and

comprehensive knowledge of symptoms of PPD is needed to develop valid screening and

diagnostic tools for research and clinical purposes. Whereas the symptom profile of PPD has

been described as typical of major non-puerperal depressions by some authors,[88] others have

described the profile as atypical or distinctive. For example, Pitt indicated that the symptoms he

observed in depressed postpartum women were atypical of classical depression.[70] In particular,

he noted a prominence of neurotic symptoms, such as anxiety, irritability, and phobias

overshadowing the depression. Furthermore, despondency and difficulty getting to

sleep late in the day for postpartum women was a reversal of the early morning wakening and

insomnia usually seen in typical depression. Similarly, Affonso et al. noted that depressed

postpartum women consistently reported eight symptoms that did not resemble the standard

symptom profile of depression: dysphoric mood, worrying, somatic and psychic anxiety,

insomnia, fatigue, anger, and irritability.[93] They suggested that childbearing depression is of a

uniquely anxious or angry character.[35, 93] In their cross-sectional study, Neiland and Roger

compared symptoms of low self-esteem and tension between two groups of women: 152 women

who were 8-weeks postpartum and 152 women who were not pregnant and had no children less

than 2 years of age. Both groups of women completed the EPDS. Low self-esteem scores among

subjects with relatively high EPDS scores (> 14) were more common among postpartum women,

$F(1, 300) = 7.84, p = .005$.[94] Whiffen reported another comparison of non-postpartum

depressed women and postpartum depressed women according to symptom characteristics.[1]

She concluded that symptoms of guilt and anhedonia^2 were more common in postpartum women

whereas suicidal ideation was significantly less common. Similar results were found by

Sugawara et al. in their survey of 1,329 Japanese women.[96] In addition, they noted that sleep

disturbances and fatigue were correlated as strongly as crying spells with the severity of

depression at all prenatal and postnatal assessments. Their results, as well as those of Green and

Kafetsios, suggest that fatigue should not be neglected as a symptom of depression in postpartum

women.[97]

Full understanding of the symptoms of PPD requires careful consideration of the cultural

context in which mothers are embedded.[49] Recognition of the role of culture in influencing the

presentation of psychiatric disorders is now evident within the DSM-IV. Expressions of

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^{2} Anhedonia is the lack of pleasure in acts that are normally pleasurable.[95]

psychological distress vary from culture to culture, which influences whether symptoms are expressed in somatic or affective forms and whether expressions of such symptoms are socially acceptable.[98] For example, Yamashita et al. [68] and Yoshida et al. [99] noted that relatively lower EPDS scores in Japanese women, compared to those of Western women, may arise because Japanese women are less likely to express their feelings and more likely to express emotional complaints indirectly through physical problems or worries about child care. Similar findings with a Chinese sample of women led Lee et al. to report the same tendency, albeit less pronounced than that seen in the Japanese study.[100] In contrast, Ghubash et al. found comparable responses between women from the United Arab Emirates and North American women.[101] Therefore, one limitation of using self-report measures of PPD is related to the uncertainty about appropriate cut points for different ethnic groups. To address this limitation, some researchers have used the EPDS scores as a continuous variable thus avoiding the creation of artificial differences between women whose scores may not be so dissimilar.[102] Other researchers have lowered their cut point to 8/9 to increase the sensitivity of the EPDS.[68] These findings suggest that culturally sensitive measures are required.[103]

Risk Factors for Postpartum Depression

In the absence of consensus regarding etiology, exploration of PPD as a multi-factorial phenomenon has resulted in the identification of a large number of risk factors, that is, potential characteristics that have been shown to increase the probability of developing PPD.[34] These risk factors may be directly related to the etiology of PPD and they may be modifiable. Using Beck's classification system in her meta-analysis of 26 prospective studies, the following review of PPD predictors is organized in seven sections: (a) prenatal anxiety and depression, (b) history of previous depression, (c) life stress, (d) childcare stress, (f) maternity blues, (g) social support, and (h) marital relationship.

Prenatal Anxiety and Depression

Prenatal anxiety and depression have received little attention in terms of being identified as risk factors for PPD. Early studies of PPD frequently assessed women only postnatally and failed to distinguish women for whom anxiety and depression presented during pregnancy from new incident cases in the postpartum period. Recently, studies have distinguished depression of prenatal onset from that of *postnatal* onset. Similarly, prenatal *anxiety* has been distinguished from prenatal *depression*. Researchers making these distinctions suggest that there may be different risk factors associated with "continuing depression" versus depression occurring either prenatally or postnatally.[1, 40, 104, 105] Researchers also have found an association between prenatal anxiety and depression[4, 40] and prenatal and postnatal depression.[4, 63, 65, 106-108] Moreover, some researchers have reported that prenatal depression is the strongest predictor of PPD.[34, 38, 40]

History of Depression Unrelated to Childbirth

Whereas a few researchers have found no relationship between a previous history of general, non-puerperal depression and PPD, most researchers have found a significant association. Whiffen identified a number of studies in her review that failed to find an association.[1] In contrast, on the basis of their meta-analysis of 12 studies, O'Hara and Swain concluded that a past history of psychopathology places women at risk for depression in the postpartum period and, moreover, that the average effect size was one of the largest of the risk factors for PPD (delta = 0.57, $r = 0.27$, 95% CI = 0.49-0.65).[4] Numerous other researchers have reached similar conclusions.[38, 63, 91, 108-110] The weight of evidence appears to support a significant relationship and, thus, a history of non-puerperal depression should be regarded as a potential risk factor for subsequent PPD.

Life Stress

Life stress (e.g., marital changes, occupational changes, and crises and life events of many sorts) has been studied in relation to PPD and identified as a significant risk factor. Some researchers have differentiated between various types of life stress, categorized by time of occurrence (stressor occurring before the pregnancy versus those associated with pregnancy, birth, and puerperium), and by other dimensions such as chronic life stressors versus daily hassles in their examination of the effects of stress on PPD.

Bernazzani et al. examined the effects of both pre-pregnancy life stressors and stressors occurring during pregnancy, birth, and the puerperium in a sample of 213 French Canadian women.[38] Unexpectedly, their path analysis revealed that it was *solely* pre-pregnancy life stressors that had effects on PPD at 6 months postpartum; they exerted direct effects on PPD ($\beta = -0.16, p < .05$), as well as indirect effects through influences on prenatal depression and locus of control (total indirect effects = -.09)[3] The effect of stressors during pregnancy and the puerperium lost their initial significant relationship to depressive symptoms at 6 months postpartum when the pre-pregnancy stressors were entered into the multiple regression analysis. Pregnancy and puerperium stress variables similarly lost their significance with multivariate analysis in another prospective Canadian study. Women with onset of depressive symptoms in the first month postpartum perceived significantly higher levels of global stress during pregnancy, $t(653) = 2.78, p < .01$, and also were significantly more bothered and stressed by their infants' behaviours, $t(653) = 3.32, p < .001$.[65] However, these stress variables lost their significance in the multiple regression analysis that included past history of poor relationship with mothers and fathers and level of depressive symptoms during pregnancy. Stressful life

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[3] The negative effects, admittedly counterintuitive, resulted from the direction of the coding of the life stressors index: ratings of the impact of various stressors ranged from "extremely negative" to "extremely positive." (38)

events during pregnancy, relative poverty, and obstetrical difficulties were measured in

15 studies conducted in Britain, the United States and Japan. The values for these variables were

combined by O'Hara and Swain in their meta-analysis, resulting in their finding a strong

relationship with subsequent PPD in the two British and 11 American studies (delta = 0.69, r =

0.33, 95% CI = 0.53-0.85 and delta = 0.61, r = 0.29, 95% CI = 0.54-0.69, respectively), but a

non-significant association in the two Japanese studies. Although the authors concluded that

experiencing stressful life events during pregnancy is a clear risk factor for PPD, they did not

attempt to explain the discrepant results between samples in Japan and the other two countries

except to point to the disproportionate number of studies.[4] Thus, although some researchers

have found pregnancy stress to be positively associated with PPD,[41, 65] others have found that

stress-related onset of depression is much more likely during pregnancy than in the

postpartum.[105]

Other types of life stress including daily hassles and chronic stressors related to poverty,

relationship instability, and employment status have been examined with respect to PPD. Daily

stressors or "hassles" is a type of life stress that has also been found to be related to depression in

pregnancy but not in the postpartum period.[40] Relationships between chronic stressors such as

poverty and conflictual relationships and PPD were examined by Séguin et al. in their very small

sample (N = 68) of low socioeconomic women recruited from prenatal clinics in Montreal. The

results of the regression model for their cross-sectional analysis of depressive symptoms at 6-

months postpartum showed that chronic stressors such as serious lack of money, health problems

after delivery, and fussy-difficult infant were significant predictors. However, the only

significant chronic stressor in their longitudinal analysis (the third week to the sixth month

postpartum) was the number of interpersonal conflicts during the first month after delivery.[66]

These results point to the complexity of the life stress construct as well as to the possibility that depressive symptoms with onset in pregnancy are associated with different stressors than depressive symptoms with onset in the postpartum period. Clear, consistent definitions are needed to replicate findings in childbearing women across cultures and socio-economic levels to increase understanding of life stress as a risk factor for PPD.

Childcare Stress

Childcare stress is another factor significantly associated with PPD in correlational studies. Researchers frequently conceptualize childcare stress as mothers' perceptions of their infants as temperamentally difficult, which are operationalized by the length and frequency of infant crying and fussiness.[42, 66, 111, 112] In Cutrona and Troutman's study, infant temperament alone accounted for 30% of the variance in PPD scores, exerting both direct and indirect effects through the mediation of mothers' perceived self-efficacy. Other studies reporting significant associations between childcare stress and PPD have measured childcare stress more broadly and have included problems of infant health, feeding and sleep schedules.[109, 113] Based on her meta-analysis of 17 studies (total sample of 1,353 mother-infant dyads), Beck concluded that there was a significant, moderate correlation ($r = .31$, 95% CI = 0.26-0.37) between PPD and infant temperament during the infant's first year.[114]

Maternity Blues

Maternity blues is a significant predictor of PPD. Although maternity blues or postpartum blues are commonly thought to be a different entity than PPD, the possibility that they represent emotional disturbances on a continuum from mild to more severe has not been ruled out. Marked depressive symptoms at 1-week postpartum have been found to be strongly correlated with PPD later in the postpartum period.[67, 68]

Although most cases of postpartum blues are transient and benign, researchers are beginning to distinguish between cases characterized by mild symptoms where mothers weep and then feel better, and more severe symptoms where mothers may experience headaches and feel irritable, depressed, tense, confused, anxious, or restless.[115] Yamashita et al.'s results showed a strong relationship between maternity or postpartum blues and PPD.[68] They documented early mood disturbance with Stein's Blues Scale, a day-to-day self-evaluation scale in the first 5-days postpartum. They also screened for PPD at 5 days, and 1- and 3-months postpartum using the Edinburgh Postnatal Depression Scale (EPDS), a 10 item self-report scale that rates the intensity of depressive symptoms present within the previous week. They adapted the instructions in the early assessment to refer to the previous 5 rather than 7 days, and established a cut- point of 8/9 for their Japanese sample instead of the higher cut-points recommended for Western populations. Thirteen of the 15 mothers who were depressed at 3-months postpartum were detected as having maternity blues using the Stein's Blues Scale. In addition, they calculated that mothers scoring high on the EPDS at 5 days were 33 times more likely to be depressed at 3 weeks, and 20 times more likely to be depressed at 3 months than those with low EPDS scores. Similarly, Hannah et al. reported a strong association between maternal dysphoria in the first week and at 6-weeks postpartum; specifically, approximately two-thirds of the mothers with a high EPDS score at 6-weeks postpartum also scored high at 5 days after birth.[67]

Social Support

Social support has been identified as an important correlate and predictor of PPD in diverse studies of childbearing women in many different countries. The literature examining social support and PPD is extensive and presented in more detail in the following sections of this

literature review. Thus, this section is a brief summary that highlights the role of social support as a predictor of PPD.

Beck's meta-analysis on postpartum predictors defined social support in terms of "lack of social support [that] occurs when a woman perceives she is not receiving the amount of instrumental or emotional support she expected."[34, p. 42] She located 15 studies in which a total of 1,263 mothers participated. The mean effect size for lack of social support in terms of the Pearson product-moment correlation was in the moderate range, $r = .39$. O'Hara's meta-analysis of five studies measuring general social support and subsequent PPD produced a similar effect size, $r = -.30$ suggesting that women with little social support were more likely to develop PPD. Although these results belie the complexity of the social support construct and overlook some contradictory findings such as a non-significant or positive relationship between social support and PPD, they summarize the accumulated evidence that there is a significant relationship between social support and PPD.

Marital Relationship

As is the case with social support, the marital relationship variable has been defined and measured in various ways, studied in various ethnic groups, and examined in cross-sectional and longitudinal designs, but has been found to be a relatively clear risk factor for PPD.[65, 109, 110, 113, 116-119] Beck's meta-analysis identified *marital dissatisfaction* defined as "how happy or satisfied the woman is with certain aspects of her marriage, such as communication, affection, similarity of values (e.g., finances, child care), mutual activity and decision-making, and global well-being"[34, p.p. 43-44] as the significant risk factor for PPD and reported a mean r effect size based on 10 studies with a total of 1,736 mothers of $r = .35$. O'Hara's meta-analysis on the other hand showed a weaker relationship that varied considerably by method and time of data collection for both the predictor and the outcome variables. He concluded that marital relationship assessed

during pregnancy with a standard self-report such as the well-known Dyadic

Adjustment Scale (DYAS) is much more predictive of PPD assessed through self-report

questionnaires than through interview measures.

Social Support and Postpartum Depression

Pregnancy and the postpartum period are times in a woman's life when she is "besieged

with transitions that challenge her coping resources and subsequent adaptation."[35, p. 217] Social

relationships and the support women draw from them are known to be critical factors in their

successful adjustment.[4] There is considerable evidence that, for women at any stage in life,

their vulnerability to depression lies in what happens to them within relationships. Jack, in her

longitudinal, qualitative study of 12 women diagnosed with depression (four of whom were

interviewed through their pregnancies and after the birth of their babies) concluded that women's

evaluations of themselves are essential elements in their depression and since they are uniquely

interpersonally oriented, "events in the domain of relationships are most relevant to their

definition and evaluation of self."[58, pp. 196-197] Therefore, the understanding of relationships most

important to childbearing women is critical to understanding social support (the product of these

relationships) as well as the causes of depression in these women.

Although the offer of a definition of social support is desirable, social scientists

acknowledge "its definition eludes consensus, referring at times to structural characteristics

and/or functions of social relationships and at other times to personal interpretations or

perceptions."[120, pp. 652-653] Social support has been described as a "metaconstruct comprised of a

number of theoretically and empirically distinctive components,"[37, p. 1254] and therefore it may

be measurable in parts not as a whole. In this study, one encompassing definition of social

support was not offered, but parts or aspects of social support were defined.

One component of social support, the *mode of support*, distinguishes varieties of ways in which people can help one another and hence defines the different functions that such assistance serves.[121] A commonly accepted typology of functions includes emotional, instrumental or practical, informational, companionship, and validation or "feedback" support.[122] The value of defining functions of social support lies in the greater potential for understanding its theoretical mechanisms thereby extending present knowledge beyond the current consensus that social support influences health, to explaining how these effects occur.[120] Each of these functions of social support is reflected in Weiss's theoretical model of six different social support functions he has termed "relational provisions."[123, 124] Social support measures that discriminate between these functions have been developed and widely employed in the social support literature. These measures are increasingly used in PPD research as well.[112, 123]

The *source of support* is another facet of social support and is considered a social network concept. The source of support derives from a structural aspect of social support that may refer to: (a) global sources or the overall social network, (b) a specific individual, or (c) several individuals of a specific type, such as friends. Thus, the term "perceptions of global support" refers to the perception of the support available from one's social network as a whole, whereas "relationship-specific support" (or domain-specific support if more than one relationship of a particular type is considered) is the perception of support available from specific sources in one's social network.

Structural network aspects of social support are distinct from *functional* aspects of social support. Measures that evaluate size and composition of the social network as well as specific sources of social support are structural measures. Only recently has the source of support been a focus of social support research, but Dakof and Taylor claimed that, "In the same way that advances in the area of social support were made when researchers began examining the various

functions of support…further gains can be made by measuring distinct supportive behaviours provided by various individuals."[125, p. 87] The literature in which social support is examined as a predictor of PPD is reviewed in the following sections organized according to these structural and functional aspects of social support.

In addition to the conceptual distinctions made between the structural and functional aspects of social support, social support theorists distinguish perceived social support from received support. *Perceived social support* refers to the perception that assistance is or could be available if needed, whereas *received* support is the actual enactment of assistance or help.[126] Perceived social support is a broad concept, extending beyond the sense that one can count on others should the necessity arise, to include cognitive appraisals that one is cared for, loved, esteemed, and valued.[127] Although researchers sometimes do not offer their conceptual definitions of social support, it is evident in the literature that perceived social support is more commonly measured than received support and the perception of support from the social network as a whole (global perceived social support) measured more often than relationship-specific support.

Global Perceived Social Support

Various conceptualizations of global perceived social support have resulted in diverse operationalizations in the PPD literature. For example, some researchers measured overall perceptions of *availability* of support and others measure *satisfaction* with overall support. Methodological variations are also pervasive in this literature: Some researchers measured global perceived social support based on interviews and others used self-report instruments, and occasionally both were used in a multi-method approach.

As mentioned previously, O'Hara and Swain, in their meta-analysis of five studies, included only studies of global social support and concluded it is a negative predictor of PPD

(delta = -.63, r = -.30 95%, CI = -0.75 - 0.51). The authors investigated the causes for

the heterogeneity of effect sizes in their analysis and concluded that an interview-based

assessment of PPD yielded a very strong association between social support and PPD, while self-

report produced more moderate, but still significant associations between social support and

PPD.[4] In a prospective cohort survey of pregnant women (N = 427), Brugha et al. employed

interview-based measures to assess the quantity and quality of social support from the primary

social networks of primiparous British women. They used a modification of the self-report

General Health Questionnaire to measure prenatal depression and PPD at 3 months postpartum.

Although the size and quality of women's primary networks were unrelated to PPD, positive

support from their partners, mothers, or confidants associated with the event of their pregnancy

(i.e., they were positive and supportive about the pregnancy), was an important predictor of PPD,

$F(5, 410)$ = 8.18, R^2 = 15.4%.[62] Also employing an interview-based measure of overall social

support, Glasser et al. reported that a lack of social support, assessed prenatally, was predictive

of PPD measured by self-report at 6-weeks postpartum in 288 Israeli women (odds ratio = 4.1,

95% CI = 2.0-8.8).[109] In both reports, the researchers suggested that prenatal recognition of

women at risk for PPD is possible and that perceived lack of social support is a clearly

identifiable risk factor in the prenatal period.

Two recent Canadian studies, both using validated social support questionnaires, reported

contradictory findings about the effect of perceived global support. In Da Costa et al.'s study,

satisfaction with available global support failed to predict PPD, whereas prenatal depression and

maternal ratings of infant temperament were predictive.[40] In contrast, Seguin et al. found that

global emotional support in the early postpartum (controlling for prenatal depression) was an

important predictor of PPD at 6 months after childbirth.[66] Comparison of these studies is

complicated by the researchers' use of different measures of PPD evaluated at different times (4-

5 weeks postpartum versus 6 months postpartum), differences in the socio-economic

status of the women, and measures of different aspects of social support (i.e., satisfaction versus

perceived availability of support).

Two studies that measured perceived global social support using the same scale (the

Social Provisions Scale [SPS]) also investigated the effect of individual functions of support

employing Weiss's model[124] of the varied assets or provisions of social relationships.[112, 123]

Cutrona measured 71 primiparous women's perceptions of global social support in their third

trimester of pregnancy using the SPS, which provides scores for each of six provisions or

functions of social support.[39] She also assessed child-related stressful events with this sample

of women at 2- and 8-weeks postpartum. The outcome variable, PPD, was measured with a self-

report scale, the Beck Depression Inventory (BDI), and a semi-structured diagnostic interview.

Although prenatal depression and childcare stress were strongly related to PPD at 2-weeks

postpartum, the social support variables were not. At 8-weeks postpartum, however, the total

global social support score and the subscale, social integration, were strongly predictive of PPD

scores, $F(1, 81) = 14.27, p < .001$. Three additional subscales were also significantly related to

PPD: reliable alliance $F(1, 81) = 6.67$, guidance $F(1, 81) = 4.82$, and reassurance of worth $F(1, 81) = 4.81, ps < .05$. Cutrona analyzed interactions between stress and individual social

provisions, but contrary to the stress-buffering hypothesis which suggests that social support is

protective in high stress contexts, social support showed a progressively weaker relationship to

depression as the stress increased.

The second study measuring global social support using the SPS tested a model of PPD

in which the effects of social support and infant difficulty on depression at 3 months postpartum

were mediated by self-efficacy in the parenting role.[112] The researchers found that their

theoretical model accounted for the correlations in the observed data and that the model's fit was

further improved by adding a direct link between infant difficulty and maternal depression. Moreover, results of their path analysis substantiated the influence of perceptions of global social support on PPD through a mediating variable—parenting self-efficacy. The researchers recommended further investigation of the inter-relationships and temporal ordering of maternal self-esteem and social support.

Even though there is growing evidence of the influence of perceived global support on PPD, there are methodological and theoretical limitations to conclusions that can be drawn regarding the strength and nature of the relationship. Small sample size in the majority of these studies may have obscured effects that exist. The Da Costa et al.[40] study, for example, was very small ($N = 80$), as was the Cutrona[39] study ($N = 71$). The outcome variable in these studies, PPD, was measured with different instruments and at different times. Few authors delineated their conceptual definitions of social support. Although most researchers controlled for prenatal depression, thus testing the extent to which social support predicted increments in depression beyond prenatal mood, most did not control for personality variables. Since personality has been viewed by some theorists and investigators as a potential rival hypothesis for social support effects,[128] controlling for personality variables would illuminate these relationships. Therefore, future research should be theoretically based, use larger samples, employ reliable and valid measures of perceived global support and PPD, and include measures of potential confounding psychological or personality variables such as self-esteem and social competence.

Relationship-Specific Social Support

In addition to the frequent use of measures of global perceived social support, investigators have also tended to examine various aspects of the support that childbearing women associate with their spouses/partners. Women's relationships with specific others, namely their mothers, mothers-in-law, and other women with children (female friends with

children) are less well studied. If women's experiences of being supported (perceived social support) is affected by their existing relationships, and the quality of those relationships,[126, 127] then it is important to study those relationships, the support they provide, and the associations between relationship-specific support and global perceptions of support. Psychosocial interventions in which a supportive person is added to a depressed woman's social network, in fact, only make sense if there is a relationship between perceived social support and specific relationships.[126]

There is empirical evidence that perceptions of social support may differ by the source of the relationship. In other words, there is a distinction, for example, between family members' support and friends' support. As Turner suggested, "Support from one's spouse may differ, in nature and strength of effects, from support received from other sources."[127, p. 228] Several other authors have drawn similar conclusions. For instance, Thoits cited an unpublished dissertation that suggested that although married men and women failed to differ significantly by level of perceived global support, they did differ systematically by identified sources of support. For the men, the source of their perceived social support was primarily their spouse; for the women it was their spouse and friends.[126] Thus, in search for scientific evidence that relationship-specific support is associated with PPD, the literature was examined for studies that examined social support associated with specific maternal relationships.

Spouses/Partners

There is general agreement that emotional support, defined as "the availability of one...who can listen sympathetically when ...[one] is having problems and can provide indications of caring and acceptance,[122, p. 88] from one's partner is consistently associated with the development of PPD.[82] Women who report poor marital relationships, unsatisfactory communication, minimal intimacy with their spouses, and limited emotional support have been

found to be at significantly higher risk for PPD.[50, 105, 109, 110, 113, 118, 119, 129] The results of a few investigations, however, have been more equivocal about the effects of some aspects of spousal support. For example, "marital satisfaction," measured with the Dyadic Adjustment Scale, was not significantly predictive of PPD at 6 months postpartum in Seguin et al.'s study of women of low socio-economic status.[66] Another study found that family support, but not specifically partner support buffered the depressive effects of infant fussiness,[42] and in an additional investigation, marital adjustment was not found to be significantly predictive of PPD compared with an index of parenting stress and problem-focused coping.[130] A further 'qualifier' of the effect of women's relationships with their spouses/partners was found in O'Hara and Swain's meta-analysis of five studies investigating the support of the baby's father.[4] Although a diagnosis of PPD was not associated with support from the baby's father, it was strongly negatively related to depression severity during the postpartum period. Thus, although the primary importance of women's relationships with their spouses/partners with respect to PPD is well established, there is some evidence that there may be limitations or unexplained intervening variables in the causal pathway. Weiss's model of the provisions of social relationships postulates that different relationships provide different provisions, and thus one would not expect the spousal relationship to supply all the "requirements for well-being which can only be met within relationships."[124, pp. 21-22]

Mothers

A few researchers have investigated the importance of support from childbearing women's mothers in the development of PPD. In an Australian study comparing 113 non-English speaking Vietnamese women, 98 non-English-speaking Arabic women, and 105 Anglo-Celtic women, Stuchbery et al. found that for the latter group, two social support variables contributed significantly to their EPDS scores at 6 weeks postpartum: needing more emotional

support from partners, $t(82) = 3.72$, $p < .0001$, and from mothers, $t(82) = 3.45$, $p < 001$.

Although needing more emotional support from mothers was not significantly related to PPD for the Vietnamese or Arabic women in the study, 40% of the Arabic mothers reported perceived insufficient support from their mothers compared to only 12% and 14% of the Anglo-Celtic and Vietnamese mothers, respectively.[102] The effect of women's relationships with their mothers was also examined by Murray et al. in a comparison of two groups of women ($N = 464$) matched for age, marital status, number of children, and social class. The intent of their investigation was to distinguish postpartum depression from general (non-postpartum) depression.[118] They found that one of the psychosocial characteristics that distinguished postpartum from other forms of depression was a poor relationship with one's mother. Thus, there is evidence suggesting that childbearing women's relationships with their mothers are important. Further study is needed to clarify the extent of the importance of this source of social support.

Mothers-in-Law

The literature is silent regarding the role of the mother-in-law as a potential source of social support for childbearing women. Although the stereotypical "interfering mother-in-law" is a popular target for humour and folk stories, her influence on the development of PPD has not been systematically studied. Global measures of social support, however, may tap the influence of mothers-in-law combined with other network members. Nurses in community health practice frequently encounter mothers-in-law in their visits with new mothers and babies, thus confirming their presence in the postpartum context. Investigation of women's relationships with their mothers-in-law is, therefore, warranted.

Female Friends with Children

Qualitative studies of PPD have provided data about the experiences of PPD from the perspective of affected women. The importance of women's relationships and the significance of

relationships with individuals other than their spouses/partners are often cited in these reports. For example, Nicolson found, based on her interviews with 24 British women who had had a previous experience of depression, that the "degree and quality of support in the early months of mothering was probably the single most crucial factor accounting for emotional stability."[75, p.693] Her study participants identified different sources of support, including their mothers, partners, friends and/or wider family networks, as well as both positive and negative types of support depending on the perceived skill and intentions of the supporter. Similarly, Mauthner conducted in-depth interviews with 18 mothers living in England who experienced PPD and described 12 first-time mothers' experiences of realizing that their personal needs within existing friendships had changed. She described these changes as follows:

> They now wanted specifically the company of other mothers with young children. They were looking for psychological and emotional affinity, and for relationships in which they could share their common experiences with other mothers who might be more responsive to them, and better able to share the joys, and understand the constraints of motherhood. Both the "working" and the "non-working" mothers felt a need for friends who could understand their lives as mothers.[131, p. 314]

Mauthner's study confirms the salience to childbearing mothers of their relationships with other mothers and reaffirms the need to further investigate this source of support.

Associations between Relationship-Specific and Global Perceived Social Support

The question of how social support provided by one's particular relationships, (relationship-specific social support), is related to one's global perceived social support has received increased attention in recent years.[126] This question is pertinent to those who seek theoretical models to explain the mechanisms by which perceived social support consistently influences various well-being outcomes, including depression. According to Thoits, the question

is also crucial to those who plan interventions such as grafting a new tie to augment social support in people's lives.[126, p. 58] In her words, "This intervention only makes sense if perceived or received social support in fact covaries strongly and systematically with network structure."[4][126, p. 58] Thus, relationship-specific social support, from one's spouse, family members or friends, for example, should have an impact on one's global perceived social support. Although unstudied in postpartum samples, the social support, personal relationships, and personality literatures reveal substantial theoretical and empirical work has been conducted to explicate the relationship between relationship-specific and global perceived social support.

A traditional assumption about global perceived social support is that it is essentially a summative appraisal of the support perceived to exist in one's current social network.[132, 133] Such appraisals are thought to be based on objective realities and an overall social consensus about what constitutes supportive behaviour and interactions. A social-cognitive approach to social support, however, applies a *social constructionist* perspective to the phenomenon of social support.[61] An assumption pivotal to this perspective is that "people construct theories and concepts about the world that reflect their social context."[61, p. 36] Thus perceived social support is strongly influenced by the personal meaning that individuals attach to social experiences. These personal meanings are to a large extent influenced by "the individual's stable, unique patterns of perceiving social relationships which are based on "working models" of self, important others, and the nature of personal relationships."[134, p. 173]

Numerous researchers have investigated social support within the social-cognitive theoretical perspective in an attempt to explain the salutary effect of social support. For example, Davis et al. challenged the traditional assumption that perceptions of social support are essentially created by objective conditions in the individual's social environment, in their study

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[4] Network structure includes the quality and quantity of one's social relationships.

that examined the relationships among relationship-specific and global perceptions of social support.[54] They postulated that global perceived social support is a social-psychological variable—a personal disposition, a set of expectations about available support, or beliefs about the quality of one's interpersonal relationships—that is linked to, but not directly a result of, one's existing social circumstances.[55, 132] Their findings that research participants' global perceptions of support exerted effects independent of relationship-specific support (with some overlapping effect) on measures of psychological well-being supported their hypothesis.

Other research has provided empirical evidence supporting the social-cognitive view of global perceived social support as a personality variable. Lakey and Cassady observed that the participants in their study with low global perceived social support interpreted equivalent or comparable supportive behaviours more negatively than those with high global perceptions of support.[132] These "low-support" participants remembered fewer behaviours they perceived to be helpful. These findings led the researchers to conclude that global perceived social support operates "in part as a cognitive personality variable that influences how supportive transactions with others will be interpreted and remembered."[132, p. 341] Similarly, Pierce et al. concluded that their results buttressed the hypothesis that global perceived social support, which they called general perceptions of available support, reflects a personality characteristic, or a working model that they labelled "sense of support." These researchers stated that one implication of their findings was the "need to operationalize perceptions of available support both as a general attitude and as a property of specific relationships."[55, p. 1037] They recommended further studies to extend their findings to other aspects of personal adjustment outcomes, such as depression.

It is worthy of note that the conceptualization of "global perceptions of social support" as an individual characteristic or aspect of personality has both its supporters and detractors in the social support field. According to Sarason et al. those who dispute the notion that perceived

social support is a stable characteristic of a person argue that the phenomenon should not be called *social* because it is not a function of social network characteristics.[52] On the other hand, those who defend the notion point to the evidence that perceived social support tends to be highly consistent over relatively long periods and is consistent before and after significant life transitions. They further argue that increased understanding of the many facets of social support will lead to improved theories and better explanations of the mechanisms by which social support influences health outcomes.[52, 135]

Thoits, interested in the interrelationships among social support concepts and between these concepts and mental health outcomes, recommended that: (a) investigators treat global perceived social support as an dependent variable and examine the degree to which it is predicted by qualitative measures of relationship-specific support and (b) that social scientists test theoretical explanations of how these two social support constructs are related to mental health outcomes.[126] Thoits offered several provocative potential explanations for the observed differential impact on mental health of relationship-specific social support and global perceived social support. She postulated that network or social ties, as potential sources of problems as well as positive benefits, may exert both direct and indirect effects on mental health. The indirect path, she hypothesized, is mediated by global perceived social support. Thus, she predicted, "We should see positive relationships directly increasing perceived support and thus psychological well-being, and negative relationships—stressors in themselves—reducing perceived support and psychological well-being."[126, p. 60]

One could ask if measures of mental well-being and perceived social support conceptualized as a cognitive variable are, in fact, redundant. That is to say, is low global perceived social support (i.e., the sense of not being loved or esteemed and being unable to count on others for help) an integral part of depression or do they both reflect another underlying

construct? According to Turner, his analyses of data from two large field studies, demonstrated that global perceived social support is a dimension distinctive from psychological distress.[127]

In summary, although the relationship between global perceived social support and relationship-specific social support appears complex, there is promise that understanding these relationships may lead to theories of social support and the mechanisms by which these variables have protective effects on adverse mental health outcomes, including postpartum depression. Childbearing women represent a population in which the quality and supportiveness of specific relationships may be critical to their mental health directly or mediated by global perceived social support.

Self-Esteem and Postpartum Depression

Self-esteem is a central concept in theories of both depression and social support. Based on her extensive work with women who were depressed, Jack concluded that depression in women could be best understood within a relational framework.[58] She discussed two basic tenants of the relational theory of depression. First, women's self-esteem develops within the context of one's closest ties to others and is linked to the *quality* of those ties. Second, "The qualities of [women's] current relationships—not just the relationships experienced in early childhood—may more deeply influence the female than the male self."[58, p. 16] Social constructionist theories of social support, in particular the social-cognitive theoretical perspective, predict that the link between perceived social support and mental health is both direct and indirect and that self-esteem is the intervening variable in the indirect pathway. In other words, the latter pathway suggests that perceived social support promotes self-esteem, which leads to positive mental health outcomes.[61]

The relationship between self-esteem and depression, although more extensively studied in non-puerperal samples of women, has been examined in samples of childbearing women. Hall et al., for example, studied the role of self-esteem as a mediator of the effects of stressors and social support on postpartum depressive symptoms at 1-2 months postpartum ($N = 738$).[60] Self-esteem was measured using the Rosenberg Scale, while social support was measured in terms of the quality of the mothers' intimate relationships and the quantity of social network ties (marital status, number of close friends and relatives, frequency of contacts and church and group membership). Path analysis results indicated that (a) relatively more everyday stressors, particularly financial problems, lack of employment, concerns about a child's health, and problems with transportation and (b) lower quality of the primary intimate relationship predicted lower self-esteem, β = -0.28, and 0.27, respectively, $ps \le .0001$. Lower self-esteem, β = -0.41, higher everyday stressors, β = 0.31, and a greater number of stressful life events within the past 12 months, β = 0.13, $ps \le .0001$, had direct effects on level of depressive symptoms. The researchers further reported that the probability of high depressive symptoms for mothers with very low self-esteem scores (a score of 10 / 40) and low self-esteem scores (a score of 15 / 40) was 11 to 39 times greater than those with high self-esteem (a score of 25 / 40 or greater).[60]

Also examining interrelationships among self-esteem, social support and stressful life events in a sample of 232 low income, inner-city American women, Ritter et al. tested their hypotheses that self-esteem would have a direct effect on PPD, as well as a stress buffering effect.[41] In other words, they hypothesized that women with high self-esteem would experience "fewer symptoms of depression independent of their level of stressful life events, and they also would be less negatively affected by undesirable life events than women with low self-esteem."[41, p. 577] They measured stressful life events, social support, and self-esteem in the

second trimester of pregnancy, and depressive symptoms prenatally and at 7-9 weeks postpartum. Self-esteem was directly and inversely correlated with depression both prenatally and postnatally, but not significantly predictive of the reductions in depressive symptoms that occurred between the prenatal and postnatal periods. In contrast, both higher satisfaction with social support and higher family income predicted the change in depressive symptoms. In addition, their results failed to support the hypothesized self-esteem stress-buffering effects.[41]

In summary, both theoretical work and research results link self-esteem to PPD. Although Hall et al. failed to find a relationship between a quantitative measure of women's social networks and self-esteem, the significant impact of the quality of their intimate relationships affirms the value of investigating whether such qualitative characteristics as positive support and conflict within postpartum women's specific interpersonal relationships are linked to self-esteem. The relationship between global perceived social support and self-esteem is also of interest to identify potential pathways explaining social support's influence on PPD.

Religiousness/Spirituality and Postpartum Depression

The literature is silent regarding the spiritual dimension of childbearing women's experience. Although numerous key domains of religiousness/spirituality have been identified in the recent health research literature and examined for their associations with the mental health of various populations, the association of these variables with the mental health of new mothers is unknown. These variables, therefore, merit attention in a study examining correlates of PPD. Due to the lack of reference to the religious/spiritual dimension in the PPD literature, this review draws on diverse literature for definitions and information on various aspects of religiousness/spirituality and their associations with health.

It is evident from the literature that there is no single authoritative definition of spirituality. Furthermore, the terms religiousness[5] and spirituality frequently are used interchangeably and inconsistently. It also is apparent that just as social support is a multidimensional construct, so too are religiousness and spirituality. The state of the science concerning these constructs is characterized by complexity, ambiguity, and lack of definitional consensus. Some authors, nevertheless, have attempted to define the characteristics that distinguish religiousness from spirituality.

Historically, religiousness and spirituality were considered synonymous; popular disillusionment with religious institutions, a shift toward greater focus on personal experience, sensitivity to the natural and supernatural, and search for meaningfulness, however, has created a growing gap between the two concepts, both in terms of denotation and connotation.[138] Nursing, over the past 3 decades, has responded to the newly emerging emphasis on direct spiritual experience over institutional religion. Consequently, according to Emblen, nursing has adopted Eastern holistic views of humanity that include the spirit as a human dimension and humanistic values that focus on personal needs and relationships.[139] Using concept analysis procedures to examine definitions of religion and spirituality in the nursing literature over the past 30 years, Emblen concluded that *religion* is a system of organized beliefs and worship that a person practices, whereas *spirituality* is conceptualized as a broader term that may subsume aspects of religion. She defined spiritual as a "personal life principle [which] animates [the] transcendent quality [of a] relationship [with] God or god being."[139, p. 45] Reed stated that "spirituality refers to the propensity to make meaning through a sense of relatedness to

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[5] Within the literature both the terms "religiousness" and "religiosity" appear. The decision to use the term religiousness rather than religiosity in this work is based primarily on the preference for the term religiousness that is evident in the Report of the Fetzer Institute.[136] This work has provided the author with significant direction in identifying the domains of religiousness, as well as articulating the associated conceptual and operational definitions. The Oxford English Dictionary indicates that both terms have been used since the 1400's with considerable overlap (i.e., religiosity is defined as "religiousness, religious feeling or sentiment").[137]

dimensions that transcend the self in such a way that empowers and does not devalue the individual."[140, p. 350] These two definitions may summarize the essential elements of definitions of spirituality in the current nursing literature.

Although few authors would disagree with Chiu's statement that spirituality is "a holistic human characteristic that is important in human health and well-being,"[141, p.30] the phenomenon of spirituality is understudied in most populations and substantive areas of nursing and poorly understood. Nurses recently, though, have demonstrated greater interest in the spiritual dimension of their patients' lives,[47, 142-146] and some have pioneered applications of spiritual knowledge in their clinical practice and research. For example, Wright et al.'s work with families reflects their belief that health-care professionals' approaches to their patients should reflect their recognition of the *biopsychosocial* and *spiritual* aspects of family care (in contrast to the prevalent biopsychosocial models).[147]

Psychiatrists, physicians, and social workers also have acknowledged their neglect of the religious/spiritual domain and have recently called for greater recognition of its importance in their practice and research.[148-154] It is interesting to note that while the nursing literature tends to focus on spirituality, the medical literature and particularly epidemiological research tends to focus on religiousness. Nevertheless, whether religiousness or spirituality, there is a clear trend toward increasing interest and sensitivity to both, accompanied by a growing body of literature in which scientists have attempted to define, study, and theorize about these two concepts.[138]

Numerous researchers have published reviews of investigations linking mental health and religiousness/spirituality. For example, Gartner et al. reviewed 200 studies on the relationship between religious commitment and psychopathology.[155] Based on those studies in which depression was an outcome, they concluded that the preponderance of evidence suggests religiosity is associated with lower levels of depression. Associations between religious

commitment and anxiety are more ambiguous: Religious individuals were more

anxious in four studies, less anxious in three studies and religiosity was unrelated to anxiety in

three other studies. Gartner et al. observed that measures of actual religious behaviour (e.g.,

measures of religious participation such as church attendance) were more powerfully related to

mental health than were attitude scales measuring religiousness. Matthews et al.'s review

highlighted the strongly significant inverse relationship between religious factors and suicide,

one of the most severe outcomes of depression.[46] On the basis of their systematic review of

over 1,200 investigations of the religion/health relationship conducted over the span of a century

in different clinical and community populations and in different parts of the world, Koenig et al.

reported that "the vast majority of these studies show a relationship between greater religious

involvement and better mental health, better physical health, or lower use of health services."[151,

p. 124] Levin and Chatters also noted this consistent, salutary relationship in their overview of the

relevant research.[45] It is reasonable to conclude, as Koenig et al. did, that the evidence

regarding religion and health is neither weak nor inconsistent, and "that religion is a factor that

should not be overlooked in describing influences on the health of populations."[45, p. 130]

The results of a few primary research studies regarding the effect of

religiousness/spirituality on health status are pertinent because they provide information about

some of the domains of religiousness/spirituality that have been examined in diverse populations

and that might be examined in a study of postpartum women. Kennedy analyzed data from 1,855

randomly selected, older North Bronx residents to examine the relationship between two

independent variables—attendance at religious services and religious affiliation—and the

outcome variable—depression (measured at baseline and 24 months later).[156] He reported that

both religious preference and non-attendance at religious services were significantly associated

with depression even after measures of sociodemographic, immigration, health, and disability

status, as well as social support were controlled. He also observed that the percentage

of persons not attending services was significantly greater in the groups in which depression

emerged and persisted. Ferraro and Albrecht-Jensen identified four domains of religion: religious

affiliation defined by degree of conservatism, practice (degree of prayer and participation in

religious services), experience (closeness to God), and ideology (life after death) in their data

taken from the U.S. General Social Survey (GSS). This data had been collected in a survey of

English-speaking, non-institutionalized Americans 18 years of age and older by the National

Opinion Research Center in1984 and 1987. Based on their analysis of the association between

these dimensions of religion and self-reported health status, they concluded that although a more

conservative religious affiliation was associated with poorer health, the practice variable

emerged as most significant. Regardless of affiliation and intensity of beliefs, higher levels of

practice were significantly related to better health status regardless of age. In fact, the effect of

religious practice on health status was greater than race and "about equal to that for education—

long considered a pivotal factor in predicting health status."[157, p. 198] Thus, attendance at

religious services, religious affiliation, and religious practice are variables significantly related to

depression in various community samples.

Relationship with God[6] could be identified as the domain that Pollner studied in his

investigation of the effect of interaction with a "divine other" on psychological well-being.[159]

His study used pooled data from the 1983 and 1984 GSS. He created a measure of "respondents'

divine relationship" that assessed the psychological proximity of a divine other and the

frequency and depth of interactions with that other."[159, p. 95] Three items constituted the measure

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[6] In the process of testing instruments to measure individuals' perception of the transcendent, Lynn Underwood of the Fetzer Institute found that various cultural, religious, and educational groups encouraged the use of the word "God" to describe the transcendent. Even the few people for whom the word "God" is not the usual descriptor of the transcendent seemed capable of connecting the term with their experience.[158] Therefore, in this study, all references to a transcendent being will use the term "God."

of the respondents' divine relationship: (a) How close do you feel to God most of the time? (b) About how often do you pray? and (c) How often have you felt as though you were very close to a powerful spiritual force that seemed to lift you out of yourself? He reported that a relationship with a divine being was a significant correlate of perceived well-being, stronger in effect than race, sex, income, age, marital status, and church attendance. He also found that neither stress nor social integration interacted significantly with a divine relationship and its effect on psychological well-being. Level of education, however, attenuated the effect modestly so that the less educated gained more from divine interaction than the better educated. Interestingly, Pollner conceptualized a divine relationship as part of a network of *imagined others* existing alongside individuals' "real" social networks. His conceptualization of the nature of the divine relationship can be compared with that of Reed and Chiu, nurse scientists who have focused on spirituality and human health and well-being.[140, 141, 160]

Reed's middle range nursing theory of self-transcendence conceptualizes a relationship with the divine as a form of connectedness in a process of human self-transcendence.[140, 160] Self-transcendence, according to this theorist, "Refers broadly to a characteristic of developmental maturity whereby there is an expansion of self-boundaries and an orientation toward broadened life perspectives and purposes."[160, p. 64] In other words, expansion of self-boundaries is a human developmental process that includes, but extends beyond achievement of a self-identity (who am I?) to achievement of an interdependent self-definition (who am I in relationship?). Reed's broad and encompassing definition of spirituality makes room for the inclusion of multiple concepts commonly associated with spirituality. According to Reed, the process of self-transcendence might be manifested in various potentially observable experiences and behaviour, such as mystical experiences, religious behaviour, and expressed inner meaning.

Chiu built on Reeds work and conceptualized transcendence as the ultimate self-transformation and a "developmental and evolutionary process of integration and inclusion, moving the self to a position of greater wholeness."[141, p. 42] Human beings transcend the self through three dimensions of connectedness: a vertical dimension of connectedness referring to relatedness to God/deity, a horizontal dimension referring to relatedness to the social and physical environment, and an inner dimension referring to relatedness to the inner self (i.e., inner consciousness reflected in self-knowledge, feelings of self-worth, and attitude toward self in a life situation).[141] These dimensions of connectedness can be described as transpersonal, interpersonal, and intrapersonal, or alternatively, as described by Ley and Corless (as cited in Reed[140]) "connectedness to God, to one's neighbor, to one's inner self."[140, p. 352] Yet another succinct summary of this concept of connectedness can be found in the Bible in Matthew 22: 37-39: "You shall love the Lord your God.... and you shall love your neighbour as yourself."

Chiu's qualitative study of women with breast cancer explored their lived experience of spirituality in everyday situations and relationships. Her work provides insights related to manifestations of spirituality within the three relational dimensions. Her sample of 15 Taiwanese women with a history of breast cancer and mastectomy were well at the time of the study. For these women, making meaning of their experience of illness led them to search for and create a sense of purpose that helped them go beyond themselves and their circumstances. The women's experience was pervaded by a sense of relationship reflecting "the importance of relationship with others, with oneself, and with God, a deity, or t'ien." [7](141, p.40). Although Chiu's study results may not be generalizable to women in other contexts of health and illness or other ethnic backgrounds, her conceptualization of their experience as manifestations of their spirituality extends the prevailing biopsychosocial perspective of the human experience of health and illness

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[7] Chiu informs the reader "To most Chinese, t'ien means supreme ruler in Heaven." [141, p. 46]

to embrace a spiritual perspective. It should be noted that the women's spirituality was more than the sum of these parts; rather, all aspects of their lives (e.g., biological, psychological, and social) were viewed from a higher plane of awareness and significance as the women attempted to make meaning of their life situation.

Although spirituality and religiousness are not explicitly examined in the PPD literature, Beck, in her grounded theory of PPD, found that women experiencing depression in the postpartum period talked about "praying for relief" as a strategy used to regain control.[161] She described four stages of a process in which postpartum women "are teetering on the edge...walking the fine line between sanity and insanity," but she did not provide further details about the meaning of prayer to those women who prayed.[161, p. 44] One plausible interpretation of their practice of prayer is that the women sensed a personal relationship or connectedness to a caring and powerful Transcendent Being. According to Burkhardt, some of the non-puerperal women in her qualitative study who communicated with the Ultimate Other also referred to as God, Maker, or Lord, tended to speak in terms of a relationship with a person.[43] Alternatively, for the women in Beck's study, prayer may have been a method of "spiritual coping" unrelated to the notion of relationship or a sense of personal connectedness. To conclude, the role and significance of prayer, a relationship with God, and other spiritual and religious beliefs and practices for women experiencing transition to motherhood with its attendant physical and emotional demands are unknown.

Summary

Postpartum depression is a largely undetected form of maternal morbidity that affects approximately 13% of all new mothers. If left untreated, residual effects may last up to 2-years postpartum potentially threatening the long-term mental health of women and the development of their children. Review of the published literature reveals the significant progress that has been

made in identifying risk factors for PPD. In particular, studies have consistently found significant associations between PPD and prenatal depression, prenatal anxiety, history of previous depression, life stress, childcare stress, maternity blues, marital dissatisfaction, and social support and marital relationship. Although demographic variables have not consistently been related to PPD, there is recent evidence that chronic stress defined in terms of socioeconomic factors is predictive of PPD.[41, 62, 66]

Social support, although clearly linked to PPD is inadequately understood in terms of the types and sources of support that are important to childbearing women. The existing research has focused on support provided by relationships with women's spouses/partners, neglecting examination of other potentially significant relationships such as with mothers, mothers-in-law, and other female friends with children. The spiritual dimension of childbearing women's experience, including a relationship with God, has also not been explored.

In recent years there has been increased awareness among PPD researchers of the need to develop and use theoretical frameworks, define key concepts explicitly, and employ reliable and valid measures. There is also evidence that researchers are moving beyond the identification of correlates of PPD to the examination of potential mechanisms by which social support is linked to PPD. Failure to do so compromises the knowledge base required in the design of effective psychosocial interventions for PPD. Prevention and early interventions require theoretical models that explain the mechanisms whereby conceptually well-defined risk and protective factors are examined in longitudinal and other well-designed and adequately powered studies. Those factors that are modifiable and amenable to incorporation in community-based programs can then be tested experimentally for their efficiency and effectiveness. In this way, the knowledge development needed to guide prevention, detection, and treatment of postpartum depression will be achieved.

CHAPTER 3: METHODS

Overview

This thesis constitutes *Study Three* of a larger, four-part research project conducted in the Fraser Valley Health Region (FVHR) of south-western British Columbia (BC) between March 1, 2001 and October 31, 2001. All four studies investigated different questions pertaining to postpartum depression (PPD) and were conducted concurrently. The research project was a collaborative effort involving members of the University of British Columbia (UBC), Faculty of Medicine, the UBC School of Nursing, and the Regional Public Health Nursing Program.

First, this chapter provides a brief overview of the four-part research study to provide the context in which the current study was conducted. Then the study's theoretical framework, research design, research hypotheses, sampling procedures, conceptual definitions, operationalization and instrumentation of research variables, and approach to analysis are presented. Finally, a discussion of ethical considerations and a summary complete the chapter.

The Four-Part Research Project

Study One of the four-part research project was a qualitative study of women's experiences of seeking and receiving help for PPD. Grounded theory, a method aimed at generating substantive theory about social phenomena, was used to guide the research project. Study Two was longitudinal in design and evaluated depressive symptoms in women recruited over the 8-month period of the project. The overall goals of Study Two were to establish the prevalence of PPD within the region and to provide a predictive model of PPD. Study Three, the current study, was a prospective study aimed at testing a theoretical model of PPD. The data for Study Three were collected over a 4-month period or the last half of the total duration of Study Two. Data collection for Study Three was achieved by including specific instruments to measure the study variables to two of the four questionnaires used in the larger Study Two as well as

using various questions that were developed by the principal investigator of the later study. The fourth study of the project was a pilot, randomized controlled trial of a psychosocial intervention for PPD. The overall design of the project was innovative in its approach to the conduct of research. It actively involved public health nurses (PHNs) and others in the Fraser Valley Public Health Nursing Program in many aspects of the research endeavour, including the securing of funding, site approval to conduct all parts of the study within the five communities of the FVHR, as well as PHN participation in the assessment of the content validity of the study's baseline questionnaire, recruitment of eligible women, data collection and management, and project coordination.

Theoretical Framework

Although multiple biopsychosocial variables have been identified as correlates and predictors of PPD, most research studies have lacked explanatory models depicting the mechanisms by which these variables influence PPD. This lack of conceptual modelling has hindered progress towards a theory of PPD, and has limited the development of preventive and therapeutic interventions. There has also been a lack of consideration of the spiritual dimension of persons, in spite of increasing awareness that persons are more that just biopsychosocial beings. The addition of the spiritual dimension to the psychological and social aspects of persons opens up new possibilities for research aimed at understanding and explaining PPD.

The primary purpose of this study was to develop and test a model of PPD based on current theories. It was deemed necessary that the model take a holistic view of persons, namely, a view that includes social, psychological, and spiritual dimensions. It should be noted that although consideration of the physical or biological dimension of persons is beyond the scope of this study, it is considered part of a holistic view of persons. Concepts from the PPD, social support, and spirituality literatures were used to develop the postulated model. In the PPD

literature, concepts related to women's social and interpersonal relationships were most frequently measured in terms of social support; however, these studies often failed to delineate the theory associated with these social support concepts. This led the researcher to the social support literature for some theoretical background. Two predominant theoretical perspectives of social support were discovered—the stress and coping perspective and the social-constructionist perspective.[61] A third perspective, the relationship perspective is less well known in research traditions and is ideally analyzed using methods suited to the measurement of interactional relationship processes rather than measures of individual differences in perceived relationship qualities. As documented in the literature review, a search for theoretical work on the spiritual dimensions of persons uncovered a growing body of research in the public health, epidemiology, and nursing literatures on religiousness/spirituality and their link to health and wellness. Thus, the conceptual definitions and linkages between the concepts within the theoretical model used in this study were drawn from empirical work on PPD, theories of social support, and emerging theoretical explanations of the link between spirituality and health.

Three Dimensions of Persons in the Theoretical Model

The Interpersonal and Intrapersonal Dimensions

As mentioned earlier, several mechanisms have been hypothesized to explain the link between social support and PPD. Stress and coping models dominate theoretical explanations and claim that either received support or perceived social support reduces or buffers the effects of stressful life events on health and psychological adjustment. These outcomes are the result of enhanced coping performance or alteration of one's appraisal of a stressful event. Empirical findings in the PPD literature, however, have not consistently supported these mechanisms for the link between social support and the development of PPD.[39, 62]

An alternative theoretical explanation for the social support-health link, the

social constructionist perspective, draws on social cognitive theories of personality and

emotional disorders. This perspective may hold more promise given the characteristics of the

target population and the outcome variable, PPD. Social cognitive theories focus on perceived

social support (PSS), a concept that has been shown to be a more reliable predictor than received

social support of outcomes including health, psychological adjustment and PPD.[128] The central

hypothesis is that PSS promotes self-esteem, which affects health outcomes.[61] This hypothesis

also proposes a direct causal path from PSS to health as depicted in Figure 3.1 taken from Lakey

and Cohen.[61, p. 37]

Figure 3.1. The social-cognitive view of social support.
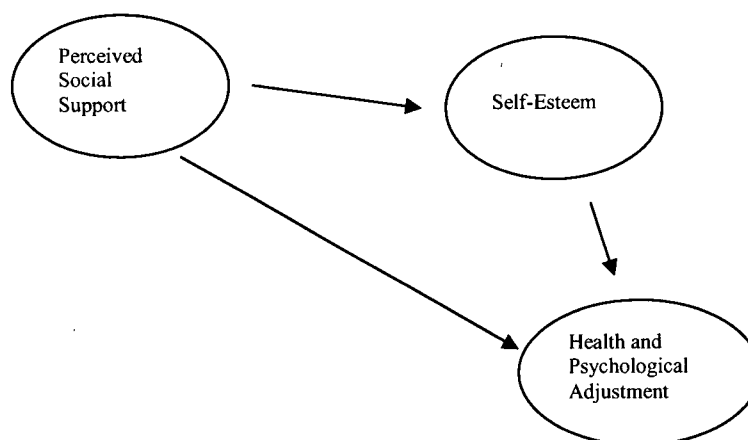
The social-cognitive theoretical explanation is credible in a study of PPD. Self-esteem has been

implicated in depression in women across different phases of their lives, including the

childbearing phase.[41, 58, 60] In this researcher's experience with childbearing women over

approximately one and one half decades, the self-esteem of new mothers seems particularly

vulnerable to the personal challenges posed by transitions to motherhood and changing relationships with spouses, other family members, and friends.

The simple conceptual model illustrated in Figure 3.1. belies the complexity of the PSS construct. PSS, most frequently conceptualized in *global* terms and referred to as global perceived social support (GPSS), describes the support perceived to be available from one's social network as a whole. This global concept can be disaggregated according to the source of the relationship, thereby referring to specific social network relationships defined as relationship-specific social support (RSSS). In this study RSSS from spouses/partners, mothers, mothers-in-law, or other female friends with children, was conceptualized as an interpersonal phenomenon and was examined for its differential impact on the development of PPD.

GPSS and RSSS can both be divided into component functions. Although there are numerous typologies of the functions of social support, generally typologies identify these functions as emotional, instrumental, informational, companionship, and validation support.[122] In the current study, the instruments chosen to measure both GPSS and RSSS were based on Weiss's typology of six functions or provisions of social support. These provisions include attachment, social integration, opportunity for nurturance, reassurance of worth, reliable alliance, and guidance.[39, 124]

As discussed in the literature review, recent conceptualizations and empirical evidence suggest that GPSS functions as a personality or intrapersonal phenomenon—a more or less stable and distinctive pattern of perceiving social relationships. This conceptualization stands out in contrast to previously held notions that GPSS is solely an observable interpersonal phenomenon.[162, p. 137] Those who have conceptualized GPSS as a feature of personality or individual difference variable have borrowed from Bowlby's Attachment Theory to further refine and describe the concept. Thus, using Bowlby's terminology GPSS can be described as a

working model or cognitive representation of "self-in-relation-to-others."[163] This concept now joins self-esteem as another *intra*personal variable. Understanding GPSS as a personality variable serves to increase the potential explanatory mechanisms for the link between social support and emotional adjustment, and responds to the acknowledged need to account for both personal and environmental influences in the development of theoretical models of social support.[128] A model incorporating these distinct conceptualizations of social support and their inter-relationships, as they were hypothesized in the current study of PPD, is illustrated in Figure 3.2.

The complexity of the PSS construct is further illustrated by the fact that social support can have both positive and negative effects. PSS is most frequently described and measured in positive rather than negative terms—the benefits rather than the risks associated with social relationships. Only recently has attention been paid to the potential impact of negative aspects of social relationships that include limited acceptance, rejection, and conflict.[164] In the model used in this study, relationship-specific conflict (RSC) and RSSS were both hypothesized to be related to PPD directly and indirectly.

Figure 3.2 A conceptual model of PPD illustrating the distinctions between interpersonal and intrapersonal social support concepts and their interrelationships.
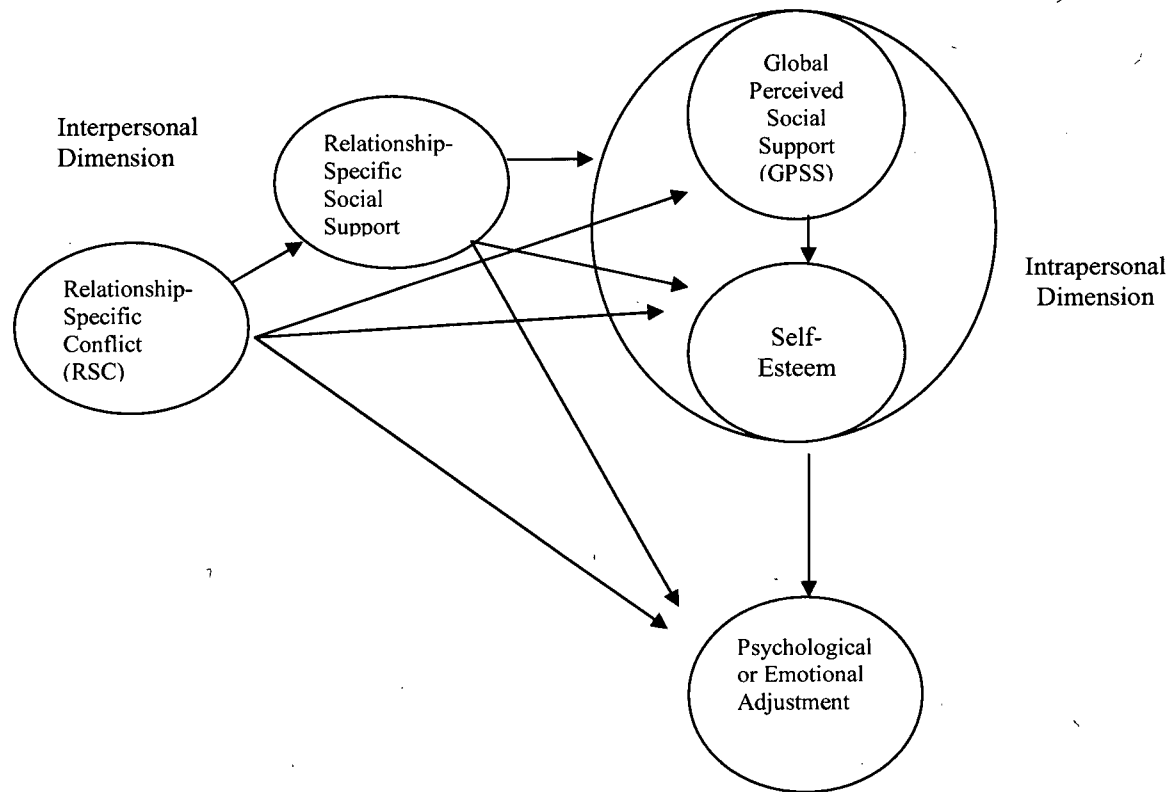
Adding the Spiritual Dimension to the Model

Whereas the concepts in Figure 3.2 address the interpersonal and intrapersonal dimensions of persons, the existence and place of a spiritual dimension is not apparent in the model. If religiousness/spirituality is indeed central to humanness, important to health and well-being, and a significant correlate of depression,[143, 147, 150, 153, 165-167] then its absence is conspicuous. Theoretical explanations of how religiousness/spirituality is linked to depression are tentative and not well established empirically.[167, 168] thus providing little previous work from which to construct the hypothetical interrelationships between spiritual variables and the inter-and intrapersonal variables in the model. Becker's comments about constructing potential

models of health and religion provide some encouragement to use one's best effort in postulating these relationships:

> There are many ways that religion, spirituality, or faith might be operationalized, conceptualized, and even organized to address health issues and attendant research....the desire for more in-depth understanding of this phenomenon should be an impetus for hypothesis-driven research and clinical studies.[169, p. 363]

Figure 3.3 illustrates the researcher's final theoretical model for PPD in which the spiritual dimension (also called the transpersonal dimension by Reed) was added to the interpersonal and intrapersonal dimensions. The spiritual/transpersonal dimension consisted of spiritual resources including relationship-specific support from God, core spiritual experiences, religious support/coping, private prayer, forgiveness of self, forgiveness of others, knowing that one is forgiven by God, and meaning. In this model, interpersonal and spiritual resources were hypothesized to influence PPD either directly or indirectly through the mediation of the intrapersonal resources consisting of the two cognitive working models of self, GPSS and self-esteem.

In the study model, each concept in the three dimensions of persons was conceptualized as a personal resource and represents a variable for which data were collected. The interpersonal dimension consisted of both positive and negative social resources perceived to be associated with women's specific relationships. The intrapersonal dimension consisted of inner-self resources, namely GPSS and self-esteem. The outcome variable in this model is PPD measured at 8-weeks postpartum. It was also postulated that depressive symptoms measured at 1-week postpartum would have direct effects on relationship-specific conflict and support as well as GPSS, self-esteem, and PPD. The literature identifies associations among depression, relational conflict and self-esteem, and the relationship between early depressive symptoms and PPD is

well established in the PPD literature. The earlier depressive symptoms may have existed before delivery or even before pregnancy. It should be noted that including depressive symptoms at 1week in the multivariate analyses allowed the researcher to examine the influence of women's spiritual and social resources on the *change* in depressive symptoms between 1-week and 8-weeks postpartum. This was a particular advantage, adding confidence in interpretations of direction of causality.

Figure 3.3. Theoretical model of depressive symptoms at 8-weeks postpartum

Depressive
Symptoms

8-Weeks
Postpartum
(DS8)

*Relationship-Specific
Social Support (RSSS):*
Spouse/Partner
Mother
Mother-in-law
Female friends with
children

Global
Perceived
Social Support
(GPSS)

Self-Esteem

*Relationship-Specific
Conflict (RSC):*
Spouse/Partner
Mother
Mother-in-law
Female friends with
children

Relationship-Specific
Support: God

Core Spiritual
Experiences

Religious Support /
Coping

Prayer

Forgive Self

Forgive Others

Know God Forgives Me

Meaning

Depressive
symptoms

1-Week
Postpartum
(DS1)

* Each transpersonal variable is hypothesized to affect
GPSS, Self-Esteem and DS8.

Legend:

Interpersonal
Dimension

Intrapersonal
Dimension

Transpersonal
Dimension

Research Design

This study used a prospective design in which a population of women in the FVHR who

gave birth to a live child in the months of July 2001 through October 2001, were surveyed at 1-

and 8-weeks postpartum via mailed questionnaires. These women were selected because they

had the potential to develop PPD within that time frame. The 1-week postpartum questionnaire

included a measure of *depressive symptoms at 1-week postpartum* (DS1), items pertaining to

demographic characteristics, and measures of all the key variables related to the theoretical

model. The 8-week postpartum questionnaire included the outcome variable—*depressive*

symptoms at 8-weeks postpartum (DS8) (measured with the same instrument as depressive

symptoms at 1-week postpartum)—as well as a question about the age of the baby, and whether

the participants were currently taking antidepressant medication.

Research Hypotheses

1. Women with more DS1 have (a) increased RSC with spouses/partners, mothers, mothers-in-

   law, and female friends with children; (b) decreased RSSS within all four relationships; (c)

   lower GPSS; (d) lower self-esteem; and (e) increased severity of DS8, all as direct effects;

   and (f) they have increased severity of DS8 indirectly because RSC influences RSSS which

   in turn influences GPSS and self-esteem.

2. Women with greater RSC with their spouses/partners, mothers, mothers-in-law, and female

   friends with children have (a) lower RSSS; (b) lower GPSS; (c) lower self-esteem; and (d)

   increased severity of DS8, all as direct effects; and (e) they have increased severity of DS8

   indirectly because RSC influences RSSS, which in turn influences GPSS and self-esteem.

3. Women with limited RSSS from their spouses/partners, mothers, mothers-in-law, and female

   friends with children experience (a) lower GPSS; (b) lower self-esteem; and (c) increased

severity of DS8, all as direct effects; and (d)they experience increased severity of DS8 indirectly because RSSS influences GPSS, which in turn influences self-esteem.

4. Women with limited GPSS, experience (a) lower self-esteem; (b) increased DS8, as *direct* effects; and (c) lower DS8 indirectly because GPSS influences self-esteem, which in turn influences DS8.

5. Women with lower self-esteem experience increased DS8 as a direct effect.

6. Women with more spiritual resources (relationship-specific support from God, core spiritual experiences, religious support/coping, prayer, forgiveness, and meaning) have (a) more GPSS; (b) higher self-esteem; and (c) less severe DS8, all as direct effects; and (d) less DS8 as indirect effects through increased GPSS and increased self-esteem.

Sampling

The population of postpartum women in the FVHR who had delivered a live child and had met the other inclusion criteria was surveyed over 4 months beginning July, 2001 and ending October 31, 2001. The target population consisted of all women who met the following inclusion criteria: (a) 18 years of age or older, (b) resident in the FVHR, and (c) able to read and understand English.

Postpartum hospital discharge guidelines state that all new mothers are to receive postpartum follow-up by PHNs or midwives in the community. PHNs in each health unit office in the region recruited study participants while they were making routine 24-48 hour post-hospital discharge contacts. The anticipated sample size for the study was based on 1999 statistics revealing that there were 3,200 births in the region. By roughly calculating the births occurring in a 4-month period and subtracting 25% for those who were likely to be ineligible because of language barriers, age, and place of residence, a sample size of approximately 800 women was expected. It was further anticipated that 15% of these women would refuse to

participate, 15% would be lost to follow-up, and a further 15% would not be located by the PHNs. Thus, we anticipated that 440 women would be enrolled in the study.

The sample size for this study was also determined by considering the required sample size for conducting multiple linear regression analyses. According to Tabachnick and Fidell, the simplest rules of thumb are that N must be $\geq 50 + 8m$ (where m is the number of independent variables) for testing multiple correlations and $N \geq 104 + m$ for testing individual predictors.[170] These rules of thumb assume medium-size relationships between the independent variables and the dependent variable, $\alpha = .05$, and $\beta = .20$. The theoretical model indicates that there are four RSC and four RSSS predictors; however all regressions were run using only one relationship at a time creating a total of 13 predictors for each of the four models. Therefore, in this study the minimal number of cases needed for the regressions was calculated as: $50 + (8)(13) = 154$ cases and the number of cases needed for testing individual predictors was calculated as $104 + 13 = 117$ cases. Since the investigator had an interest in the overall correlations as well as the individual independent variables, the larger number of cases ($N=154$) was considered an adequate sample to ensure sufficient statistical power.

Procedures

The procedures followed for the study are described in three categories: personnel and responsibilities, recruitment and retention of study participants, and data collection.

Personnel and Responsibilities

1. PHNs were invited to be involved in discussions regarding the procedures for the studies and they provided feedback regarding their role in data collection.

2. A research team was assembled within the health region consisting of the three investigators (the Principal Investigator of Studies Two and Four and the overall research project, the Principal Investigator of Study One, and the Principal Investigator of Study Three), PHN

research assistants, and PHN representatives from each office acting as research liaisons between the investigative team, nursing, and the clerical staff.

3. The research co-ordinator (the author of this thesis) assumed responsibility for providing ongoing direct support to those involved in recruitment and data management procedures and engaging in consultation with the project's principal investigator. All research team members were made aware of matters of confidentiality and ethical behaviour with respect to all procedures related to the study.

Recruitment and Retention of Study Participants

Recruitment and retention procedures were developed by the research co-ordinator in consultation with the principal investigator for the project.

1. All procedures proposed for the recruitment of study participants were reviewed by relevant staff for feasibility, clarity, and acceptability. Recruitment guidelines were delineated and distributed to each PHN and clerical staff members involved in, or supporting the recruitment process (see Appendices A-1, A-2, and A-3).

2. A telephone reminder system was designed to identify "due dates" for each questionnaire. A worksheet was created using Microsoft Excel to track distribution dates for all questionnaires. This worksheet was sent on a weekly basis to the research assistant who was responsible for making reminder telephone calls to participants. This protocol was put in place to minimize losses to follow-up.

Data Collection

1. A system of data collection was created in collaboration with the research assistant who was responsible for ensuring that all women consenting to participate received an initial research package containing a "Letter of Explanation" of the study (see Appendix B), "Consent Form" (see Appendix C), and the "Mothers Helping Mothers with Postpartum Depression:

New Mother Questionnaire." To ensure that each questionnaire had a unique coded identifier rather than the participant's name, instructions for developing a unique "Code Number" were attached. To enhance easy return of questionnaires, the mail out packages distributed to participants in the first week postpartum included a self-addressed stamped envelope.

2. A system of data collection and management was also created that was aimed at ensuring that women who received the 1-week postpartum questionnaire also received the second questionnaire, "Mothers Helping Mothers with Postpartum Depression: 8-Weeks Postpartum" on or just before 8-weeks postpartum.

3. Each returned questionnaire was evaluated for the participant's responses to question #10 in the Edinburgh Postnatal Depression Scale (EPDS). In the event of a positive response, that is a response of *hardly ever, sometimes,* or *yes, quite often* to the prompt "the thought of harming myself has occurred to me," the research co-ordinator identified the name and phone number matching the mother's code, and attempted to contact the mother by telephone. A telephone assessment consisted of an initial confirmation that the respondent had understood the question, including the time element associated with the question. If the participant confirmed a correct understanding of the question, the research coordinator used a pre-developed protocol to assess for suicide risk to guide the ensuing conversation, and to encourage/assist the woman to seek help or initiate appropriate follow-up. This procedure (see Appendix D) was approved by PHN management and was covered by a statement included in the consent form signed by all participants that was worded as follows: "As an ethical commitment to women in the study, the research co-ordinator will contact me if I am feeling particularly low."

4. All data management procedures were aimed at preserving the women's anonymity. Personal identifiers were separated from code numbers on the data and personal information was kept in a locked file.

Conceptualization and Operationalization of Study Variables

Conceptualization and operationalization of each of the study variables is presented within the organizing framework established for the theoretical model. Thus the independent variables are ordered by their respective interpersonal, intrapersonal, and transpersonal dimensions with the conceptual definition preceding the operationalization of the variable.

Interpersonal Dimension: Social Resources

Social resources, a component of the interpersonal dimension, include both positive and negative relational provisions that are associated with specific interpersonal relationships. These two aspects of social resources were identified as RSC and RSSS.

Relationship-Specific Conflict (RSC)

RSC is a negative social resource theorized to undermine the perceived social supportiveness associated with a specific relationship.[126, 164] Conflict was conceptualized as how often the women felt angry and how often they felt they must work hard to avoid conflict in a specific interpersonal relationship. The notion of conflict also included the women's sense that a specific person or group of persons was critical of them and tried to control their lives or pressured them to change.[55, 57, 61, 171]

Measurement of RSC: The Quality of Relationships Inventory (QRI).

The measurement of relationship-specific conflict used a subset of items from the Quality of Relationships Inventory (QRI) developed by Pierce, Sarason, and Sarason that assessed perceptions of interpersonal conflict.[55] Alpha coefficients reported by the authors for the total QRI Conflict scale were satisfactory, ranging from .83 to .91. The Cronbach's alpha for the five

item subset of questions used in this study was .84. Questions 59-63, 67-71, 75-79, 83-87, in the 1-week postpartum questionnaire pertained to the four relationships identified above. The questions read as follows:

How often does your _____ make you feel angry?

How often do you have to work hard to avoid conflict with _____?

How often does your _____ try to control or influence your life?

How often do you feel your _____ tries to get you to change?

How critical of you is your _____?

Responses to the first four questions were measured with a 5-point Likert scale with 1 being *very often* and 5 being *never*. The response to the last question was measured with a 5-point Likert scale with 1 being *very critical* and 5 being *not at all critical*. These five items were recoded so that the values ranged from zero to four with a potential range of scores from 0-20. Lower scores represented perceived minimal conflict in the relationship.

Relationship-Specific Social Support (RSSS)

RSSS was conceptualized as social support perceived to be available (or existing within) specific relationships in one's network of family and friends. If more than one relationship of a particular type is considered together as a group, for example, other female friends with children, this is termed *domain-specific social support*.[55, 172] The support perceived to be available from women's relationships is based on an evaluation of the six provisions of social relationships proposed by Weiss: (1) *attachment*, provided by intimate relationships where the person receives a sense of security and safety; (2) *social integration*, provided by a network of relationships in which individuals find companionship and share interests and concerns; (3) *opportunity for nurturance*, derived from relationships where the person is responsible for the well-being of another; (4) *reassurance of worth*, provided by relationships where the person's skills and

abilities are acknowledged; (5) *reliable alliance*, derived from relationships where the person can count on others for assistance under any circumstances; and (6) *guidance*, provided by relationships with trustworthy and authoritative individuals who can provide advice.[39, 124] The extent to which a relationship is perceived to offer all these benefits is described as the "supportiveness" of that relationship. The nature of that supportiveness can be more precisely understood by examining the contributions of each of the provisions to the perceived overall supportiveness.

Measurement of RSSS: Social Provisions Checklist (SPC).

To measure RSSS, the Social Provisions Checklist (SPC) was included in the 1-week postpartum questionnaire. This instrument was developed and used by Davis et al. in their study of various aspects of the mental health and well-being of college students.[54] The SPC assesses the availability of the six social provisions identified by Weiss by asking to what extent the respondents' particular relationship provided six different benefits representing each provision.[124] SPC scale reliabilities were calculated for each of the six provisions across the four relationships evaluated by the college students in the Davis et al. study and reportedly ranged from .79 to .94. Similar to the researchers' reported reliabilities for the total score for each of the four relationships ($\alpha > .95$), in this current study the alpha reliability was .97.[54] The investigators were not able to report on the validity of their newly developed tool (in terms of evidence that the scores were associated with actual receipt of support by the respondents), but they did note that the instrument yielded results that were comparable to more established indexes of support from specific sources of relationships.

The list of 30 items (five items for each social provision) appeared four times in the 1-week postpartum questionnaire (Questions 64, 72, 80, and 88) to assess RSSS in each of the four relationships. Responses to each item were measured with a 5-point Likert scale with 1 being

never and 5 being *very often*. Scoring was recoded so that a response of *never* was given a value of 0 and *very often* a score of 4. Thus, the potential range of summated scores for each provision is 0-20 with a higher score representing women's perceptions that the specific relationship frequently provided her with that particular social provision. The potential range of scores for the total scale is a sum of all six subscales ranging from 0-120.

Intrapersonal Dimension: Inner-Self Resources

Associated with the *intrapersonal dimension,* inner-self resources are one's cognitive working models of self and others that are shaped by past as well as ongoing experiences and appraisals of one's self and one's self-in-relation-to-others. Two cognitive working models were included in this study, global perceived social support and self-esteem.

Global Perceived Social Support (GPSS)

GPSS is conceptualized as a cognitive working model of one's self in relationship—the extent that one is cared for, valued by others, and esteemed worthy of assistance in times of need. GPSS is based on the contributions of Weiss's six provisions and defines overall social support in the same way as social support provided by specific relationships—RSSS.[134]

Measurement of GPSS: The Social Provisions Scale.

The Social Provisions Scale (SPS) measured global perceived social support in Question 38 of the 1-week postpartum questionnaire. The instrument consists of 24 statements with two positively worded and two negatively worded statements, each assessing one of the same six social provisions as in the SPC. Respondents were asked to think about their current relationships with family, friends, co-workers, community members, and so on, when responding to the statements. The responses were measured with a 4-point Likert scale with 1 being *strongly disagree* and 4 being *strongly agree*. Negatively worded statements were reverse scored. All items were assigned a range of 0-3.The potential range of summated scores for each of the six

provisions was 0-12 and for the entire scale was 0-72 with higher scores indicative of participants' perceptions that higher levels of support were available to them if needed.

The SPS has been subjected to rigorous psychometric evaluation. Cutrona and Russell reported reliabilities of the individual social provision subscales with coefficient alphas ranging from .65 to .76 and the reliability of the total SPS score as .92.[123] The scale's high level of reliability was also confirmed in this study ($\alpha = .91$). Additionally, research has affirmed the adequacy of the scale's construct and discriminant validity. The scale has consistently predicted measures of well-being, including loneliness and depression.[39, 54, 55, 112] The validity of the six subscales has been assessed by distinguishing between specific types of personal relationships and their most salient social provision. For example, attachment was found in one study to be significantly predictive of how satisfied individuals were with their romantic/dating relationships, whereas social integration was significantly predictive of how satisfied they were with their friendships. Reliable alliance was related to the perceived quality of both familial and friendship relationships.[123]

Self-Esteem

Self-esteem is a global sense of self-worth and self-acceptance also thought to be shaped in one's early years, but susceptible to influence by the quality and supportiveness of existing relationships.[128] Rosenberg's definition of self-esteem, "the evaluation which the individual makes and customarily maintains with regard to himself or herself: it expresses an attitude of approval or disapproval toward oneself" (as cited in Turner & Lloyd,[59, 650]) indicates that Rosenberg conceptualized self-esteem as more trait-like and stable than the conceptualization used for this work. Interestingly, self-esteem was found to be relatively less stable than perceived social support in Newcomb and Keefe's 12-year longitudinal study (the UCLA Study of

Adolescent Growth and Adult Development survey) with four data collection points from late adolescence to adulthood.[173]

Measurement of Self-Esteem: The Rosenberg Self-Esteem Scale.

Self-esteem was measured with the Rosenberg Self-Esteem Scale, a 10-item scale assessing general self-worth/self-acceptance.[174] The favourable Cronbach's reliability in this study (α = .89) is consistent with the instrument's well-established reliability and validity. It was included in the first postnatal questionnaire as Question 20. Lower self-esteem using this measure has been associated with more depressive symptoms as measured by the CES-D in postpartum women.[60] Responses were measured with a 4-point Likert scale with 1 being *strongly disagree* and 4 being *strongly agree*. Five of the 10 items were reversed scored (# 2, 5, 6, 8, and 9) so that the sum of all items ranged from 10-40 with higher scores representing higher global self-esteem.

The Transpersonal Dimension: Spiritual Resources

Spiritual resources, components of the transpersonal dimension, are those provisions arising from experiences of the sacred[8] and or the mystical[9] in life. The context of sacred and mystical experiences can be events within collective, religious practices and traditions, and/or private events, beliefs, and practices. In the current study, spiritual resources encompass positive relational provisions such as love, acceptance, reassurance of worth, and guidance arising from a sense of relationship with God, as well as outcomes of mystical experiences, and benefits associated with interpersonal relationships with members of one's faith community or religion.

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[8] "Sacred refers to a divine being, higher power, or ultimate reality, as perceived by the individual."[167, p. 104]

[9] "The mystical experience is a transient, extraordinary experience marked by feelings of unity, harmonious relationship to the divine and everything in existence, as well as euphoric feelings, noesis, loss of ego functioning, alterations in time and space perception, and the sense of lacking control over the event."[150, p. 678]

In addition, prayer, forgiveness, and meaning in one's life are other examples of spiritual resources.[10]

Relationship-Specific Support: God

As with other interpersonal relationships, relationship-specific support from God is that perceived benefit, available assistance, love, and sense of worth that arises from a personal relationship with God. Relationship with God is conceptualized as the perception of interactions with, or involvement with, God in daily life.[158]

Measurement of relationship-specific support: God.

Questions for the measurement of the variable, *relationship-specific support: God* were developed by the investigator. Direction for the development of the questions was taken from several sources: (a) the October 1999 report of the Fetzer Institute/National Institute on Aging Working Group that published a document as a resource to provide questions relevant to religiousness/spirituality as it relates to health outcomes,[175] (b) Weiss's provisions of social relationships identifying the six categories of relational benefits, and (c) the review of the spirituality literature.

Six items comprised the scale included in the 1-week postpartum questionnaire. The six items listed below are not presented in their numerical order but rather are presented in an order that represents a logical progression in the exploration of women's relationship with God.

- Question #137 read: "To what extent do you feel loved by God?" measured with a six-point Likert scale with 1 being *very loved* and 5 being *not at all loved* and the additional option of choosing 6, *I do not sense that God's love is relevant to me.* Scoring was reversed from 4 to 0. Women who respond *not at all loved* or *I do not sense that God's love is relevant to me*, were

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[10] These additional four domains of spirituality represent a subset of those domains identified as conceptually strong and theoretically and/or empirically connected to health outcomes by the National Institute on Aging Working Group in the United States and reported by the Fetzer Institute in 1999. [136]

given a zero score. In addition, missing responses to this question were interpreted as not applicable (N/A). A score of 0 was assigned to N/A because it was deemed contextually valid and consistent with the score for responses of *not at all loved* and *I do not sense that God's love is relevant to me*. Women who scored higher had a greater sense of being loved by God.

- Question #138 read: "To what extent do you feel accepted by God for who you are?" measured with a 6-point Likert scale with 1 being *unconditionally accepted* and 5 being *not at all accepted* and the additional option of choosing 6, *I do not sense that God's acceptance is relevant to me*. Scoring was reversed from 0-4 with the same scoring decisions as in question 137. Women with higher scores felt more accepted by God for who they were.

- Question #136 read: "I look to God for strength, support, and guidance" measured with a 4-point Likert scale with 1 being *a great deal* and 4 being *not at all*. Scoring was reversed from 0-3. No response was interpreted as N/A and was also given a value of 0. Women with higher scores felt loved and accepted and had higher expectations of strength, support and guidance from God.

- Question # 144 read: "To what extent did you expect God's comfort/help as you experienced labour and delivery?" measured with a 4-point Likert scale with 1 being *I very much expect God's comfort/help* and 4 being *I do not expect God's comfort/help*. Scoring was reversed from 0-3. No response was also scored as 0. Women with higher scores had higher expectations of God's comfort/help during labour and delivery.

- Question #145 read: "To what extent do you expect God's wisdom/guidance to help you with parenting?" measured with a 4-point Likert scale with 1 being *I very much expect God's wisdom/guidance* to 4 being *I do not expect God's wisdom/guidance*. Scoring was reversed from 0-3. No response was also given a value of 0. Women with higher scores had higher expectations of wisdom and guidance from God to help with parenting.

- Question #135 read: "When do you pray? (Please circle ALL that apply; you may circle more than one)." The fifth response *to talk to someone who cares* was considered an indicator of a sense of relationship with God and was scored one if it was circled and 0 if not circled.

The six items were summed and the potential range of scores for the variable *relationship-specific support from God* was 0 to 18 with higher scores representing a stronger sense of relationship with God. These items formed a scale with a Cronbach's alpha of .91.

Core Spiritual Experiences

Core spiritual experiences are those experiences that convince a person that God exists and evoke feelings of closeness with God, including the perception that God dwells within.[176]

Measurement of Core Spiritual Experiences: The INSPIRIT.

Core spiritual experiences is a domain described by Kass et al. and investigated in their study of medical outpatients, 25 to 72 years old.[176] Their scale, the INSPIRIT, was developed to measure the "occurrence of experiences that convince a person God exists and evoke feelings of closeness with God, including the perception that God dwells within."[176, p. 205] They reported a Cronbach's alpha reliability coefficient of .90, concurrent and discriminant validity and a significant relationship between core spiritual experiences and health outcomes. In this study the alpha reliability was .91. Questions 126-132 in the baseline questionnaire constituted the seven items of the INSPIRIT. The seven items, one of which had twelve parts, are presented below with associated scoring. The potential range of scores for the summated variable was 0-60.

- Question 126 read: "How strongly religious (or spiritually-oriented) do you consider yourself to be?" and was measured with a 5-point Likert scale with 1 being *very strongly religious* and 5 being *not at all religious*. Scoring on this question was reversed and assigned a

range of 0-4 with higher scores representing higher levels of self-rated religiousness /
spirituality.

- Question 127 read: "About how often do you spend on religious or spiritual practices?"
and was measured with an 8-point Likert scale with 1 being *never* and 8 being *3 or more times a day*. Scoring on this question was recoded and assigned a range of 0-7.

- Question 128 read: " How often have you felt as though you were very close to a
powerful spiritual force that seemed outside of yourself?" and was measured with a five-point
Likert scale with 1 being *very often* and 5 being *never*. Scoring on this question was reversed and
assigned a range of 0-4 with higher scores representing a more frequent sense of closeness to an
external spiritual force.

- Question 129 read: "How close do you feel to God?" and was measured with a five-point
Likert scale with 1 being *very close* and 5 being *not at all close*. Scoring was reversed and
assigned a range of 0-4. Missing responses to this question was assigned a score of 0. Higher
scores represented a higher level of self-rated closeness to God.

- Question 130 read: "Have you ever had an experience that has convinced you that God
exists?" measured with a yes-no response with 1 being *yes* and 2 being *no*. Yes was recorded
with a value of 1 and no with a value of 0.

- Question 131 read: "Please indicate whether you agree or disagree with this statement,
'God dwells within me" and was measured with a five-point Likert scale with 1 being *strongly
agree* and 5 being *strongly disagree*. Scoring was reversed and assigned a range of 0-4. Missing
responses to this question were given a score of 0. Higher scores represented respondents'
stronger sense of certainty that God dwelt within.

- Question 132 consisted of a list of 12 types of spiritual experiences. Each type was
measured with a 4-point Likert scale with 1 being *I never had this experience* and 4 being *I had*

this experience and it convinced me of God's existence. Scoring was recoded with a range from 0-3. Missing responses were given a score of 0. Higher scores indicated that the respondents had experienced the spiritual event and the event had served to strengthen their belief in God or even convince them of God's existence.

Religious Support/Coping

Religious support/coping is the first of the remaining spirituality variables taken directly from the "Brief Multidimensional Measure of Religiousness /Spirituality: 1999."[175] The National Institute on Aging Working Group identified these key domains of religiousness/spirituality which are conceptually robust and have theoretical or empirical connections to health outcomes.

Religious support is the perception that one's religion is a source of personal consolation and, fortitude in life situations and that assistance is available from members of one's religious group or faith community members. Religious coping is the perception that one's religion offers methods of understanding and dealing with life stressors.[177] The support and coping aspects were combined in a support / coping scale measured with three items (questions 122, 123, and 124) in the 1-week postpartum questionnaire. The alpha was .91 in the present study. The potential sum of the three items ranged from 0-11 with higher scores indicating greater perceived religious support/coping.

Measurement of religious support/coping.

- Question 122 read: "I find strength and comfort in my religion" measured with a 6-point Likert scale with 1 being *many times a day* and 6 being *never or almost never*. Scoring was reversed and assigned a range of 0-5. Missing responses were interpreted as N/A and were given a score of 0.

- Question 123 read: "To what extent is your religion involved in understanding or dealing with stressful situations in any way?" and was measured with a 4-point Likert scale with 1 being

very involved and 4 being *not involved at all*. Scoring was reversed and assigned a range of 0-3. Missing responses were interpreted as N/A and given a score of 0.

- Question 124 read: "If you had a problem or were faced with a difficult situation, how much comfort would the people in your religion be willing to give you?" measured with a 4-point Likert scale with 1 being *a great deal* and 4 being *none*. Scoring was reversed and assigned a range of 0-3 with a value of zero given to the response *none* as well as to missing responses interpreted as N/A.

Prayer

Prayer is a spoken or unspoken interaction with the transcendent that reinforces a sense of connection with God or connection with all of life. It may be informal and occur in the context of one's daily life, or it may be associated with formal religious and sacred practices and ceremonies. Its significance for individuals may vary from that of seeking strength, help, guidance, or emotional support from a personal God, or seeking a connection with a more cosmic consciousness, to a sense of inner harmony, spiritual integration, or wholeness.[158]

Measurement of prayer.

Prayer was measured with five items in the 1-week postpartum questionnaire which constituted a scale with a Cronbach's alpha of .74. The potential sum for these items ranged from 0-17 with a higher score signifying that prayer was more significant and/or practiced more frequently.

- Question 133 read: "How often do you pray?" measured with an 8-point Likert scale with 1 being *never* and 8 being *3 or more times a day*. Scoring was reversed and assigned a range of 0-7 with a value 0 given to the response *never* as well as to missing responses.

- Question 134 read: "How often do you pray <u>privately</u> in places other than at church/synagogue/temple/mosque?" measured with an 8-point Likert scale with 1 being *never*

and 8 being *3 or more times a day*. Scoring was reversed and assigned a range of 0-7

with the value 0 given to the response *never* as well as to missing responses.

- Question 135 read: "When do you pray?" Respondents were given a list of circumstances

and asked to circle all that applied. A score of 1 was given for each of three items circled, that is,

for *when I am stressed*, *when I am feeling low*, and *part of my daily routine*. Each of these

responses was given a value of 0 if not circled.

Forgiveness

Forgiveness is the process of overcoming negative affect and judgment toward offenders

by endeavouring to view offenders with compassion, benevolence, and love.[178, p. 35] Three

aspects of forgiveness are identified in this study.

Forgive self.

Forgiving self is a process in which one identifies oneself as the offender, acknowledges

and grieves the wrongdoing, attempts to make amends, and then "recognizes for [oneself] that in

spite of what one has done, and regardless of whether the victim is willing or able to forgive,

[one] remains a valuable human being who warrants love, respect, and compassion."[179, p. 14]

Measurement of forgiving self.

Forgiveness of self was measured with one item in the 1-week postpartum questionnaire.

Scoring was reversed and assigned a range from 0-4. Missing responses were given a value of 0

for N/A.

- Question 139 read: "I have forgiven myself for the things that I have done wrong" and

was measured with a 5-point Likert scale with 1 being *always* and 5 being *never*.

Forgive others.

Forgiving others is an interpersonal phenomenon. McCullough et al. define interpersonal

forgiving as "the set of motivational changes whereby one becomes (a) decreasingly motivated

to retaliate against an offending relationship partner, (b) decreasingly motivated to maintain estrangement from the offender, and (c) increasingly motivated by conciliation and goodwill for the offender, despite the offender's hurtful actions."[180, p. 321-322]

Measurement of forgiving others.

- Forgiveness of others was measured with one item in the 1-week postpartum questionnaire. Scoring was reversed and assigned a range from 0-4. Missing responses were given a value of 0 for N/A.

- Question 140 read: "I have forgiven those who hurt me" and was measured with a 5-point Likert scale with 1 being *always* and 5 *never*.

Know God forgives me.

Knowing God forgives one is a relationship with God or transpersonal phenomenon and occurs as one perceives that God's view of oneself is not judgmental but characterized by compassion, benevolence, and love.[181]

Measurement of knowing God forgives me.

Knowing that God forgives me was measured with one item in the 1-week postpartum questionnaire. Scoring was reversed and assigned a range of 0-4. Missing responses were given a value of 0 for N/A.

- Question 141 read: "I know that God forgives me" and was measured with a 5-point Likert scale with 1 being *always* and 5 *never*.

Meaning

Meaning is a sense of purpose in life or a way of understanding one's place and significance in life's events. The *will to meaning* is an essential human characteristic thought to be part of a sense of coherence, an essential function of coping with major life stresses, or an element of psychological well-being.[182]

Measurement of meaning.

- The meaning variable was measured with two items (questions 142 and 143) in the 1-week postpartum questionnaire. Scoring for these two items was reversed and assigned a range from 0-3 and missing responses were given a value of 0.The potential range for the summed variable was 0-6 with higher scores indicating that respondents had a greater sense of life purpose or meaning.

- Question 142 read: "The events in my life unfold according to a divine or greater plan" and was measured with 4-point Likert scales with 1 being *strongly agree* and 4 being *strongly disagree*.

- Question 143 read: "I have a sense of mission or calling in my life" and was measured with 4-point Likert scales with 1 being *strongly agree* and 4 being *strongly disagree*.

Open-Ended Religiousness/Spirituality Question

Finally, respondents were given an opportunity to offer additional comments about their spirituality in an open-ended question at the end of the religiousness/spirituality section of the 1-week postpartum questionnaire.

- Question 146 read, "Is there anything else you would like to tell us about your spirituality?" If they responded *yes* then respondents were asked to specify.

Depressive Symptoms at 1-Week Postpartum

Depressive symptoms at 1-week postpartum (DS1) was conceptualized as emotional distress that manifests itself as feelings of sadness, anxiety, and panic with an accompanying anhedonia. Thoughts of self-blame and perhaps self-harm may compound these symptoms.

The Edinburgh Postnatal Depression Scale (EPDS) was used to operationalize both DS1 and DS8. The EPDS is described below under the heading, The Outcome Variable: Depressive Symptoms at 8-weeks Postpartum.

The Outcome Variable: Depressive Symptoms at 8-Weeks Postpartum

DS8 is a phenomenon manifesting identical emotional distress symptoms as DS1. In this study, DS8 reflects either an increment or a new onset of depressive symptoms since the measure at 1week-week postpartum.

Measuring Depressive Symptoms in the Postpartum: The EPDS

Since Cox et al. published their study in 1987 validating their newly developed 10-item scale measuring symptoms of depression in women 2-3 months postpartum, the EPDS has been widely used.[11] Translation of the EPDS into at least 11 languages testifies to its popularity in recent years.[7] The acceptability of the tool to the target group is well documented. It is also described as quick and easy to score by hand thus enhancing its usefulness for clinical screening in various primary health care settings.[7, 9, 77, 104, 183, 184]

Although numerous instruments with demonstrated adequate reliability and validity are in current use within clinical practice and research, the EPDS was designed specifically to measure symptoms of PPD. The developers omitted questions about depressive symptoms that may be normative changes in the postpartum such as fatigue, changes in appetite, weight loss, and loss of libido to avoid inflating results. Seven of the ten items in the EPDS consist of short statements of common depressive symptoms (e.g., self-blame, feeling upset, anxiety, fear or panic, feeling overwhelmed, difficulty sleeping because of unhappiness, sadness or misery, crying, and thoughts of self-harm) and three items are positively worded and address enjoyment, laughter, and seeing the funny side of things. There are four possible responses to each statement graded according to severity or duration and women are asked to underline the statement that best reflects how they have been feeling within the past seven days.

Numerous studies have assessed the psychometric properties of the EPDS.

Estimates of internal consistency reliability were reported by Appleby et al. (alpha=0.88),[185] Astbury et al. (alpha=0.97),[186] and Pop et al. (alpha=0.82).[187] Cox et al. evaluated the validity of the EPDS by comparing the scores of a sample of 84 women at 6-weeks postpartum in the community against the Research Diagnostic Criteria (RDC) clinical diagnosis of depression obtained from Goldberg's Standardized Psychiatric Interview.[11] Using a cut point of 12/13, the sensitivity of the EPDS (the percentage of RDC-diagnosed depressed women who were correctly identified by the EPDS) was 86%; the specificity (proportion of non-depressed women who were correctly identified) was 78%, and the positive predictive value (the proportion of women above cut point on the EPDS who met the RDC criteria for depression) was 73%. The authors suggested that a cut point of 9/10 would increase the sensitivity of the EPDS and recommended this threshold for community screening. In addition to Cox et al.'s validation study of the EPDS, Harris et al., using the DSM-III criteria for diagnosis of PPD, reported a sensitivity of 95% and specificity of 93% with a threshold of 13 and over; sensitivity of 100% and specificity of 82% with a threshold of 10 and over, based on their sample of 147 mothers screened for major depression at 6- to 8-weeks postpartum.[11] Murray and Carothers, however, criticized both these studies as methodologically flawed by pointing to small samples, lack of randomization, and screening after, rather than before, the psychiatric interview, thus sensitizing women to depressive symptoms that might not otherwise have been acknowledged.[188] The researchers' more moderate EPDS sensitivity and specificity values, 89% and 82%, respectively (threshold of 9.5 and using the Research Diagnostic Criteria as the criteria for diagnosis of PPD) based on a random sample of 646 women screened at 6-weeks postpartum may be a more accurate estimate of the instrument's validity. The positive predictive value of 39% for both major and minor

depression in the Murray and Carothers study was also notably smaller than Cox's estimated 73%.

Although studies have established evidence of the reliability, sensitivity, specificity, and positive predictive value of the EPDS, some authors have criticized the scale on the basis of its content validity.[77, 189-191] According to Talbot, content validity "assesses whether the instrument adequately measures the domain of interest or universe of concern."[192, p. 280] Both a lack of items regarding the context of women's current experience as new mothers and a lack of coverage of the scope of symptoms postpartum women may experience are said to be limitations of the EPDS as a measure of PPD. On the basis of her phenomenological study of PPD, Beck concluded that five symptoms are not included in the EPDS, namely loss of control, obsessive thinking, loss of self, loneliness, and lack of concentration.[190]

Two other aspects related to the use of the EPDS in this study deserve further elaboration and clarification. Firstly, using the EPDS to measure depressive symptoms in the first week postpartum raises questions about what is being measured and the validity of using an instrument that was developed for use at 6-8 week postpartum. Understandably, it could be assumed that at 1 week one might be measuring postpartum or maternity blues, a phenomenon traditionally thought to be distinct from PPD. However, researchers using the instrument in the first two weeks postpartum have confirmed its validity and usefulness with respect to PPD. Yamashita et al. reported that EPDS scores at 5-days postpartum predicted PPD (diagnosed using the Schedule for Affective Disorder and Schizophrenia / Research Diagnostic Criteria) at 3-weeks and 3-months postpartum with odds ratios of 33 and 20, respectively,[68] and Hannah et al. found a high significant correlation between EPDS scores at 5-days and those at 6-weeks, $r = .60, p < .0001$.[67] These findings support the use of the EPDS as a screening instrument for onset of postpartum depression in the very early puerperium.

Secondly, the researcher's decision to treat the outcome variable as a continuous rather than a categorical measure of depressive symptoms was influenced by several considerations. Affonso recommended that nurse investigators not carry on the tradition of favouring a diagnosis of who is depressed and who is not depressed.[35] Instead, she advocated "a health and behaviour research agenda that suggests depression might be a continuum from mild distress to a moderate level of disturbance to a clinical disorder."[35, p. 217] Green suggested that the EPDS has validity as a continuous measure of depressive symptoms. She found that significant correlations existed between EPDS scores and other measures of symptom severity that were administered concurrently to a sample of 1,272 women (evaluated at 35-weeks prenatal and 6-weeks postpartum).She concluded that valuable data are wasted by dichotomizing on the basis of EPDS scores.[73] Additionally, Munoz et al. argued that it is important to distinguish between *depressive symptoms* and *depressive disorders* in research.[32] They pointed out that depressive symptoms represent a level within a continuum and are usually measured by self-report scales to determine how depressed a person is. Depressive disorders, on the other hand, are dichotomous variables classifying a person as depressed or not depressed based on well-delineated and widely accepted criteria specifying the number, severity, and duration of symptoms. [32] Therefore, since in this study the outcome of interest was depressive symptoms and not depressive disorder, using the EPDS scores as a continuous measure was considered appropriate.

In the current prospective study, the EPDS was used to measure depressive symptoms early in the postpartum period (i.e., approximately 1-week postpartum) and again at approximately 8-weeks postpartum. The 10-item scale was embedded in the 1-week postpartum questionnaire, questions 177 to 186 inclusive, and in the 8-week postpartum questionnaire consisting of questions 26 to 35 inclusive. Each item of the EPDS was measured with a 4-point

Likert scale scored from 0 to 3. Three of the scale's ten items were reverse scored. The potential range of scores for the total scale was from 0-30 with higher scores representing increasing severity of depressive symptoms. Cronbach's alpha for the EPDS at 1-week postpartum and 8-weeks postpartum was .88 and .87, respectively.

It should be noted that the EPDS was treated as binary variable in this study for the purpose of describing the women's emotional status at 1- and 8-weeks postpartum. A binary variable was created with a cut point of 9/10. Significant demographic differences between the groups of depressed/non-depressed women were examined using this binary variable. For all multivariate analyses, however, the EPDS scores were treated as a continuous variable reflecting a continuum of depressive symptoms.

Due to the complexity of the study variables Tables 3-1 through 3-3 present an overview of the independent variables according to their dimensions, inter-, intra-, and transpersonal respectively. The name of the variable, and the instrument used to measure the variable as well as when it was measured (1- or 8-weeks postpartum) are included in the overview. Table 3-4 describes the same aspects of the independent variable, DSI, and the outcome variable, DS8.

Table 3-1 *Instrumentation of Independent Variables in the Interpersonal Dimension*

Variable	Instrument	Location Questionnaire (1-Week Postpartum)	Location Questionnaire: (8-Weeks Postpartum)
Relationship-Specific Conflict (RSC):	Quality of Relationships Inventory (QRI)-		
Spouse/partner	QRI (5 items)	Questions 59-63	N/A
Mother	QRI (5items)	Questions 67-71	N/A
Mother-in-law	QRI (5 items)	Questions 75-79	N/A
Female friends with children	QRI (5 items)	Questions 83-87	N/A

Variable	Instrument	Location Questionnaire (1-Week Postpartum)	Location Questionnaire: (8-Weeks Postpartum)
Relationship-Specific Support (RSSS):	Social Provisions-Checklist (SPC) (30 items)		
Spouses/partners	SPC (30 items)	Question 64	N/A
Mothers	SPC (30 items)	Question 72	N/A
Mothers-in-law	SPC (30 items)	Question 80	N/A
Female friends with children	SPC (30 items)	Question 88	N/A

Table 3-2 *Instrumentation of Independent Variables in the Intrapersonal Dimension*

Variable	Instrument	Location Questionnaire (1-Week postpartum)	Location Questionnaire (8-Weeks postpartum)
Global Perceived Social Support (GPSS)	Social Provisions Scale (SPS) (24 items)	Question 38	N/A
Self-Esteem	Rosenberg Self-Esteem Scale (10 items)	Question 20	N/A

Table 3-3 *Instrumentation of the Independent Variables in the Transpersonal (Spiritual) Dimension*

Variable	Instrument	Location Questionnaire (1-Week postpartum)	Location Questionnaire (8-Weeks postpartum)
Relationship-Specific Support: God	(Six items) *	Questions 135 (5) 136, 137, 138, 144,145	N/A
Core Spiritual Experiences	INSPIRIT (7 items)	Questions 126-132 (inclusive)	N/A
Religious Support/Coping	(Three items) **	Questions 122, 123, 124	N/A
Prayer	(Five items)	Questions 133, 134, 135-parts 1,3,4	N/A

Variable	Instrument	Location Questionnaire (1-Week postpartum)	Location Questionnaire (8-Weeks postpartum)
Forgive Self	(One item) **	Question 139	N/A
Forgive Others	(One item) **	Question 140	N/A
Know God Forgives Me	(One item) **	Question 141	N/A
Meaning	(Two items) **	Questions 142, 143	N/A

* Items were developed by author.
** Items adopted/adapted from Brief Multidimensional Measure of Religiousness/Spirituality: 1999. [175, pp.85-88]

Table 3-4 *Instrumentation of Depressive Symptoms at 1- and 8-Weeks Postpartum*

Variable	Instrument	Location Questionnaire (1-Week postpartum)	Location Questionnaire (8-Weeks postpartum)
Depressive Symptoms at 1 Week	Edinburgh Postnatal Depression Scale (EPDS) (10 items)	Questions 177-186	N/A
Depressive Symptoms at 8-Weeks Postpartum	(EPDS) (10 items)	N/A	Questions 26-35

Sample Characteristics

In addition to the variables above, data were collected to describe the participants' personal characteristics including sociodemographic variables, obstetrical and mental health history, and use of antidepressants. A few background questions about religious affiliation and self-rated strength of religiousness were also asked.

Sociodemographic Characteristics

Items 199-203 and 208 in the 1-week postpartum questionnaire were developed by the project Principle Investigator (PI) and consisted of standard questions about age, marital status, education, employment status during the pregnancy, ethnic identity, country of birth, and annual household income.

Obstetrical History

Participants were asked, in the 1-week postpartum questionnaire, if this was their first pregnancy; they were given options to respond affirmatively, or alternatively, to indicate a history of previous miscarriages, abortions, and number of previous live births (question 3 developed by the project PI).

Mental Health History

Questions 109-111 (developed by the project PI) asked participants about their mental health history. The women circled any or all of the conditions that they had ever experienced from a list that included drug addiction and alcoholism. They were given the option to choose *none of these* or *I'm not sure*. One item, question 198 in the 1-week postpartum questionnaire asked respondents, "Are you currently taking antidepressant medication?" Respondents indicated whether they were taking medication and when they started taking antidepressants, before pregnancy or during the current pregnancy. The same question was repeated in the 8-week postpartum questionnaire.

Religious Affiliation and Strength of Religiousness

One item, question 135 in the baseline questionnaire, measured religious preference. The question read, "What religion do you belong to?" Respondents had a choice of five world religions, the opportunity to specify another religion, or to respond, *I do not belong to a specific religion*. They also were asked to describe the strength of their religiousness from *not at all religious* to *very strongly religious*.

Analysis

All data were analyzed using SPSS for Windows Version 10. An alpha level of .05 was used for all statistical tests. The description of the analyses includes the univariate and multivariate analyses that were conducted.

First Stage: Univariate Analysis

In the first stage of analysis, univariate analyses were completed to evaluate the quality of the data. Error was suspected for any data values that appeared unlikely or improbable. The source of the error was identified and correct information obtained from the original questionnaire was re-entered into the data file.[193] Univariate analyses on study variables were then conducted to become acquainted with the data and verify statistical assumptions. Specifically, the distributions of the observed values for the sociodemographic and personal characteristics of the study, the independent variables—interpersonal, transpersonal, and intrapersonal variables, DS1—and the dependent variable, DS8,were examined. Finally, the sociodemographic characteristics (i.e., age, net household income, and education) of women grouped by EPDS scores, that is those with scores 0-9 and those with scores 10 and above, were compared.

Second Stage: Path Analysis

To test the research hypotheses regarding the relationships between the independent variables and DS8 as well as the interrelationships among the independent variables, path analysis was used. Path analysis is based on simple regression techniques that test whether a set of independent variables predicts a phenomenon. It is a method that takes a step beyond regression analysis to test theorized, directional relationships among a set of variables.[193] As a first step in the path analysis a path model was constructed. Directional arrows (paths) diagrammed the hypothesized direction of effects for the independent variables on DS8, the dependent variable in the model. The path model constructed for this study entitled "theoretical model of depressive symptoms at 8-weeks postpartum," is depicted in Figure 3-3. It was based on the review of the theoretical and empirical literature and the theoretical framework presented to guide this work. According to Munro, path models are a "causal modeling technique,"

reflecting implicit assumptions of causation. Theoretical assumptions of causality are strengthened when: (a) there is a correlation between the predictor and dependent variable, (b) the predictor variable precedes the dependent variable in time, and (c) the relationship remains significant when the effects of other variables on the dependent variable are controlled.[193]

Further preparation for the path analysis included the following three steps:

1. Bivariate correlations among all model variables were calculated and displayed in tabular format. These correlations, expressed as the Pearson correlation coefficient values (r), are used in two aspects of path analysis: (a) to represent the relationship between independent variables in the path model that have no other variables influencing them such as the spirituality variables and DS1 (exogenous variables) and (b) to represent the relationship between the dependent and independent variables in the model for the final step of comparing these observed correlation values to the estimated total effects of the independent variables on PPD.

2. The number of regression analyses needed to calculate the path coefficients, and test the paths in the model, was determined by counting the number of endogenous variables (i.e., those variables diagrammed as being influenced by other variables in the model). For this study there were five endogenous variables thus requiring that the following regressions were conducted: (a) RSC regressed ontoDS1; (b) RSSS regressed onto RSC and DS1; (c) GPSS regressed onto RSSS, RSC, DS1, and the eight spirituality variables; (d) self-esteem regressed onto GPSS, RSSS, RSC, DS1, and the eight spirituality variables; and (e) DS8 regressed onto all independent variables. All of these regressions were completed four times, one for each specific relationship or relationship domain—spouses/partners, mothers, mothers-in-law, and female friends with children.

3. Variables that were not significant in each of the regressions were dropped from the models and all of the above five regressions were repeated with only the remaining significant variables (resulting in *trimmed* models).

Path analysis was conducted after the following preparatory steps were completed. The first step was identification of the value of the path coefficients (representing the magnitude of the influence of one variable on another). These values had already been calculated in the regression analyses done in the preparation phase and were the values of the standardized (beta) regression coefficients. The unstandardized (b) regression coefficient was included with the beta value for each path coefficient to allow for comparison of the magnitude of the effects across models for spouse/partner, mother, mother-in-law, and female friends with children.[11]

Calculation of the direct and indirect effects of the independent variables was undertaken at this point. The value of a direct or simple path was simply the beta and b values. The value of an indirect or compound path was calculated as the product of the simple paths that made it up. For example, the value of the compound path between relationship-specific conflict and postpartum depression through the three intervening variables RSSS, GPSS, and self-esteem in the study's theoretical model was equal to the product of the beta coefficient of the three simple paths that made it up (see Figure 3-3). The total effect for each independent variable was the sum of the direct (simple) and indirect (compound) effects. Compound effects can either be meaningful or non-meaningful (non-causal). Non-causal effects ignore the direction of the relationships as specified by the path model. However, these non-causal effects are important components of the correlation between an independent variable and a dependent variable.

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[11] The number of cases for each relationship-specific model varied as some participants did not have a relationship with spouses/partners, mothers, mothers-in-law, or female friends with children.

Therefore, the value of the non-causal pathways must be added to the total effects of each independent variable.

Finally, the correlation, r value, between the dependent and the independent variables was compared to the sum of the direct, indirect, and non-causal effects to test if the path model was correctly specified.[193] Results of this comparison are reported and discussed.

Ethical Considerations

Ethical approval for this study was obtained from the Behavioural Research Ethics Board of the University of British Columbia (see Appendix E). This approval was based on the application submitted by the project PI, which described the data collection methods for the studies comprising the overall research project. The specific ethical considerations incorporated in the study were as follows:

1) PHNs recruiting postpartum women were oriented to the recruitment procedures that stressed the importance of adequately explaining the study, reviewing the women's rights and issues of confidentiality, discussing the potential risks and benefits, and providing information on how women could access further information about the study if they wished.

2) Study information and a written consent form were included in the 1-week postpartum questionnaire; one copy was signed and returned and one copy was kept by the participant.

3) Provisions were made to protect women's anonymity at all points in the collection and management of data, including the removal of names and addresses from all returned questionnaires, and proper use of unique identifying codes created by each participant.

4) The research co-ordinator evaluated the response to question 10 of the EPDS and responded as outlined in point #3 of the data collection section in Procedures.

5) Finally, all FVHR staff members participating in any aspect of the research were aware of the ethical considerations pertinent to the study in addition to the professional code of ethics guiding their conduct.

Summary

Chapter Three has included a discussion of the larger research project of which this study was part and which proved a unique context and approach to research. The project represented an attempt to bring PHN practitioners and academic faculty together in a collaborative effort to accomplish research of importance to clinicians and essential in the development of knowledge and understanding of PPD. Additional details of the study method included some description of the prospective design of the study, the evaluation of depressive symptoms at approximately 1- and 8-weeks postpartum, and presentation of the theoretical framework and research hypotheses that were tested with path analysis. The study sample consisted of all women in the FVHR who gave birth to a live child and who met the eligibility criteria for the study including provision of informed consent. Detailed descriptions of the procedures and activities designed to preserve the women's anonymity and protect their rights as study participants were provided.

CHAPTER 4: ANALYSIS AND RESULTS

Overview

The analysis and results of this study are reported in four major sections. In the first section, the participants are described with details provided about sampling and participation rates, sociodemographic characteristics and obstetrical and mental health history, as well as interpersonal and religious/spiritual characteristics. The second section presents descriptive data about the key variables in the study's theoretical model of postpartum depressive symptoms, and the third section presents results of the multivariate analyses of the model. Finally, the fourth section summarizes the major findings in terms of the study hypotheses.

The Participants

Efficiency of Recruitment and Follow-up of Participants

All women aged 18 years and over, who could read and write English, who did not have a history of postpartum psychosis, and who gave birth to a live child in the Fraser Valley Health Region's (FVHR) hospitals between the dates July 1 and October 31, 2001 were potential study participants. Although recruiting PHNs were supplied with "non-participant forms" to complete for every mother who was either ineligible for the study or who declined to participate, there was insufficient collection of non-participant data to determine the number of new mothers who were actually ineligible. However, regional hospital statistics and health status reports did provide information from which to estimate how many women may have been ineligible.[194, 195] Of the 925 births occurring within the recruitment period, approximately 18% were born to Indo-Canadian women, 2% were not residents of the region, and an estimated 3% were born to women less than 18 years of age resulting in a total of 712 potentially eligible women. Of these 712 potentially eligible women, 393 or 55% indicated interest in participating in the study when

approached by the PHNs. The remaining 22% of potentially eligible women were not accounted for by the recruitment procedures.

One hundred and ninety-one non-participant forms that PHNs completed over the recruitment period were hand counted to gain an impression of the sociodemographic characteristics of those women who declined participation. Three-quarters of the forms described women who were "white," with an average age of 29 years. The primary reasons given for declining participation were "not interested" or "too busy." A large number of these forms omitted information about education and annual household income and thus descriptive statistics were not calculated for these variables. The non-participant forms representing women who were East Indian and Punjabi and who declined participation because of *poor English* accounted for only 3.5% of the total babies born in the health region (compared to an estimated 18% of mothers who gave birth). It is thus reasonable to assume that a large number of Indo-Canadian women were not approached about the study in the PHN postnatal visit perhaps because of language barriers. There were 10 forms for women who identified themselves as First Nations, eight of which stated that they were too busy to participate and two who were under 18 years of age.

Response rates and loss to follow-up were calculated and are displayed in Table 4-1.

Table 4-1 *Response Rates and Loss to Follow-Up*

Type of Rate	Comparison	Numerator/ Denominator	Rate (%)
Efficiency of PHN contact	New mothers approached during first PHN contact / total number of live births	584/925	63%
Efficiency of consent of new mothers	(a) Women giving verbal telephone consent/total women approached	393/584	67%
	(b) Consent forms returned / total number of consents mailed	259/393	65%
	(c) Consent forms returned/total women approached	259/584	44%

Loss to follow-up	Number of 1-week surveys returned less no. of 8-week surveys returned / no. of 1-week surveys returned	56/259	22%

The PHNs were surveyed to determine the factors that might have accounted for the 37% of women for whom there was no record of their being approached for participation in the study. Most commonly the PHNs reported that they forgot to complete a non-participant form when the mother refused or was ineligible, or they were too busy to complete the form. Unfortunately, an unprecedented number of unusual events occurred over the course of the study that adversely affected the PHNs' ability to incorporate recruitment efforts into their routine practice. For example, a mass immunization campaign was launched in response to an outbreak of meningitis and a period of labour unrest caused significant work load issues.

Sociodemographic Profile of the Participants

The average age of the participants at the time of the surveys was 29 years ($SD = 5.0$). Other demographic information pertaining to marital status, employment status during this pregnancy, birthplace, immigrant status, education and income is presented in Table 4-2. It is interesting to note that the majority of women in the sample were born in Canada (92.6%), only 2.5% immigrated to Canada within the past five years, and none of the participants claimed to be South Asian (including East Indian, Pakistani, Punjabi, Sri Lankan).

Table 4-2 Demographic Characteristics of the Participants

Characteristic	Frequency (%) $N=203$
Marital Status	
Partnered (married or common law)	193 (95.1)
Single (never married)	9 (4.4)
Missing or unanswered	1 (.5)
Employment Status During this Pregnancy	
Full-time work	94 (46.3)
Part-time work	50 (24.6)

Not employed, stayed at home by choice	48 (23.6)
Unemployed for less than one year	5 (2.5)
Unemployed for more than one year	2 (1.0)
Recently lost job	2 (1.0)
Seasonal work	2 (1.0)
Born In Canada	
Yes	188 (92.6)
No	15 (7.4)
Immigrated to Canada Less Than Five Years Ago	
No	198 (97.5)
Yes	5 (2.5)
Self-Reported Ethnicity	
White	191(94.1)
First Nations	4 (2)
Métis	1 (.5)
Arab / West Asian	2 (1.0)
Filipino	1 (.5)
Latin American	1 (.5)
Other	3 (1.5)
Education Completed	
Elementary school	3 (1.5)
High school	68 (33.5)
College/trade school	83 (40.9)
University (undergraduate degree)	37 (18.2)
University (graduate degree)	11 (5.4)
Missing or unanswered	1 (.5)
Annual Household Income Before Taxes	
$0-$19,999	20 (9.9)
$20,000-$39,999	46 (22.7)
$40,000-$59,999	46 (22.7)
$60,000-$79,999	41 (20.2)
$80,000 or more	38 (18.7)
Missing or unanswered	12 (5.9)

Statistics Canada census data were used to examine the representativeness of the sample. The 1996 Canada Census for the Fraser Valley communities reported that English was spoken by 95% of the population as the "home language" ("defined as the language spoken most often at home by the individual at the time of the census").[194, p. II-16] Punjabi was the home language of approximately 2% of the total population with German, Chinese and French identified as the *home* language of most of the remaining 3%. Of these residents 12.6% claimed Punjabi as their *mother* tongue.[194] Although it can be confidently stated that the study sample does not

represent the relatively large population of postpartum women in the region who were Indo-Canadian, it is unclear what percentage of these women were ineligible because of an inability to read and write English and what percentage would have refused for other reasons.

Mothers Experiencing / Not Experiencing Depressive Symptoms

Although postpartum depressive symptoms were analyzed as a continuous variable for model testing in this study, a binary variable for depressive symptoms was created to allow for comparison of the two groups based on age, education, and household income. Using the EPDS cut point of 9/10 for depressive symptoms, 38 (18.7%) of 202 women displayed depressive symptoms at 8-weeks postpartum. The group means for age were compared using an independent samples t-test; the variable met the assumptions of being normally distributed and continuous. No significant difference in age was found, t (200) = 1.35, p = .18. Household income and education were treated as ordinal level data and their association with depressive symptoms at 8-weeks was analyzed using the most conservative of the non-parametric two-independent-samples test procedure, the Kolmogorov-Smirnov test. Although no significant difference was found for education, there was a significant difference in the annual household income of women with postpartum depressive symptoms and those without, Kolmogorov-Smirnov Z (191) = 1.39, p = .04. Women with relatively less household income were more likely to have depressive symptoms at 8-weeks postpartum.

Although maternal demographics were not included in the theoretical model of depressive symptoms at 8-weeks, which had been postulated before data collection and analyses, the model would have been incomplete without the inclusion of annual household income, having discovered that it was associated with depressive symptoms at 8-weeks postpartum. Other researchers have found a significant relationship between variables related to socio-economic status and depression in women in childbearing years[196] and specifically in the

postpartum phase.[38, 197, 198] A relationship between low socioeconomic status (SES)

and stress has also been reported. Hall et al. examined the influence of everyday stressors in a

theoretical model of depressive symptoms in postpartum mothers. They identified financial

problems at the top of the list of everyday stressors and found that lower self-esteem was

predicted by higher everyday stressors.[60] In Turner et al.'s research investigating the role of

two personal resources, mastery and self-esteem, the researchers consistently found an

association between SES and risk for general depression. They also found that both resources

mediated the relationship between SES and depression. In other words, lower SES was

associated with increased depression through the effects of lower self-esteem and decreased

sense of personal mastery.[59] Therefore, the variable *annual family income* was added to the

path model regressions with hypothesized direct influences on DS8 as well as self-esteem.

Obstetrical History

In examining the obstetrical data it was evident that 21% of the participants had

experienced the loss of a previous pregnancy or pregnancies; 12.8% had previous miscarriage(s),

1.5% stillbirth(s), and 6.4% abortion(s). Sixty-one percent of the women were primiparous, and

of the remaining multiparous women, one half had three or more children.

Mental Health History

While none of the women in the study identified a history of schizophrenia or bipolar

disorder, 71 (35%) women reported a history of one or more mental health conditions. Non-

childbearing depressions, as well as depression during previous pregnancies and postpartum

periods, and anxiety were most frequently mentioned. A history of drug addiction and

alcoholism was acknowledged by a few women. To clarify the considerable overlap among these

variables, the results are presented in Table 4-3. The data do not reveal whether women who

reported several conditions experienced these at separate times in their lives or simultaneously.

Respondents were also asked more specifically about their history of postpartum depression(s). While 175 (86.2%) indicated no previous history, 17 (8.4%) reported one occurrence, 8 (3.9%) two, and 3 (1.5%) three or more episodes. These episodes were rated as mildly and somewhat depressed by 17 (8.3%) women, 6 (3%) were moderately, and 5 (2.5%) were very or severely depressed. At 1- and 8-weeks postpartum the women were asked whether they were taking antidepressant medications, when they started taking them, and if they were contemplating taking them in the near future. On both occasions, 96.1% and 91.6%, respectively, indicated they were not taking antidepressant medications. Whereas only three women were contemplating starting antidepressants at 1-week postpartum, twice as many were contemplating it at 8-weeks postpartum.

Table 4-3 *Mental Health History of the Participants*

Mental Health Condition[a]	Frequency (%) $N = 203$
Non-childbearing depression	42 (21.0)
▪ reported only this condition	23 (11.3)
▪ reported this *plus* history of other conditions (e.g., anxiety, PPD, depression in pregnancy, drug and alcohol addiction)	19 (9.3)
Depression during a previous pregnancy	12 (5.9)
▪ reported only this condition	2 (1.0)
▪ reported this *plus* history of other conditions (e.g., PPD and anxiety)	10 (4.9)
Postpartum Depression	27 (13.3)
▪ reported only this condition	12 (5.9)
▪ reported this *plus* history of other conditions	15 (7.4)
Anxiety	23 (11.3)
▪ reported only this condition	8 (3.9)
▪ reported this *plus* a history of other conditions	15 (7.7)
Drug Addiction	6 (3.0)
▪ reported only this condition	1 (0.5)
▪ reported this *plus* a history of other conditions	5 (2.5)
Alcoholism	3 (1.5)
▪ reported only this condition	0 (0.0)
▪ reported this *plus* a history of other conditions	3 (1.5)

No history of any of these conditions	124 (61.1)
Not sure	8 (3.9)
Other	6 (3.0)

[a] More than one response was permitted; totals exceed 100%.

Importance of Participants' Interpersonal Relationships

This study examined women's social resources, namely the quality of specific, close personal relationships (i.e., relationships with spouses/partners, mothers, mothers-in-law, and female friends with children). Women were asked if they currently had a relationship with the specific person(s) and how important the relationship was to them. Interestingly, although initial intentions were to include *importance of the relationship* as a control variable in the analysis of the impact of perceived social support or conflict within these relationships, it was evident that few women described these relationships as not very, or not at all important. Instead, it appears that they may have decided that an unimportant relationship was indeed *not* a relationship and thus they responded by denying the relationship existed at all.

Table 4-4 *Importance of Participants' Interpersonal Relationships (N = 203)*

Question	Frequency (%)
Currently have a spouse/partner	
Yes	201 (99.0)
No	2 (1.0)
Importance of relationship with spouse/partner	
Very important	191 (94.1)
Important	9 (4.4)
Not very important	1 (0.5)
Missing or unanswered	2 (1.0)
Currently have a relationship with mother	
Yes	191 (94.1)
No	12 (5.9)
Importance of relationship with mother	
Very important	138 (68.0)
Important	48 (23.6)

Not very important	5 (2.5)
Missing or unanswered	12 (5.9)
Currently have a relationship with mother-in-law	
Yes	174 (85.7)
No	28 (13.8)
Missing or unanswered	1 (0.5)
Importance of relationship with mother-in-law	
Very important	48 (23.6)
Important	97 (47.8)
Not very important	27 (13.3)
Not at all important	2 (1.0)
Missing or unanswered	29 (14.3)
Currently have a relationship with other female friends with children	
Yes	183 (90.1)
No	20 (9.9)
Importance of relationship with other female friends with children	
Very important	83 (40.9)
Important	86 (42.4)
Not very important	11 (5.4)
Not at all important	1 (0.5)
Missing or unanswered	22 (10.9)

General Religious/Spiritual Characteristics of the Participants

In addition to the key spirituality variables in the study model predicting DS8, data on some broad religious/spirituality characteristics such as religious affiliation, strength of religiousness, and prayer habits were collected as well as data more specific to the context of childbearing, for example, the extent to which the participants expected God's wisdom/guidance to help with parenting. Table 4-5 provides descriptive information provided by this sample about an aspect of postpartum women that is unknown to date.

Table 4-5 *Religious / Spiritual Characteristics of the Participants (N = 203)*

Item / Characteristic	Frequency (%)
Religious Affiliation	
Christian	116 (57.1)
Muslim	1 (.5)
Sikh	0.0
Jewish	0.0

Buddhist	0.0
Other	13 (6.4)
No religious affiliation	73 (36.0)
Missing or unanswered	0.0

Self-rated strength of religiousness

Very strongly religious	32 (15.8)
Religious	47 (23.2
Sometimes religious	36 (17.7)
Not very religious	42 (20.7)
Not at all religious	46 (22.7)
Missing or unanswered	0.0

Frequency of religious or spiritual practices

Never	64 (31.5)
A couple of times a year	36 (17.7)
Occasionally but not weekly	23 (11.3)
Once a week	9 (4.4)
Several times per week but not daily	22 (10.8)
Once a day	25 (12.3)
Twice a day	9 (4.4)
Three or more times a day	15 (7.4)
Missing or unanswered	0.0

Frequency of experiencing a powerful spiritual force that seemed outside of yourself

Very often	24 (11.8)
Often	25 (12.3)
Sometimes	40 (19.7)
Not very often	48 (23.6)
Never	66 (32.5)
Missing or unanswered	0.0

Feeling of closeness to God

Very close	30 (14.8)
Close	54 (26.6)
Sometimes close	63(31.0)
Not very close	29 (14.3)
Not at all close	23 (11.3)
Missing or unanswered	4 (2.0)

Frequency of prayer

Never	40 (19.7)
A couple of times a year	31 (15.3)
Occasionally, but not weekly	36 (17.7)
Once a week	1 (.5)
Several times per week but not daily	31 (15.3)
Once a day	23 (11.3)
Twice a day	15 (7.4)
Three or more times a day	25 (12.3)
Missing or unanswered	1 (.5)

Circumstances in which you pray
When I am stressed (family illness, work, etc.)

Yes	119 (58.6)
No	84 (41.4)

Only at church	
Yes	15 (7.4)
No	188 (92.6)
When I am feeling low	
Yes	81 (39.9)
No	122 (60.1)
Part of my daily routine	
Yes	67(33.0)
No	136 (67.0)
To talk to someone who cares	
Yes	67 (33.0)
No	136 (67.0)
Expectation of God's comfort / help during labour and delivery	
Very much	40 (19.7)
Expected	30 (14.8)
Somewhat expected	39 (19.2)
Did not expect	83 (40.9)
Missing or unanswered	11 (5.4)
Expectation of God's wisdom / guidance to help with parenting	
Very much	61 (30.0)
Expect	41 (20.2)
Somewhat expect	38 (18.7)
Do not expect	54 (26.6)
Missing or unanswered	9 (4.4)

From the table it is evident that the majority of women (57.1%) claimed that their religious affiliation was Christian, and thirty-nine percent of the sample viewed themselves as *religious* or *very strongly religious* thus outweighing the approximate 16% who stated they were *not at all religious*. The remaining approximately 38% fell into the middle-ground groups who saw themselves as *sometimes* or *not very* religious. A minority of the women, approximately 20%, stated they never prayed, but 33% prayed daily and to talk to someone who cared. A large majority of women, almost 70% had some expectation (or even higher expectations) of finding assistance with parenting through God's wisdom/guidance.

Responses to Open-Ended Spirituality Questions

Nineteen women chose to respond to the open-ended question that asked if there was anything they would like to say about their spirituality. Nine of the 19 women offered statements that identified their beliefs about God, Jesus Christ, prayer, forgiveness, and meaning in life. Participants' beliefs about God varied. One participant identified her god as powerful and non-personal in nature, "My God is the power of the universe from which my soul stems." Other participants identified God in more personal terms, for example, "I believe God is real and a personal God and that I have a personal relationship with Jesus Christ." Several women described their relationship with God in terms of the provisions associated with this relationship. These provisions included "help if we pray and ask for it," "abundant life," "forgiveness of sins," "guidance throughout life," "healing," "love," "gift of a child," "meeting all my needs," "taking exceptional care of me," "safety and health for my family," and "a plan and purpose for life."

A few of the participants discussed how their spirituality related to specific aspects of labour and delivery, parenting, and their experience of depressive symptoms. One woman interpreted her recurring vision of a galloping horse as a mystical assurance from Jesus of "health, strength, power, and speed" for her labour and delivery. She stated, "This was an invaluable encouragement to me." Several women linked their spirituality to their parenting and family needs. For them, God was the source of love, the one who filled her with love for her family, and the one who provided safety and health for her family. Her enhanced coping ability was attributed to God by one woman who stated, "Without my relationship with the Lord, coping with much of postpartum and parenting would seem almost impossible at times." An experience of postpartum depression stimulated one woman to seek help from God and gave another woman hope within the experience. The former stated, "It was my fear, anxiety, and mild depression with my first child that lead me to believe in God. Focusing on my faith in God

helped calm uncertainties I was experiencing. Now with my second child I feel

secure, confident, and truly blessed." The latter stated, "It was my relationship with God through

Jesus that kept me sane while going through the worst of my postpartum depression. He kept me

from giving up and gave me hope." In summary, although these qualitative data were collected

from only 10% of the sample they enhance the study findings with respect to the salience of

spirituality to childbearing women and how spirituality might be linked to sense of personhood,

motherhood and depressive symptoms.

Descriptive Statistics for Main Study Variables

The key study variables described in this section are the social resources, RSC and RSSS,

the spiritual resources consisting of the eight transpersonal variables, and the inner-self

resources, GPSS and self-esteem, the two intrapersonal variables. DS1 and DS8 are also

described here. The summary statistics used to describe the key variables include those that

describe the whole sample with additional statistics used to describe specific subgroups of the

whole sample. For all cases in the sample, the mean score of each key variable is reported as the

measure of central tendency. The range and standard deviations for each variable are reported to

describe the variability of the scores for all cases in the sample. Skewness and kurtosis statistics

are presented to describe the symmetry and shape of the distributions with reference to the

normal curve. In addition, summary statistics are reported for two specific subgroups, (a) women

with high, moderate and low relationship conflict, and (b) women categorized by strength of

religiousness. The additional summary statistics for the later two subgroups of women are

included to provide information about the key study variables that enhance understanding of the

nature of the variables and their interrelationships.

Social Resource Variables

Descriptive statistics for the social resource variables are presented in Table 4-6. The

smaller N for conflict with mothers-in-law and female friends with children than the N for

support from those relationships, though of minor consequence, is probably best explained by

the comparative difficulty in completing the two scales. The conflict scales were 5 items in

length and the support scales comprised 30 items.

Table 4-6 *Social Resources of the Participants: Summary Statistics*

Characteristic	N	Range (Min-Max)	Mean	SD	Skew (Std. Error)	Kurtosis (Std. Error)
Social Resource: RSC						
Conflict with spouses/partners	200	16 (0-16)	5.28	3.23	.92 (.17)	.72 (.34)
Conflict with mothers	191	20 (0-20)	6.83	4.60	.72 (.18)	.21 (.35)
Conflict with mothers-in-law	173	18 (0-18)	5.89	4.29	.54 (.19)	-.26 (.37)
Conflict with female friends with children	183	13 (0-13)	3.96	3.07	.39 (.18)	-.38 (.36)
Social Resource: RSSS						
Support from spouses/partners	201	90 (30-120)	98.59	17.76	-.97 (.17)	.66 (.34)
Support from mothers	190	120 (0-120)	84.78	24.77	-1.06 (.18)	1.42 (.35)
Support from mothers-in-law	171	120 (0-120)	65.18	25.90	-.34 (.19)	-.31 (.37)
Support from female friends with children	176	115 (5-120)	79.95	20.11	-.51 (.18)	.87 (.36)

It is interesting to note that the mean conflict score for mothers ($M = 6.83$) is higher than

that obtained for both mothers-in-law ($M = 5.89$) and spouses/partners ($M = 5.28$). The analyses

planned for the study, that is correlation and regression analyses to examine the relationship

between conflict and social support in the theoretical model would not illuminate any subtle

distinguishing features of this association across the four interpersonal relationships. Therefore,

the relationship between RSC and RSSS was further examined by creating subgroups of women

with high, moderate and low levels of conflict. Although the effect of conflict on perceived

supportiveness within relationships has been studied,[57] such quantitative comparisons across

sources of conflict and support have not. Figure 4.1 illustrates the results of these

additional analyses. It is evident that although there is consistent negative relationship between

level of conflict and level of supportiveness within three of the four interpersonal relationships,

the pattern is different for female friends with children. The mean level of perceived

supportiveness of female friends dropped from 86.6 to 71.2 under the low and moderate conflict

conditions, respectively, and then rose slightly to 74.7 under the high conflict condition.

■ Spouses ▥ Mothers ⊠ Mothers-in-Law ◨ Female Friends with Children
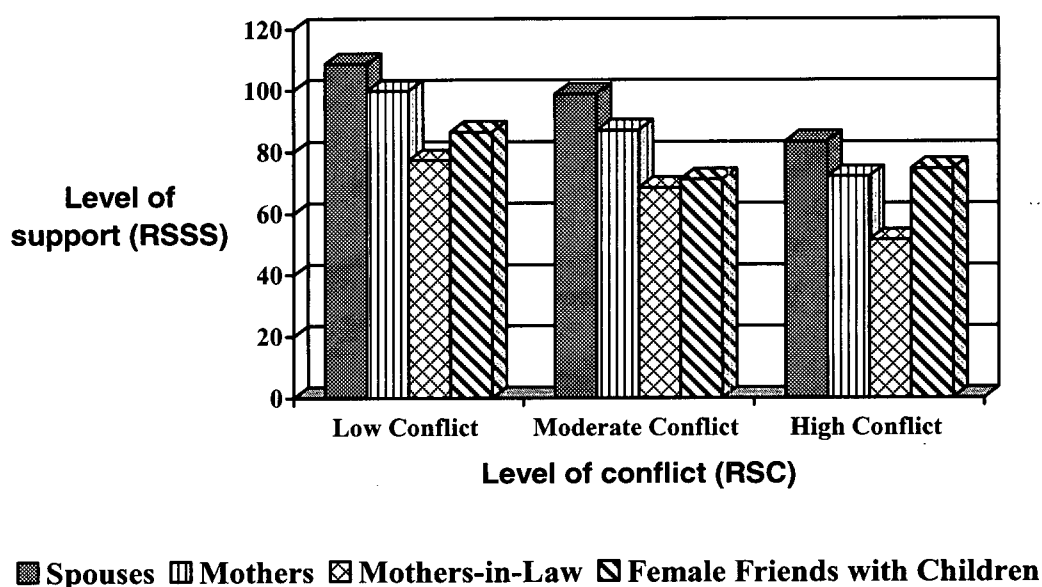
Figure 4.1. Mean social support by mean conflict within participants' four interpersonal

relationships. Cell sizes for low, moderate and high levels of conflict, respectively, are: $n = 89$,

52, and 59 for spouses; $n = 70, 31$, and 89 for mothers; $n = 70, 31$, and 70 for mothers-in-law;

and $n = 92, 49$, and 35 for female friends with children.

Spiritual Resource Variables

Descriptive statistics for the spiritual resource variables are presented in Table 4-7. The N

= 203 for these variables reflects the systematic recoding of all missing values as zero rather than

missing. This recoding was described along with other details of the

operationalization of these variables. Thus, for example, participants who did not respond to the

question, *I know that God forgives me* were given the same value of zero as those who responded

never. The data revealed that 11 women (5.4%) responded *never* and 26 (12.8%) did not respond

to this question. These 37 women (18.2%) were, therefore, assigned an identical value for their

response.

Table 4-7 *Spiritual Resources of the Participants: Summary Statistics*

Characteristic	N	Range (Min-Max)	Mean	SD	Skew (Std. Error)	Kurtosis (Std. Error)
Relationship-specific support: God	203	18 (0-18)	9.05	6.31	-.17 (.17)	-1.33 (.34)
Core spiritual experiences	203	51 (0-51)	19.55	13.00	.37 (.17)	-.97 (.34)
Religious support/coping	203	11 (0-11)	4.6	4.13	.27 (.17)	-1.48 (.34)
Prayer	203	17 (0-17)	7.21	5.53	.28 (.17)	-1.15 (.34)
Forgive self	203	4 (0-4)	2.64	1.05	-.68 (.17)	-.5 (.34)
Forgive others	203	4 (0-4)	2.57	.96	-.92 (.17)	.77 (.34)
Know God forgives me	203	4 (0-4)	2.86	1.57	-.98 (.17)	-.72 (.34)
Meaning	203	6 (0-6)	3.62	1.68	-.62 (.17)	-.18 (.34)

Additional summary statistics were calculated to compare the means of three spirituality

variables—the forgiveness variables—that were significant correlates or predictors of the key

study variables. The nursing literature on spirituality has attempted to make distinctions between

religiousness and spirituality in efforts to clarify these concepts.[199] This additional analysis was

expected to reveal if there are consistent relationships between a key spirituality variable in the

study, forgiveness, and religiousness. It was anticipated that examination of such patterns of

relationship would contribute to conceptual clarity. Thus, mean scores for the three

forgiveness variables were compared by strength of religiousness.

Figures 4.2 through 4.4 display simple error bar graphs of the 95% confidence intervals

for the means for forgiveness of self, others, and knowing God forgives, respectively. Whereas

higher means for forgiveness of others and knowing God forgives are related in a linear pattern

to stronger self-rated religiousness, forgiveness of oneself does not follow the same pattern. The

not at all religious group and the *very strongly* religious group have similar and higher means for

forgiveness of self than the two moderately religious groups—*not very* and *sometimes*.

(Interestingly, for the remaining five spirituality variables higher mean scores were associated

with stronger religiousness in a similar steep linear pattern as forgiveness of others and knowing

God forgives one). These results indicate that the *forgiveness of self* variable has a distinctive

nature, at least with respect to its relationship with religiousness, and that the remaining seven

spirituality variables have a similar relationship to religiousness.

Figure 4.2

Forgiveness of self x religiousness

strength of religiousness

Figure 4.3

Forgiveness of others x religiousness

Figure 4.4
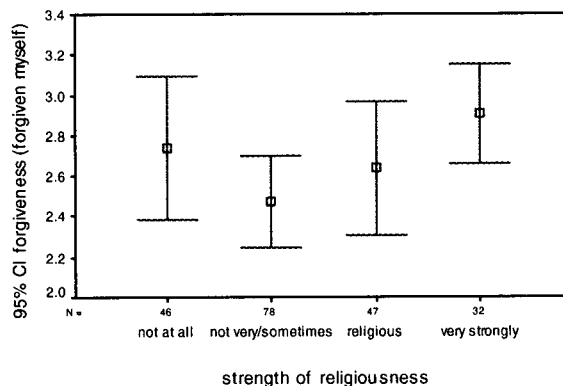
Forgiveness by God x religiousness
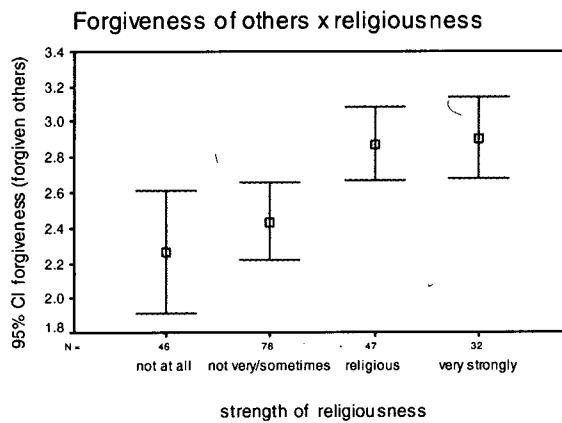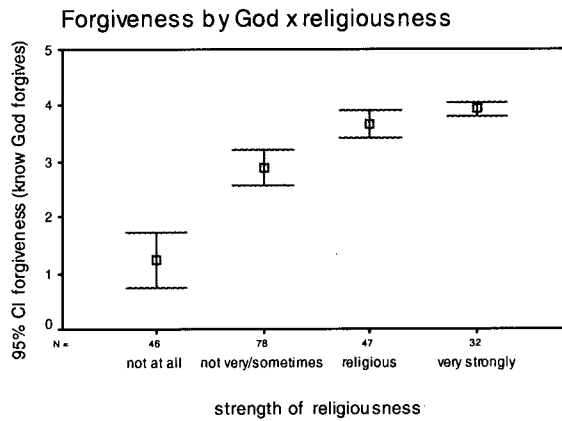
Figures 4.2 through 4.4. Graphs for forgiveness of self, others and knowing God forgives, respectively, by strength of religiousness. Points represent the means for forgiveness of self by the four levels of religiousness; vertical lines depict the 95% confidence interval for the means. The association between forgiveness of self and strength of religiousness differs from the other two forgiveness variables suggesting it is unique in nature.

Inner-Self Resource Variables

Table 4-8 presents descriptive statistics for all cases with respect to the two inner self-resources, GPSS and self-esteem.

Table 4-8 *Inner-Self Resources of the Participants: Summary Statistics*

Characteristic	N	Range (Min-Max)	Mean	SD	Skew (Std. Error)	Kurtosis (Std. Error)
Inner-Self Resource:						
■ GPSS	203	40 (32-72)	59.2	8.9	-.71 (.17)	-.27 (.34)
Inner-Self Resource:						
■ Self-Esteem	201	25 (15-40)	32.0	4.7	-.50 (.17)	.74 (.34)

The distributions of the scores for each of the independent variables in the above three tables departed from normal symmetry and shape as indicated by the skewness and kurtosis statistics, none of which were near zero as in normal distributions. If one uses the general rule that values of 2 standard errors or more of skewness or kurtosis (regardless of sign) indicate that distributions are significantly skewed or significantly different from the mesokurtic shape, then only four of these variables are not significantly skewed (namely, support from mothers-in-law, relationship-specific support from God, religious support / coping, and prayer). However, this approach in determining the significance of skewness is sample size dependent. In the case of the remaining variables the absolute skewness value remains below 1.0, suggesting that the assumption of normality is not grossly violated because the value does not deviate substantially from zero. Consequently, it was concluded that the distributions were not sufficiently non-normal to warrant transformation.

Depressive Symptoms at 1- and 8-Weeks Postpartum

Summary statistics for depressive symptoms at 1-and 8-weeks postpartum are presented in Table 4-9. As with the independent variables, the symmetry and shape of the distribution of scores for depressive symptoms at both time intervals did not depart enough from normal to warrant transformation. Comparisons of the two sets of scores reveal a higher mean score for depressive symptoms at 1-week postpartum. Evaluation of the pattern of change from 1- to 8-

weeks postpartum by analyzing the frequencies of a newly created variable (EPDS

total at 1-week minus EPDS total at 8-weeks postpartum) showed that 68.5% of $N = 200$ valid

cases, or 112 women experienced decreased scores compared to 63 (31.5%) whose scores

increased over the approximately 7 week period. Twenty-five or 12.3% of the women's scores

remained the same over the two intervals.

Table 4-9 *Depressive Symptoms at 1-and 8-Weeks Postpartum: Summary Statistics*

Characteristic	N	Range (Min-Max)	Mean	SD	Skew (Std. Error)	Kurtosis (Std. Error)
Depressive Symptoms at 1-Week	201	24 (0-24)	7.0	4.9	.71 (.17)	.15 (.34)
Depressive Symptoms at 8-Weeks	202	20 (0-20)	5.8	4.4	.89 (.17)	.41 (.34)

In brief, summary statistics of the key study variables confirmed that the distribution of

scores for all cases did not deviate substantially from a normal distribution and that there were

systematic and interesting inter-relationships among the independent variables. These inter-

relationships are further examined in the multivariate analyses of the theoretical model of PPD.

Multivariate Analyses: Estimation of the Theoretical Model

The results of the path analysis that was conducted with the study data are reported in the

step by step process recommended by Munro.[193] A report of the verification of the statistical

assumptions that must be considered with path analysis was the first step. The first set of

assumptions is related to multiple regression analysis (MRA), specifically, the assumptions of

independence, normality, homoscedasticity, and linearity.[200] The design requirement of MRA

regarding the minimum sample size (discussed earlier) was also confirmed. Confirmation of the

second set of four assumptions unique to path analysis, and the calculations of direct

and indirect effects of variables in the path model, are reported. These assumptions are:

(a) When two independent variables are correlated with one another and diagrammed as having

no other variables influencing them, their relationship can not be analyzed, and it is assumed that

the magnitude of this relationship is represented by the observed correlation coefficient.

(b) It is assumed that the flow of causation in the model is unidirectional.

(c) It is assumed that the variables are measured on an interval scale, although the analysis is not

restricted to the continuous variable case.

(d) All variables in the model are measured without error.[193, p. 360]

Results of the second step in the analyses, the value of the path coefficients that were

calculated by the four regression analyses, are reported. Path coefficients were examined for

statistical significance, non-significant paths were deleted, and each regression was re-run with

the remaining significant variables in the third step. In the fourth step, the resulting trimmed

models were used for the final calculations of direct, indirect, and total effects and the calculated

sums all these effects are reported. These sums were compared with the observed correlations

between the respective independent variables and the dependent variable, and comments and

conclusions are offered as to how well "specified" the study model was (i.e., how well the data

supported the model as it was proposed). In the fifth and final step the results of the path analysis

were interpreted with respect to the study hypotheses. Those hypotheses that were supported,

and those that were not, are reported.

Step One: Assumption Verification

The first set of assumptions was examined with respect to the study data. The

independence of the scores was confirmed by examination of the study procedures. All

questionnaires were mailed to individual participants who completed and returned them

independently of the other study participants. The remaining three assumptions of normality, homoscedasticity, and linearity were met.

Of the second set of assumptions related specifically to path analysis, the first assumption applies to those variables in the model that have no other variables influencing them. The eight spirituality variables are exogenous and although correlational paths do not appear in the theoretical model, these relationships are provided in the correlation matrix of all the study variables in Tables 4-10 and 4-11. It is evident from Table 4-10 that a significant correlation exists between only two spiritual resource variables and the social resource variables. Specifically, conflict with spouses/partners, mothers and mothers-in-law is significantly negatively correlated with forgiveness of self in other words, more conflict within these relationships are associated with less self-forgiveness. Forgiveness of self is also significantly correlated with scores of supportiveness from spouses / partners, mothers-in-law, and female friends with children, but in the opposite direction. Thus higher support scores within these relationships are associated with higher scores for forgiving self. A similar pattern of significant correlations exists for the relationship between forgiving others and interpersonal conflict and supportiveness. Intercorrelations among the spirituality variables are all large in magnitude and statistically significant with one exception being the *forgiveness of self* variable. As can be seen in Table 4.11, forgiveness of self is weakly positively correlated with relationship-specific support from God and core spiritual experiences, not significantly correlated with religious support / coping and prayer, but most significantly positively correlated with forgiving others, knowing God forgives and meaning.

Annual household income and DS1 are also exogenous variables and correlations between these two variables and other independent variables in the model are interesting and deserve mention. Annual household income is significantly correlated to DS1.The direction of

this correlation is as expected. Only one significant correlation exists between DS1

and the spirituality variables: More depressive symptoms in the first week postpartum are

significantly associated with less self-forgiveness. In summary, the variability of the three

exogenous variables in the theoretical model is assumed to be determined by factors outside the

model but the correlations between them and the other variables in the model are both interesting

and informative.

Table 4-10 *Correlations among Study Variables: Part I*

Variable	Spouses/Partner		Mothers		Mothers-in-law		Female Friends with Children	
	1	2	1	2	1	2	1	2
1. *Relationship-specific conflict*	--	--	--	--	--	--	--	--
2. *Relationship-specific social support*	-.69**	--	-.66**	--	-.53**	--	-.29**	--
3. *Relationship-specific support: God*	.04	-.01	-.07	.06	.02	.07	.10	.00
4. *Core Spiritual Experiences*	.05	.02	-.02	.01	.02	.10	.13	.03
5. *Religious Support/ Coping*	.07	.01	-.04	.04	-.00	.07	.12	-.00
6. *Prayer*	.10	-.03	-.06	.06	.03	.07	.13	-.05
7. *Forgive Self*	-.27**	.32**	-.17*	.13	-.25**	.23**	-.12	.26**
8. *Forgive others*	-.15*	.19**	-.10	.12	-.17*	.18*	-.05	.20**
9 *Know God Forgives Me*	-.03	.06	-.04	.00	-.02	.06	.13	-.00
10. *Meaning*	.11	.06	-.06	.03	.02	.07	.06	.07
11. *Annual Household Income*	-.06	.05	-.10	-.01	-.08	.03	-.11	.03
12. *Global Perceived Social Support*	-.40**	.50**	-.31**	.36**	-.12	.28**	-.21**	.43**
13. *Self-Esteem*	-.48**	.45**	-20**	.17*	-.05	.06	-.17*	.26**
14. *Depressive Symptoms at 1-Week Postpartum (DS1)*	.32**	-.33**	.27**	-.15*	.11	-.10	.30**	-.23**
15. *Depression Symptoms at 8-Wekks Postpartum (DS8)*	.36**	-.28**	.23**	-.13	.12	-.17*	.28**	-.26**

** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed)

Table 4-11 Correlations among Study Variables: Part II

	3	4	5	6	7	8	9	10	11	12	13	14	15
3. Relationship-specific support: God	--												
4. Core Spiritual Experiences	.82**	--											
5. Religious Support/Coping	.84**	.78**	--										
6. Prayer	.86**	.81**	.83**	--									
7. Forgive Self	.20*	.17*	.10	.06	--								
8. Forgive others	.34**	.36**	.33**	.31**	.55**	--							
9. Know God Forgives Me	.72**	.59**	.61**	.58**	.34**	.38**	--						
10. Meaning	.68**	.69**	.60**	.61**	.22**	.30**	.40**	--					
11. Annual Household Income	-.02	-.07	.02	-.02	.07	.04	-.00	.02	--				
12. Global Perceived Social Support	.05	.07	.09	.03	.25**	.14*	.06	.11	.13	--			
13. Self-Esteem	-.00	.01	-.07	-.09	.32**	.03	.06	.12	.27**	.48**	--		
14. Depressive Symptoms at 1-Week Postpartum (DS1)	.06	.10	-.01	.03	-.25**	-.01	-.00	-.07	-.28**	-.43**	-.45**	--	
15. Depressive Symptoms at 8-Weeks Postpartum (DS8)	-.02	-.02	-.04	-.02	-.35**	-.12	-.16*	-.04	-.25**	-.41**	-.50**	.54**	--

** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

The remaining three of Munro's four assumptions related specifically to path analysis are easily addressed. Inspection of the theoretical model for the study confirms that all causal paths flow in one direction. All variables were measured with Likert-type scales, and are thus classified as interval though not continuous. Lastly, examination of the assumption of measurement error concludes the considerations required as a first step in the multivariate analyses. All scales used in the model possessed high Cronbach's alpha levels as was reported in the methods section of the thesis; most of the scales also possessed well established validity.

Step Two: Calculation of Path Coefficients

It was determined that five regression analyses were needed because there are five endogenous variables in the study model. Endogenous variables are variables that are specified as being influenced by other variables in the model, thus, in the study model RSC, RSSS, GPSS, self-esteem and DS8 are endogenous and were regressed onto the variables postulated to influence them. The coefficient for the path between DS1 and RSC is equal to the value of the correlation between these variables. Tables 4-12 through 4-16 display the results of the five multiple linear regressions for the endogenous variables.

Table 4-12 *Linear Regression Analyses: Influence of DS1 on RSC*

Model	Predictor Variable	b	Beta	Intercept	R^2	Adjusted R^2
Model 1: RSC Spouses / Partners	DS1	.21***	.32***	3.8	.11	.10
Model 2: RSC Mothers	DS1	.25***	.27***	5.0	.07	.07
Model 3: RSC: Mothers-in-law	DS1	.10	.11	5.2	.01	.01
Model 4: RSC: Female friends with children	DS1	.19***	.30***	2.7	.09	.09

* Significant at alpha ≤ .05 ** Significant at alpha ≤ .01 *** Significant at alpha ≤ .001

Table 4-13 *Linear Regression Analyses: Influence of RSC and DS1 on RSSS*

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Model 1 RSSS Spouses / Partners	RSC	-3.57***	-.65***	120.5	.49	.48
	DS1	-.41*	-.12*			
Model 2 RSSS Mothers	RSC	-3.67***	-.67***	108.3	.44	.43
	DS1	.20	.04			
Model 3 RSSS: Mothers-in-law	RSC	-3.12***	-.52***	86.1	.28	.27
	DS1	-.29	-.05			
Model 4: RSSS: Female friends with children	RSC	-1.60***	-.24***	91.1	.11	.10
	DS1	-.65*	-.16*			

* Significant at alpha ≤ .05 ** Significant at alpha ≤ .01 *** Significant at alpha ≤ .001

The percentage of the variability in the perceived supportiveness of the four interpersonal relationships that was predicted by RSC and DS1 ranges from highs of 48% and 43% for spouses/partners and mothers to 28% and 10% for mothers-in-law and female friends with children, respectively. Conflict exerted a considerably stronger influence than DS1, which was much weaker in predicting perceived supportiveness in the spouse/partner and female friends' with children models. DS1 did not significantly predict RSSS for mothers' and mothers'-in-law. RSC's strongest effects on RSSS were observed in regard to mothers and spouses/partners (b = -3.67 and -3.57, respectively). Although conflict with female friends with children was significantly related to the informants' perceptions of their supportiveness, it had a much smaller impact than the effects of conflict on perceptions of support from mothers and spouses/partners.

Table 4-14 *Linear Regression Analyses: Influence of Social and Spiritual Resources, and DS1 on GPSS*

Model	Predictor Variable(s)	b	Beta	Intercept	R²	Adjusted R²
Model 1:	*RSC*	-.19	-.07	43.9	.35	.31
GPSS: Spouses / Partners	*RSSS*	.17***	.34***			
	RSS: God	-.05	-.04			
	Core Spiritual Experiences	.02	.03			
	Religious Support / Coping	.21	.10			
	Prayer	-.09	-.06			
	Forgive Self	.32	.04			
	Forgive Others	.13	.01			
	Know God Forgives Me	-.46	-.08			
	Meaning	.71	.13			
	DS1	-.52***	-.29***			
Model 2:	*RSC*	.03	.01	51.2	.30	.26
	RSSS	.11***	.31***			
GPSS: Mothers	*RSS: God*	-.11	-.08			
	Core Spiritual Experiences	.12	.18			
	Religious Support / Coping	.22	.11			
	Prayer	-.27	-.17			
	Forgive Self	.91	.11			
	Forgive Others	-.09	-.01			
	Know God Forgives Me	-.45	-.08			
	Meaning	.54	.10			
	DS1	-.63***	-.35***			
Model 3:	*RSC*	.16	.08	54.6	.26	.20
	RSSS	.09**	.24**			
GPSS: Mothers-in-law	*RSS: God*	.12	.08			
	Core Spiritual Experiences	.01	.01			
	Religious Support / Coping	.26	.12			
	Prayer	-.29	-.17			
	Forgive Self	.82	.10			
	Forgive Others	.14	.01			
	Know God Forgives	-.65	-.11			

Model	Predictor Variable(s)	b	Beta	Intercept	R²	Adjusted R²
	Me					
	Meaning	.60	.11			
	DS1	-.70***	-.37***			
Model 4:	*RSC*	-.06	-.02	50.9	.36	.32
GPSS:	*RSSS*	.14***	.33***			
Female	*RSS: God*	-.11	-.08			
Friends	*Core Spiritual*	-.00	-.00			
with	*Experiences*					
children	*Religious Support /*	.44	.21			
	Coping					
	Prayer	.00	.00			
	Forgive Self	.90	.11			
	Forgive Others	-.29	-.03			
	Know God Forgives	-.62	-.11			
	Me					
	Meaning	.25	.05			
	DS1	-.62***	-.35***			

* Significant at alpha ≤ .05; ** Significant at alpha ≤ .01; ***Significant at alpha ≤ .001

Based on the results in Table 4-14, an average of one third of the variability in GPSS was significantly predicted by RSSS and DS1 in the spouse/partner and female friends with children models, and only one quarter and one fifth of the variability in the mothers' and mothers'-in-law models, respectively. The magnitude of the effect of perceived supportiveness of spouses/partners, other women with children, mothers, and mothers-in-law on GPSS decreased correspondingly within these relationships. The influence of DS1 on GPSS was highly significant across all models.

Table 4-15 *Linear Regression Analyses: Influence of Social and Spiritual Resources, GPSS, and DS1 on Self-Esteem*

Model	Predictor Variable(s)	b	Beta	Intercept	R²	Adjusted R²
Model 1:	*RSC*	-.47***	-.34***	26.6	.49	.45
Self-	*RSSS*	-.00	-.01			
Esteem:	*GPSS*	.10**	.18**			
Spouses /						
Partners	*RSS: God*	-.02	-.03			

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
	Core Spiritual Experiences	-.02	-.03			
	Religious Support / Coping	-.28*	-.25*			
	Prayer	.01	.02			
	Forgive Self	.92**	.20**			
	Forgive Others	-.94**	-.19**			
	Know God Forgives Me	.11	.04			
	Meaning	.56*	.20*			
	DSI	-.21**	-.22**			
	Annual Household Income	.62**	.17**			
Model 2:	*RSC*	-.06	-.06	21.5	.38	.33
	RSSS	-.00	-.00			
Self-Esteem:	*GPSS*	.14**	.26**			
	RSS: God	-.00	-.01			
Mothers	*Core Spiritual Experiences*	.08	.22			
	Religious Support / Coping	-.32*	-.29*			
	Prayer	.04	.05			
	Forgive Self	.96**	.22**			
	Forgive Others	-.61**	-.13			
	Know God Forgives Me	.11	.04			
	Meaning	.37	.14			
	DSI	-.23**	-.25**			
	Annual Household Income	.63**	.18**			
Model 3:	*RSC*	-.01	-.01	20.0	.40	.34
	RSSS	-.02	-.01			
Self-Esteem:	*GPSS*	.17***	.34***			
	RSS: God	-.08	-.11			
Mothers-in-law	*Core Spiritual Experiences*	.09*	.26*			
	Religious Support / Coping	-.38*	-.35*			
	Prayer	.05	.06			
	Forgive Self	.99*	.22*			
	Forgive Others	-.93*	-.19*			
	Know God Forgives	.39	.13			

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
	Meaning	.31	.11			
	DS1	-.22**	-.23**			
	Annual Household Income	.76**	.21**			
Model 4:	*RSC*	.06	.04	16.8	.41	.36
	RSSS	.01	.04			
Self-Esteem:	*GPSS*	.19***	.34***			
	RSS: God	-.04	-.06			
Female Friends	*Core Spiritual Experiences*	.04	.11			
with children	*Religious Support / Coping*	-.38*	-.34*			
	Prayer	.04	.05			
	Forgive Self	.89*	.19*			
	Forgive Others	-.74	-.14			
	Know God Forgives Me	.27	.09			
	Meaning	.64*	.23*			
	DS1	-.22**	-.23**			
	Annual Household Income	.66**	.18**			

* Significant at alpha ≤ .05; ** Significant at alpha ≤ .01; *** Significant at alpha ≤ .001

From Table 4-15 it is apparent that the spouses'/partners' model explains the greatest proportion, that is, nearly one half of the variability in women's self-esteem. Of the four relationships, only perceived conflict with spouses/partners is significantly predictive of self-esteem whereas GPSS is significantly predictive of self-esteem across all of them. Two spirituality variables have a statistically significant influence on self-esteem in all four models, religious support/coping and forgiveness of self. Both DS1 and annual household income have a significant impact on the women's self-esteem in all four models.

Table 4-16 *Linear Regression Analyses: Influence of Social, Spiritual, Inner-Self Resources, and DS1 on DS8*

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Model 1:	RSC	.25*	.19*	11.4	.44	.39
Depressive Symptoms at 8-Weeks:	RSSS	.05*	.19*			
	GPSS	-.07*	-.14*			
Spouses / Partners	Self-Esteem	-.21**	-.22**			
	RSS: God	.20	.28			
	Core Spiritual Experiences	-.02	-.06			
	Religious Support / Coping	-.03	-.03			
	Prayer	-.60	-.14			
	Forgive Self	-.60	-.14			
	Forgive Others	.16	.03			
	Know God Forgives Me	-.67**	-.24**			
	Meaning	.10	.04			
	DS1	.29***	.32***			
	Annual Household Income	-.25	-.07			
Model 2:	RSC	.12	.13	13.0	.40	.35
	RSSS	.01	.06			
Depressive Symptoms at 8-Weeks:	GPSS	-.04	-.08			
	Self-Esteem	-.21**	-.23**			
	RSS: God	.12	.19			
Mothers	Core Spiritual Experiences	-.06	-.18			
	Religious Support / Coping	-.02	-.02			
	Prayer	-.05	-.07			
	Forgive Self	-.56	-.14			
	Forgive Others	.23	.05			
	Know God Forgives Me	-.52*	-.20*			
	Meaning	.18	.07			
	DS1	.27***	.31***			
	Annual Household Income	-.16	-.05			

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Model 3:	*RSC*	-.07	-.01	16.4	.42	.37
	RSSS	-.09	-.05			
Depressive	*GPSS*	-.04	-.09			
Symptoms						
at 8-Weeks	*Self-Esteem*	-.25**	-.26**			
	RSS: God	.20	.29			
Mothers-in-	*Core Spiritual*	.01	.02			
law	*Experiences*					
	Religious Support /	-.01	-.01			
	Coping					
	Prayer	-.11	-.14			
	Forgive Self	-.22	-.05			
	Forgive Others	-.08	-.02			
	Know God Forgives	-.87**	-.30**			
	Me					
	Meaning	.10	.04			
	DS1	.34***	.37***			
	Annual Household	-.08	-.02			
	Income					
Model 4:	*RSC*	.21*	.15*	18.7	.49	.44
	RSSS	-.00	-.01			
Depressive	*GPSS*	-.07	-.13			
Symptoms						
at 8-Weeks:	*Self-Esteem*	-.26**	-.27**			
	RSS: God	.17	.24			
Female	*Core Spiritual*	-.04	-.12			
Friends	*Experiences*					
with	*Religious Support /*	-.04	-.04			
children	*Coping*					
	Prayer	-.05	-.06			
	Forgive Self	-.40	-.09			
	Forgive Others	.04	.01			
	Know God Forgives	-.76**	-.26**			
	Me					
	Meaning	.21	.08			
	DS1	.26***	.29***			
	Annual Household	-.32	-.09			
	Income					

* Significant at alpha $\leq$ .05; ** Significant at alpha $\leq$ .01; *** Significant at alpha $\leq$ .001

The results displayed in Table 4-16 can be summarized by first highlighting the

significant effects on DS8 of perceived conflict with spouses/partners and female friends with

children. In contrast, conflict with mothers and mothers-in-law is not significantly predictive of

DS8. Self-esteem had a significant influence on DS8 that was consistent across all four models but was smaller in magnitude than the impact of DS1 across all models. Of the spirituality variables, only *knowing that God forgives me* was significantly influential across all four models.

Step Three: Regression Analysis of Trimmed Models

As previously indicated, minimum significance levels were established at alpha $\leq .05$. In each of the five regressions, all paths with coefficients that did not meet the minimum significance level were deleted and regressions were re-run with the remaining paths. In the first regression, namely regression of RSC on DS1 in the mothers'-in-law model was dropped in the second round because DS1 did not have a significant impact on conflict within this relationship. In the second regression, that of RSSS on RSC and DS1, both predictors were statistically significant in the spouses'/partners' and female friends' with children models. However, DS1 was not significantly predictive of supportiveness within the mothers' and mothers'-in-law relationships and thus in the mothers' and mothers'-in-law models, RSC was the single predictor of RSSS (see Tables 4-17 and 4-18 for these results). Results of the re-analysis of the remaining three models are presented in Tables 4-19 through 4-21. A summary of the significant results in these tables is offered only after the presentation of the five tables.

Table 4-17 *Trimmed Models of the Influence of DS1 on RSC*

Model	Predictor Variable	b	Beta	Intercept	R^2	Adjusted R^2
Model 1: RSC Spouses / Partners	*DS1*	.21***	.32***	3.8	.11	.10
Model 2: RSC Mothers	*DS1*	.25***	.27***	5.0	.07	.07
Model 3: RSC: Mothers-in-	*DS1*	.10	.11	5.2	.01	.01

Model	Predictor Variable	b	Beta	Intercept	R^2	Adjusted R^2
law						
Model 4: RSC: Female friends with children	*DS1*	.19***	.30***	2.7	.09	.09

* Significant at alpha ≤ .05; ** Significant at alpha ≤ .01; *** Significant at alpha ≤ .001

Table 4-18 *Trimmed Models of the Influence of RSC and DS1 on RSSS*

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Model 1 RSSS Spouses / Partners	*RSC*	-3.57***	-.65***	120.5	.49	.48
	DS1	-.41*	-.12*			
Model 2 RSSS Mothers	*RSC*	-3.53***	-.66***	108.9	.443	.43
Model 3 RSSS: Mothers-in-law	*RSC*	-3.20***	-.53***	84.3	.28	.28
Model 4: RSSS: Female friends with children	*RSC*	-1.60***	-.24***	91.1	.11	.10
	DS1	-.65*	-.16*			

* Significant at alpha ≤ .05; ** Significant at alpha ≤ .01; *** Significant at alpha ≤ .001

Table 4-19 *Trimmed Models of the Influence of Social and Spiritual Resources and DS1 on GPSS*

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Model 1: GPSS: Spouses / Partners	*RSSS*	.20***	.40***	43.0	.25	.25
	DS1	-.53***	-.30***			
Model 2: GPSS: Mothers	*RSSS*	.11***	.30***	55.1	.26	.26
	DS1	-.67***	-.37***			

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Model 3:						
	RSSS	.08**	.23**	59.5	.23	.23
GPSS: Mothers-in-law	DSI	-.74***	-.39***			
Model 4:						
	RSSS	.15***	.35***	52.2	.33	.33
GPSS: Female Friends with children	DSI	-.68***	-.38***			

    * Significant at alpha   .05; ** Significant at alpha   .01; *** Significant at alpha   .001

Table 4-20 *Trimmed Models of the Influence Social and Spiritual Resources, GPSS, and DSI on Self-Esteem*

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Model 1:						
	RSC	-.47***	-.34***	26.6	.48	.46
Self-Esteem:	GPSS	.09**	.18**			
Spouses / Partners	Religious Support /Coping	-.19*	-.17*			
	Forgive Self	.95**	.21**			
	Forgive Others	-.92**	-.18**			
	Meaning	.68**	.25**			
	DSI	-.20**	-.21**			
	Annual Household Income	.59**	.16**			
Model 2:	GPSS	.16**	.29**	20.6	.36	.34
Self-Esteem: Mothers	Forgive Self	.94**	.21**			
	DSI	-.24**	-.25**			
	Annual Household Income	.59**	.17**			
	GPSS	.16***	.29***	20.8	.39	.36
Model 3:						
Self-Esteem:	Core Spiritual Experiences	.08*	.22*			

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Mothers-in-Law	*Religious Support / Coping*	-.26*	-.24*			
	Forgive Self	1.18***	.26***			
	Forgive Others	-.74*	-.15*			
	DS1	-.24***	-.25***			
	Annual Household Income	.66**	.18**			
Model 4:	*GPSS*	.20***	.38***	20.1	.38	.36
Self-Esteem: Female Friends with Children	*Religious Support / Coping*	-.23*	-.21*			
	Forgive Self	.93**	.21**			
	Meaning	.64*	.23*			
	DS1	-.27***	-.28***			
	Annual Household Income	.77**	.22**			

* Significant at alpha   .05; ** Significant at alpha   .01; *** Significant at alpha   .001

Table 4-21 *Trimmed Models of the Influence of Social, Spiritual, Inner-Self Resources and DS1 on DS8*

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Model 1:	RSC	.23*	.18*	11.6	.41	.39
Depressive Symptoms at 8-Weeks:	*Self-Esteem*	-.24***	-.26***			
	Know God Forgives Me	-.48**	-.16**			
Spouses / Partners	*DS1*	.30***	.34***			
Model 2:	*Self-Esteem*	-.30***	-.33***	14.2	.38	.37
Depressive Symptoms at 8-weeks postpartum:	*Know God Forgives Me*	-.41**	-.15**			

Model	Predictor Variable(s)	b	Beta	Intercept	R^2	Adjusted R^2
Mothers						
	DSI	.33***	.37***			
Model 3: Depressive symptoms at 8-weeks postpartum	*Self-Esteem*	-.30***	-.33***	16.4	.38	.37
	Know God Forgives Me	-.41**	-.15**			
Mothers-in-Law	*DSI*	.33***	.37***			
Model 4:				14.2	.44	.43
	RSC	.21*	.15*			
Depressive Symptoms at 8-Weeks:	*Self-Esteem*	-.31***	-.34***			
	Know God Forgives Me	-.52**	-.18**			
Female Friends with children	*DSI*	.31***	.35***			

* Significant at alpha .05; ** Significant at alpha .01; *** Significant at alpha .001

Figure 4.5 represents the study model "trimmed" to display only paths that remained

significant in both rounds of multiple regression analyses and were consistently significant

across all four models. As can be seen from Table 4-20 the "inconsistent variables" were

associated with self-esteem; Core spiritual experiences, religious support/coping, forgiving

others, and meaning were significant in one or two of the models but not in the others. One

possible reason for this inconsistency is the existence of multicollinearity or high correlations

among the spirituality variables that can produce unstable estimates of the partial regression

coefficients, including changes in magnitude and even in sign (positive/negative) from one

sample to the next.[200]

Before providing a summary of the results, there are several important points to be made

to assist in the interpretation of the trimmed model. First, all path coefficients shown were

significant at * p .05, ** p .01, and p >001, by the F test for regression coefficients.

Standardized coefficients (beta) appear first with the unstandardized coefficients (b) appearing next in parenthesis. Second, results from the four relationship-specific models are depicted in the one diagram. When there are four results associated with a single path, they are always listed in order—first the result from the spouses/partners model, followed by the mothers, mothers-in-law, and female friends with children models. "N/S" refers to non-significance, and if, for example, the N/S appears third in order it refers to the result in the mothers-in-law model. It should be recalled that the decision to analyze the key variables in four separate models was made to avoid eliminating participants who had fewer than all four of the relationships. Thus, the data in the spouse/partner model were collected from those women in the sample who responded to questions about RSC and RSSS for their spouses/partners ($N = 200$ and 201, respectively). The corresponding Ns for RSC and RSSS in the remaining three models were, $N = 191$ and 190 for mothers, $N = 173$ and 171 for mothers-in-law, and $N = 183$ and 176 for the female friends with children model, respectively.

The third consideration in interpreting the results displayed in Figure 4-5, is the caution against drawing conclusions about the hypothesized *indirect* paths influencing DS8. Although it appears in the model, for example, that the indirect path from GPSS to DS8 (through the mediation of self-esteem) was supported, the final steps in the path analysis (computation of direct, indirect and total effects of the independent variables and comparison with observed correlations) are needed to make this determination. Therefore, Figure 4-5 should be used to identify only the significant direct relationships between the variables in the model summarized as follows:

1. Five variables had significant direct effects on DS8, RSC with spouses/partners, RSC with female friends with children, self-esteem, DS1, and knowing God forgives me.

2. There were multiple other significant direct relationships between the independent variables:

 a. The paths from RSC to RSSS were highly significant across all four interpersonal relationships.

 b. The paths from RSSS from all four interpersonal relationships to GPSS were significant.

 c. RSC with spouses/partners was directly predictive of self-esteem.

 d. Forgiving oneself, GPSS, and annual household income were significantly predictive of self-esteem.

 e. DS1 was directly predictive of RSC for spouses/partners, mothers and female friends with children, as well as GPSS, and self-esteem (in all models). DS1 also was significantly predictive of RSSS from spouses/partners and female friends with children.

The adjusted R^2 is the square of the multiple correlation coefficients and is an index showing the percentage of variation in the dependent variable accounted for by the set of independent variables in the regression analysis.[200] Based on the R^2 values associated with each regression one can ascertain that the trimmed models for spouses / partners, mothers, mothers-in-law, and female friends with children accounted for 39%, F (6, 188) = 21.83; 37%, F(3, 194) = 39.75; 37%, F(3, 194) = 39.74, and 43%, F(4, 173) = 34.06, respectively, of the variance in DS8. The overall Fs from these multiple regressions were highly significant, all $ps < .00$.

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Figure 4.5 Trimmed model of depressive symptoms at 8-weeks postpartum [a][b]
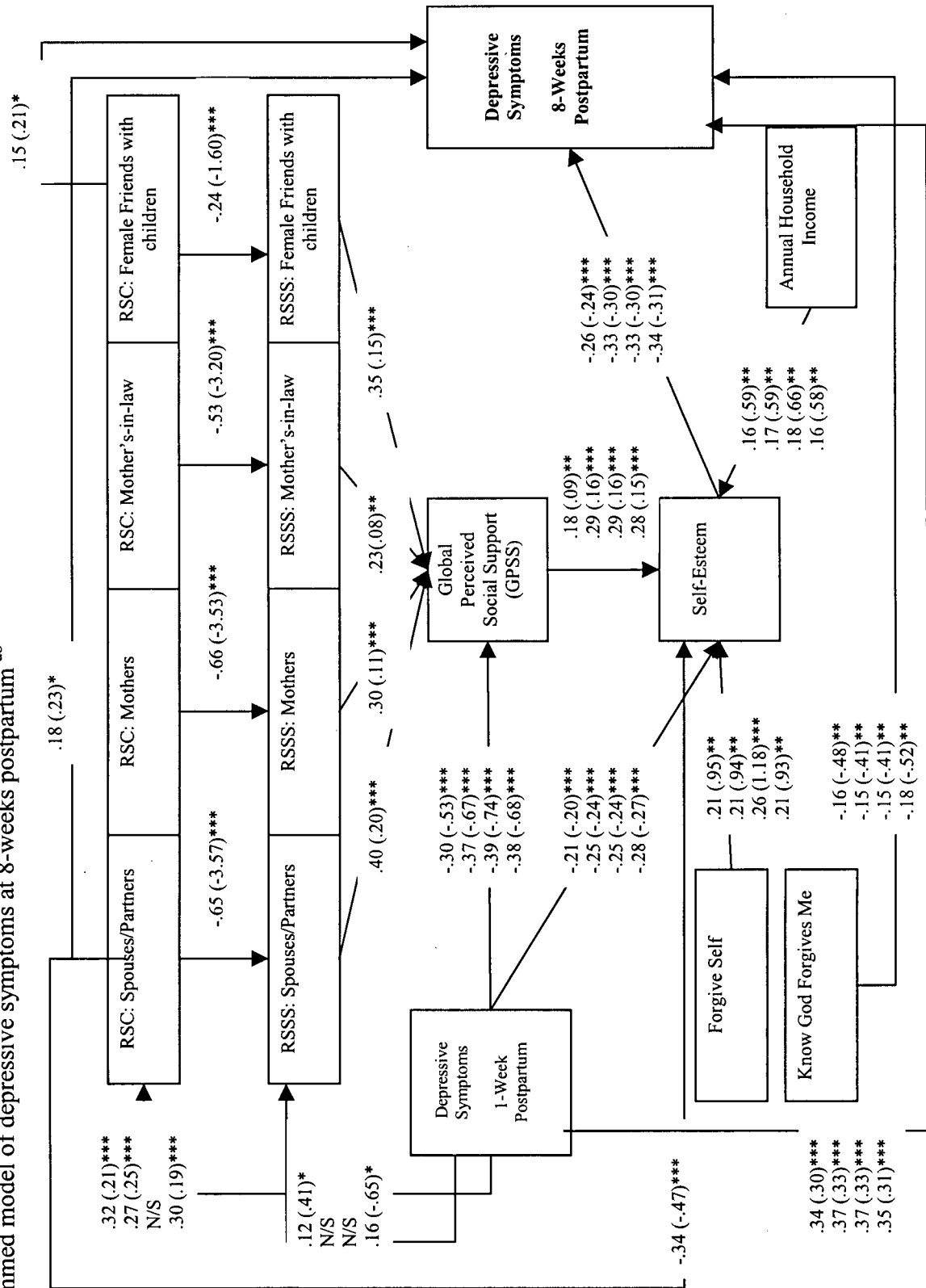
[a] Path coefficients for 4 models: Standardized beta first with unstandardized b in parenthesis.

[b] $* p \leq .05$, $** p \leq .01$, $*** p \leq .001$

Step Four: Calculation of Direct, Indirect and Total Effects

The fourth step in the path analysis of the study model was the calculation of the direct, indirect and total effects of the independent variables. Determining both direct and indirect paths is an important advantage of path analysis. One aspect of this advantage is the ability to compare the magnitude of the direct and indirect effects. Such a comparison could have a practical application in the design of preventive and therapeutic interventions that may be directed toward modification of indirect effects as well as direct effects.

The calculation of the direct and indirect effects was done using the method recommended by Munro.[193] Working directly from *Figure 4-5*, the simple paths (direct effect) and compound paths (more than one path involved) for the outcome variable (depressive symptoms at 8-weeks) were identified. The value of one compound path was calculated by multiplying the beta values of each of the relevant simple paths. As described in the analysis section of the study methods (Chapter 3), meaningful or causal compound paths are those that follow the direction of the arrows in the diagram whereas nonmeaningful or noncausal compound paths ignore the direction of the relationships specified in the path model. These noncausal paths are nevertheless an important component of the correlation between the independent and dependent variable and were included in the calculation of total effects.

Table 4-22 presents correlation values between the independent variables and PPD, the direct paths, and paths needing to be multiplied in causal and noncausal compound paths. It should be noted that the subscripts used in the notation for path coefficients are ordered so that the abbreviation for the variable being influenced is always listed first and the one for the variable doing the influencing is listed second. Variable abbreviations that are new to the table include SE for self-esteem, AHI for Annual Household Income, FS for forgive self, and FG for

forgiveness from God. The subscripts used for the correlations simply specify the

two variables in the correlations, in this instance the independent variables' correlations with

DS8.

Table 4-22 *Calculation of the Direct and Indirect Effects of the Independent Variables on DS8*

Model / Observed Correlation Coefficient with PPD = r	Direct (Simple) Paths	Indirect (Compound) Causal Paths[12]	Indirect (or Compound) Noncausal Paths
Model 1: **RSC:Spouses/Partners** $r_{RSC,PPD} = .36$	$p_{PPD, RSC} = .18$	$(p_{RSSS,RSC})(p_{GPSS,RSSS})(p_{SE,GPSS})(p_{PPD,SE}) = (-.65)(.40)(.18)(-.26) = .01$ + $(p_{SE,RSC})(p_{PPD, SE}) = (-.34)(-.26) = .09$	$(p_{RSC, SE})(p_{PPD,SE}) = (-.34)(-.26) = .09$ + $(p_{RSC, DS1})(p_{SE, DS1})(p_{PPD, SE}) = (.32)(-.21)(-.26) = .02$ + $(p_{RSC,RSSS})(p_{RSSS, GPSS})(p_{SE, GPSS})(p_{PPD, SE}) = (-.65)(.40)(.18)(-.26) = .01$
Model 2: **RSC: Mothers** $r_{RSC,PPD} = .23$	None	$(p_{RSSS,RSC})(p_{GPSS,RSSS})(p_{SE,GPSS})(p_{PPD,SE}) (-.66)(.30)(.29)(-.33) = .02$	$(p_{RSC, DS1})(p_{SE, DS1})(p_{PPD, SE}) = (.27)(-.25)-.33) = .02$ + $(p_{RSC, DS1})(p_{GPSS, DS1})(p_{SE, GPSS})(p_{PPD, SE}) = (.27)(-.37)(.29)(-.33) = .01$
3. Model 3: **RSC: Mothers-in-law** $r_{RSC,PPD} = .12$	None	$(p_{RSSS,RSC})(p_{GPSS,RSSS})(p_{SE,GPSS})(p_{PPD,SE}) (-.53)(.23)(.29)(-.33) = .01$	None
Model 4: **RSC: Female friends with children** $r_{RSC,PPD} = .28$	$p_{PPD, RSC} = .15$	$(p_{RSSS,RSC})(p_{GPSS,RSSS})(p_{SE,GPSS})(p_{PPD,SE}) (-.24)(.35)(.28)(-.34) = .01$	$(p_{RSC, DS1})(p_{GPSS, DS1})(p_{SE, GPSS})(p_{PPD, SE}) = (.30)(-.38)(.28)(-.34) = .01$ + $(p_{RSC, DS1})(p_{SE, DS1})(p_{PPD, SE}) = (.30)(-.28)(-.36) = .03$

[12] Totals appear in Table 4.21

Model / Observed Correlation Coefficient with PPD = r	Direct (Simple) Paths	Indirect (Compound) Causal Paths[12]	Indirect (or Compound) Noncausal Paths
Model 1: **RSSS: Spouses/partners** $r_{\text{RSSS, PPD}} = -.28$	None	$(p_{\text{GPSS, RSSS}}) (p_{\text{SE, GPSS}}) (p_{\text{PPD, SE}})$ $(.40)(.18)(-.26) = .02$	$(p_{\text{RSSS, DS1}})(p_{\text{GPSS, DS1}})$ $(p_{\text{SE, GPSS}})(p_{\text{PPD, SE}}) =$ $(-.12)(-.30)(.18) = -.00$ $+(p_{\text{RSSS, DS1}})(p_{\text{SE, DS1}})(p_{\text{PPD, SE}})$ $=$ $(-.12)(-.21)(-.26) = -.01$
Model 2: **RSSS: Mothers** $r_{\text{RSSS, PPD}} = -.13$	None	$(p_{\text{GPSS, RSSS}}) (p_{\text{SE, GPSS}}) (p_{\text{PPD, SE}})$ $(.30) (.29) (-.33) = -.03$	None
Model 3:. **RSSS: Mothers-in-law** $r_{\text{RSSS, PPD}} = -.17$	None	$(p_{\text{GPSS, RSSS}}) (p_{\text{SE, GPSS}}) (p_{\text{PPD, SE}})$ $(.23) (.29) (-.33) = -.02$	None
Model 4: **RSSS: Female friends with children** $r_{\text{RSSS, PPD}} = -.26$	None	$(p_{\text{GPSS, RSSS}}) (p_{\text{SE, GPSS}}) (p_{\text{PPD, SE}})$ $=$ $(.35) (.28) (-.34) = -.03$	$(p_{\text{RSSS, DS1}}) (p_{\text{GPSS, DS1}})$ $(p_{\text{SE, GPSS}}), =$ $(-.16) (-.38)(.28)(-.34) =$ $-.01$ $+(p_{\text{RSSS, DS1}})(p_{\text{SE, DS1}})$ $(p_{\text{PPD, SE}}) = (-.16)(-.28)$ $(-.36) = -.02$
GPSS: . $r_{\text{GPSS, PPD}} = -.41$[13]			
Model 1: **GPSS: Spouses/partners**	None	$(p_{\text{SE, GPSS}})(p_{\text{PPD, SE}})$ $= (.18)(-.26) = .05$	$(p_{\text{GPSS,DS1}})(p_{\text{SE, DS1}})(p_{\text{PPD, SE}}) =$ $(-.30)(-.21)(-.26) = .02$ $+(p_{\text{GPSS, DS1}})(p_{\text{PPD, DS1}}) =$ $(-.30)(.34) = .10$ $+(p_{\text{GPSS, DS1}})(p_{\text{DS1, RSSS}})(p_{\text{RSSS, RSC}})(p_{\text{PPD, RSC}}) = (-.30)(-.12)$ $(-.65)(.18) = .00$
Model 2: **GPSS: Mothers**	None	$(p_{\text{SE, GPSS}})(p_{\text{PPD, SE}})$ $= (.29)(-.33) = .10$	$(p_{\text{GPSS,DS1}})(p_{\text{SE, DS1}})$ $(p_{\text{PPD, SE}}) = (-.37)(-.25)$ $(-.33) = -.03$ $+(p_{\text{GPSS, DS1}})(p_{\text{PPD, DS1}}) =$ $(-.37)(.37) = -.14$
Model 3:			

[13] GPSS and all remaining variables in this table are not relationship-specific and therefore there is one r value across the four models.

Model / Observed Correlation Coefficient with PPD $= r$	Direct (Simple) Paths	Indirect (Compound) Causal Paths[12]	Indirect (or Compound) Noncausal Paths
GPSS: Mothers-in-law	None	$(p_{SE, GPSS})(p_{PPD, SE})$ $= (.29)(-.33) = .10$	$(p_{GPSS,DS1})(p_{SE, DS1})(p_{PPD, SE})$ $(-.39)(-.25)(-.33) = -.03$ $+(p_{GPSS, DS1})(p_{PPD, DS1})=$ $(-.39)(.37) = -.14$
Model 4: **GPSS:Female friends with children**	None	$(p_{SE, GPSS})(p_{PPD, SE})$ $= (.28)(-.34) = .10$	$(p_{GPSS,DS1})(p_{SE, DS1})(p_{PPD, SE})$ + $(-.38)(-.28)(-.36) =$ $-.04$ $+(p_{GPSS, DS1})(p_{PPD, DS1})=$ $(-.38)(.35) = -.13$ $+ (p_{GPSS, DS1})$ $(p_{DS1, RSSS})(p_{RSSS, RSC})$ $(p_{PPD, RSC}) = (-.38)(-.16)$ $(-.24)(.15) = .00$
Self-Esteem: $r_{SE,PPD} = -.50$			
Model 1: Spouses/partners	$p_{PPD, SE} =$ $-.26$	None	$(p_{SE, DS1})(p_{PPD, DS1}) =$ $(-.21)(.34) = -.07$ $+(p_{SE, DS1})(p_{DS1, RSC})(p_{PPD, RCS})$ $= (-.21)(.32)(.18)$ $= -.01$ $+(p_{SE, RSC})(p_{PPD, RSC}) =$ $(-.34) (.18) = -.06$
Model 2: **Mothers**	$p_{PPD, SE} =$ $-.33$	None	$(p_{SE, DS1})(p_{PPD, DS1}) =$ $(-.25)(.37) = -.09$
Model 3: **Mothers-in-law**	$p_{PPD, SE} =$ $-.33$	None	$(p_{SE, DS1})(p_{PPD, DS1}) =$ $(-.25)(.37) = -.09$
Model 4: **Female friends with children**	$p_{PPD, SE} =$ $-.34$	None	$(p_{SE, DS1})(p_{PPD, DS1}) =$ $(-.28)(.35) = -.10$
DS1 $r_{DS1,PPD} = .54$ **Model 1: Spouses/partners**	$p_{PPD, DS1} = .34$	$(p_{SE, DS1})(p_{PPD, SE}) = (-.21)(-.26)$ $= .05$ $+(p_{GPSS, DS1})(p_{SE, GPSS})(p_{PPD, SE})$ $= (-30)(.18)(-.26) = .01$ $+(p_{RSC, DS1})(p_{PPD, RSC}) =$ $(.32)(.18) = .06$	

Model / Observed Correlation Coefficient with PPD = r	Direct (Simple) Paths	Indirect (Compound) Causal Paths[12]	Indirect (or Compound) Noncausal Paths
		$+ (p_{RSC, DS1})(p_{GPSS, RSSS})$ $(p_{SE, GPSS})(p_{PPD, SE}) =$ $(-.12)(.40)(.18) (-.26) = .00$	
2. Mothers	$p_{PPD, DS1} = .37$	$(p_{SE, DS1})(p_{PPD, SE}) = (-.25)(-.33)$ $= .08$ $+ (p_{GPSS, DS1})(p_{SE, GPSS})(p_{PPD, SE})$ $= (-37)(.29) (-.33) = .04$	
3. Mothers-in-law	$p_{PPD, DS1} = .37$	$(p_{SE, DS1})(p_{PPD, SE}) = (-.25)(-.33)$ $= .08$ $+ (p_{GPSS, DS1})(p_{SE, GPSS})(p_{PPD, SE})$ $= (-39)(.29) (-.33) = .04$	
4. Female friends with children	$p_{PPD, DS1} = .35$	$(p_{SE, DS1})(p_{PPD, SE}) = (-.28)(-.34)$ $= .10$ $+ (p_{GPSS, DS1})(p_{SE, GPSS})(p_{PPD, SE})$ $= (-38)(.28) (-.34) = .04$	
Forgive Self: $r_{FS, PPD} = -.35$			
Model 1: Spouses/partners	None	$(p_{SE, FS}) (p_{PPD, SE})$ $= (.21)(-.26) = -.05$	None
Model 2: Mothers	None	$(p_{SE, FS}) (p_{PPD, SE})$ $= (.21)(-.33) = -.07$	None
Model 3: Mothers-in-law	None	$(p_{SE, FS}) (p_{PPD, SE})$ $= (.26)(-.33) = -.09$	None
Model 4: Female friends with children	None	$(p_{SE, FS}) (p_{PPD, SE})$ $= (.17)(-.34) = -.06$	None
Know God Forgives (FG): $r_{FG, PPD} = -.16$			
Model 1: Spouses/partners	$p_{PPD, FG} = -.16$	None	None
Model 2: Mothers	$p_{PPD, FG} = -.15$	None	None
Model 3: Mothers-in-law	$p_{PPD, FG} = -.15$	None	None

Model / Observed Correlation Coefficient with PPD = r	Direct (Simple) Paths	Indirect (Compound) Causal Paths[12]	Indirect (or Compound) Noncausal Paths
Model 4: **Female friends with children**	$p_{PPD, FG} = -.18$	None	None
Annual Household Income (AHI): $r_{AHI, PPD} = -.25$			
Model 1: **Spouses/partners**	None	$(p_{SE, AHI})(p_{PPD, SE})$ $= (.16)(-.26) = -.04$	None
Model 2: **Mothers**	None	$(p_{SE, AHI})(p_{PPD, SE})$ $= (.17)(-.33) = -.06$	None
Model 3: **Mothers-in-law**	None	$(p_{SE, AHI})(p_{PPD, SE})$ $= (.18)(-.33) = -.06$	None
Model 4: **Female friends with children**	None	$(p_{SE, AHI})(p_{PPD, SE})$ $= (.16)(-.36) = -.06$	None

Table 4-23 contains the values of the direct and indirect effects of each of the independent variables based on the computations illustrated in Table 4-22.

Table 4.23 *Table of Direct and Indirect Effects, Noncausal Components, and Total Effects*

Independent Variable (Correlation with PPD)	Direct +	Indirect +	Total Effect =	Total Effect + Noncausal
RSC:				
1. Spouse/Partner (r = .36)	.18	.10	.28	.40
2. Mother (r = .23)	0	.02	.02	.05
3. Mother-in-law (r = .12)	0	.01	.01	.01
4. Female friends with children (r = .28)	.15	.01	.16	.20
RSSS:				
1. Spouse/Partner (r = -.28)	0	-.02	-.02	-.03
2. Mother (r = -.13)	0	-.03	-.03	-.03
3. Mother-in-law (r = -.17)	0	-.02	-.02	-.02
4. Female friends with children	0	-.03	-.03	-.06

Independent Variable (Correlation with PPD)	Direct +	Indirect +	Total Effect =	Total Effect + Noncausal
(r = -.26)				
GPSS (r = -.41)				
1. Spouse/Partner model	0	-.05	-.05	-.17
2. Mother model	0	-.10	-.10	-.27
3. Mother-in-law model	0	-.10	-.10	-.27
4. Female friends with children model	0	-.10	-.10	-.27
Self-Esteem (r = -.50)				
1. Spouse/Partner model	-.26	0	-.26	-.40
2. Mother model	-.33	0	-.33	-.35
3. Mother-in-law model	-.33	0	-.33	-.35
4. Female friends with children model	-.34	0	-.34	-.34
Depressive Symptoms at 1 Week (r = .54)				
1. Spouse/Partner model	.34	.12	.46	.46
2. Mother model	.37	.12	.49	.49
3. Mother-in-law model	.37	.12	.49	.49
4. Female friends with children model	.35	.14	.49	.49
Forgive Self (r = -.35)				
1. Spouse/Partner model	0	-.05	-.05	-.05
2. Mother model	0	-.07	-.07	-.07
3. Mother-in-law model	0	-.09	-.09	-.09
4. Female friends with children model	0	-.06	-.06	-.06
Know God Forgives (r = -.16)	-.16	0	-.16	-.16
1. Spouse/Partner model	-.15	0	-.15	-.15
2. Mother model	-.15	0	-.15	-.15
3. Mother-in-law model	-.18	0	-.18	-.18
4. Female friends with children model				
Annual Household Income (r = -.25)	0	-.04	-.04	-.04
1. Spouse/Partner model	0	-.06	-.06	-.06
2. Mother model	0	-.06	-.06	-.06
3. Mother-in-law model	0	-.06	-.06	-.06
4. Female friends with children model				

The values in the last column in Table 4-23, the sums of the total effects and noncausal

components, were compared with the magnitude of the values of the observed correlation

coefficients in the first column. Based on these quantitative comparisons for each variable in the

trimmed model the following conclusions were drawn about the consistency between the study data and the theoretical model of depressive symptoms at 8-weeks postpartum:

1. The paths specified for the relationships between RSC for spouses/partners and PPD and RSC with female friends with children and PPD provide a relatively close estimation of the observed correlations between these variables. The former relationship was overestimated by .04 and the latter was underestimated by .08. On the other hand, the calculated total effects of RSC for mothers and mothers-in-law account for only a small fraction of the observed correlation and thus the specified paths did not account for the variability in DS8.

2. None of the total effects of RSSS approximated the observed correlations between the perceived supportiveness of spouses/partners, mothers, mothers-in-law and female friends with children and PPD. Thus the model did not account for the correlation between RSSS and DS8.

3. The path model accounted for less than one half of the correlation between GPSS and DS8 in the spouse/partner model (the difference in the r value and total effects was .24). In the remaining three models the difference between the total effects and the observed correlation and was .14 (or about two-thirds the magnitude of the r value). Thus the model only partially explained this relationship.

4. The calculated total effects of self-esteem on DS8 differed from the observed correlation in the spouse/partner model by .10 and in the remaining three models by .15. The direct effect hypothesized in the model is a plausible, but not full, explanation of the large observed correlation.

5. The independent variable with the strongest observed correlation with DS8 was DS1. The paths in the models offered a plausible explanation for this relationship in terms of its

magnitude, although once again the total effects fell short by .09 and .05—the greater difference occurring in the spouse/partner model.

6. The observed correlation between forgiving oneself and depressive symptoms at 8-weeks postpartum was not accounted for by a single indirect path to DS8 through self-esteem as can be seen in the large discrepancies between the total effects and the correlation coefficient.

7. The coefficients for the direct paths between forgiveness from God and DS8 in the four models are equal to or almost equal to the observed correlation between the two variables. The total effects in the mothers' and mothers'-in-law models underestimated the correlation by .01 in contrast to an overestimation of .02 in the female friends with children model. Therefore, the direct pathway in the study model is a plausible explanation of the correlation between these variables.

8. The large discrepancy between the total estimated effect of annual household income on DS8 and the observed correlation between annual household income and DS8 reveals that the model's explanation of this relationship is not correctly specified.

Step Five: Consideration of the Results of Path Analysis

With completion of the path analysis of the study model it was possible to address the study hypotheses. Of the six hypotheses, the first referred to the effects of DS1. The second and third related to the two social resource variables in the interpersonal dimension and the fourth and fifth to the effects of the two inner-self resource variables in the intrapersonal dimension. Lastly the sixth hypothesis applied to the eight spiritual resource variables in the transpersonal dimension. Each hypothesis is addressed under these now familiar headings in summary form. Further discussion of the findings relevant to these hypotheses is offered in the fifth chapter.

Hypothesis Related to Depressive Symptoms at 1 Week Postpartum

Hypothesis one: effects of DS1.

It was hypothesized that women with more DS1 have: (a) increased RSC with spouses/partners, mothers, mothers-in-law, and female friends with children, (b) decreased RSSS within all four relationships, (c) lower GPSS, (d) lower self-esteem, and (e) increased severity of DS8, all as direct effects, and (f) they have increased severity of DS8 indirectly because RSC influences RSSS which in turn influences GPSS and self-esteem. In summary, hypothesis 1(a) was supported in three of the four models with the one exception being the mother-in-law model, hypothesis 1(b) was supported only in the spouse/partner and female friends with children model, hypothesis1(c) was supported in all four models, hypothesis 1(d) was supported in all four models, hypothesis 1(e) was supported in all four models, and hypothesis 1(f), the hypothesized indirect effects of DS1, was also largely supported.

Hypotheses Related to Women's Social Resources

Hypothesis two: effects of RSC.

Hypothesis two stated that women with greater RSC with their spouses/partners, mothers, mothers-in-law, and other female friends with children have (a) lower RSSS; (b) lower GPSS; (c) lower self-esteem; and (d) increased severity of DS8, all as direct effects; and (e) they have increased severity of DS8 indirectly because RSC influences RSSS, which in turn influences GPSS and self-esteem. In summary, hypothesis 2(a) was supported across all models, hypothesis 2(b) was not supported, hypothesis 2(c) was supported only for the spouses/partners' relationships, hypothesis 2(d) was supported only for spouses/partners and female friends with children, and hypothesis 2 (e) was not supported for mothers and mothers-in-law, but was supported for spouses/partners and female friends with children.

Hypothesis three: effects of RSSS.

The third hypothesis stated that women with limited RSSS from their spouses/partners, mothers, mothers-in-law, and other female friends with children experience: (a) lower GPSS, (b) lower self-esteem, and (c) increased severity of DS8 all as direct effects, and (d) they experience increased severity of DS8 indirectly because RSSS influences GPSS, which in turn influences self-esteem. In summary, hypothesis 3(a) was supported in all four models, but hypothesis3 (b) and 3(c) were not supported in any of the models, and hypothesis 3(d), the hypothesized indirect path from RSSS to DS8 through the mediation of GPSS and self-esteem, was not upheld in the path analysis.

Hypotheses Related to Women's Inner-Self Resources

Hypothesis four: effects of GPSS.

It was hypothesized that women with limited GPSS experience (a) lower self-esteem and (b) increased DS8, as direct effects, and (c) less DS8 indirectly because GPSS influences self-esteem which in turn influences DS8. The study results supported hypothesis 4(a) in all four models but did not support hypothesis 4(b) in any of the models. The indirect effects hypothesized in 4(c) were only partially supported by the path analysis leading to the conclusion that this part of the fourth hypothesis was not supported.

Hypothesis five: effects of self-esteem.

It was hypothesized that women with lower self-esteem experience increased DS8 as a direct effect. This hypothesis was largely supported in all four models.

Hypothesis Related to Women's Spiritual Resources

Hypothesis six: effects of the spirituality variables.

It was hypothesized that women with more spiritual resources have (a) more GPSS, (b) higher self-esteem, (c) less severe DS8, all as direct effects and, (d) less DS8 as indirect effects

through increased GPSS and increased self-esteem. Of the eight spirituality

variables, forgiving self and knowing God forgives remained in the trimmed model. With respect

to forgiving self, hypotheses 6(a), 6(c), and 6(d) were not supported, but hypothesis 6(b) was

supported in all four models. With respect to knowing God forgives, only hypothesis 6(c) was

supported; knowing God forgives was directly predictive of DS8.

In summary, Chapter 4 presented the study findings pertaining to the characteristics of

the participants, a description of the key study variables, and the path analysis of the theoretical

model of postpartum depressive symptoms. Hypotheses related to the model were addressed in

light of the results of the path analysis. These findings are discussed in detail in Chapter 5, and

implications for research and practice are discussed in Chapter 6.

CHAPTER 5: DISCUSSION

Overview

The postpartum depression (PPD) literature has identified multiple risk and protective factors in two dimensions of women's lives—the social and psychological. This study took steps to advance our knowledge of PPD through the development and testing of a holistic and theoretically-based model that included variables in a third and yet unstudied dimension of childbearing women's experience—the spiritual—in the prediction of postpartum depressive symptoms. The variable, *knowing that God forgives one* was found to be significantly and inversely predictive of depressive symptoms at 8-weeks postpartum (DS8). Contrary to the social cognitive perspective on which the model was based, the hypothesized direct and indirect effects of social support (mediated by self-esteem) on postpartum depressive symptoms were not supported by path analysis. Interpersonal conflict, on the other hand, was directly and indirectly predictive of postpartum depressive symptoms thus upholding the relationship perspective of social support, a perspective that is expected to provide new and alternative ways of thinking about social support.[61] The importance of social networks that have been virtually overlooked in the PPD literature was highlighted by the intriguing finding that the variable *conflict with female friends with children* was a significant predictor of DS8. The results of the study support recent evidence that depressive symptoms experienced in the first week or two after the birth of the baby are a significant risk factor for later depressive symptoms. Furthermore, the findings suggest possible mechanisms for the role of depressive symptoms at 1-week postpartum in the development of later depression. Descriptive findings provide preliminary data about the religiousness/spirituality of the women which are not significantly dissimilar to corresponding data about the general Canadian population.

To lend support for the validity and significance of the findings, this chapter begins with a discussion of the study strengths. Particular mention is made of the strength of the study's design and sampling method. The comprehensiveness of the examination of women's personal resources is also mentioned. Key research findings are then discussed in detail. Study limitations are considered throughout the discussion of key findings to assist the reader to accurately interpret the results and exercise appropriate caution in drawing conclusions beyond what is reasonably supported by the data. Descriptive findings pertaining to the participants' spirituality are presented and compared with the religiousness/spirituality of the general Canadian population.

Strengths of the Study

The prospective design of this research study in which the independent variables were measured at 1-week postpartum (Time 1) and predicted a *change* in depressive symptoms from Time 1 to 8-weeks postpartum (Time 2) is a particularly strong non-experimental approach to address causal issues.[201] A design that allows solid temporal ordering of events and has a solid theoretical foundation improves the plausibility of causal claims in path analysis in contrast to cross-sectional and weak theoretical investigations in which associations must be strictly seen as correlational. The attempt to sequentially sample all women in the health region who delivered a baby within the specified period is a sampling method that lends more confidence to the generalizability of the findings than a convenience sampling approach. Unfortunately, the achievement of a sample that was fully representative of the base population was not achieved due to the failure of the recruitment procedures to account for 22% of the potentially eligible women and the failure to recruit any of the approximately 18% of Indo-Canadian women who delivered a baby over the course of the research. Nevertheless, the advantages of the sequential

sampling approach, as well as the achievement of a sample size determined to

provide adequate statistical power for the intended analyses, are strengths of the present work.

Another particular strength of this study is the inclusion of variables examining the

spiritual dimension of postpartum women's experience and the integration of this dimension

with the interpersonal and intrapersonal variables in a model to explain postpartum depressive

symptoms. The resulting model is more comprehensive and holistic in approach than prevailing

models that ignore the spiritual dimension or fail to investigate the interrelationships among

multiple dimensions. Additionally, this study included a more comprehensive examination of

social support than is typically undertaken. Variables that represented structural and functional,

and positive and negative aspects of social support, as well as measures of support available in

the social environment versus measures of support reflecting individual differences (an

internalized working model of how supported one feels), were included in the study model. By

including multiple facets of social support, the study has drawn on the combined strengths of

various viewpoints thus enriching the understanding of the phenomena.[202, 203]

Major Study Findings

The four major study findings are organized under the headings: (a) social resources and

depressive symptoms at 8-weeks postpartum, (b) inner-self resources and depressive symptoms

at 8-weeks postpartum, (c) depressive symptoms at 1-week postpartum and depressive symptoms

at 8-weeks postpartum, and (d) spiritual resources and depressive symptoms at 8-weeks

postpartum. In summary, the findings are as follows: (a) of the social resources of the women

enrolled in this study, only perceived conflict with spouses/partners and female friends with

children predicted DS8. The hypothesized direct and indirect effects of perceived social support

from spouses/partners, mothers, mothers-in-law, and female friends on DS8 were not supported

in this sample; (b) of the two inner-self resources specified in the model (global perceived social

support and self-esteem), only self-esteem predicted DS8; (c) depressive symptoms at 1-week postpartum had significant direct and indirect influences on the development of DS8; and (d) with respect to the spiritual resources of the participants in the study, it was the knowledge that God forgives that was predictive of DS8.

Social Resources and Depressive Symptoms at 8-Weeks Postpartum

The study findings regarding the influence of the women's two social resources, relationship-specific conflict (RSC) and relationship-specific social support (RSSS) on DS8 supported some of the hypothesized relationships. With regard to conflict, the postulated direct effects of RSC on DS8 were significant for spouses/partners and female friends with children. On the other hand, conflict with mothers and conflict with mothers-in-law were not directly related to DS8. Path analysis showed that the hypothesized indirect effects of RSC on DS8 were also largely supported for spouses/partners and female friends with children but not for mothers and mothers-in-law. Additionally, conflict with spouses/partners was the only relationship-specific conflict variable that had a direct impact on the women's self-esteem. The focus of the discussion in this chapter is the positive findings with respect to the outcome variable, DS8 but mention is made of significant interrelationships among the independent variables that did not prove to be directly or indirectly predictive of DS8.

Relationship-Specific Conflict

Although the mean scores for RSC were comparatively higher for mothers and mothers-in-law than the mean score for conflict with spouses/partners and female friends with children, it was conflict associated with the later two relationships that had direct effects on DS8 with unstandardized partial regression coefficients (b) of similar magnitude (bs of .23 and .21, respectively). It is of primary importance in drawing conclusions about RSC, to recall how conflict was measured in this study since the concept has been measured in diverse ways in the

PPD literature. The five items composing the conflict scale, as well as the

frequencies of the women's responses to each item concerning their spouses/partners and female

friends, clarify the findings with respect to RSC. Fourteen (7%) of the women responded *fairly*

often/very often to the first four questions: "How often does your spouse / partner make you feel

angry?" "How often do you have to work hard to avoid conflict?" "How often does your spouse

try to control or influence you?" and "How critical of you is your spouse?" Only five (2.5%) of

the women responded *fairly often* (no woman responded *very often*) to the fifth item in the

conflict scale, that is, the question of how often their spouses/partners tried to get them to

change. With respect to conflict with female friends with children, fewer of the participants

identified high levels of conflict associated with these relationships: Only 3 of 183 and 5 of 183

(1.5% to 2.5%, respectively) of the women reported they *fairly often/very often* felt angry,

criticised or controlled, or worked hard to avoid conflict with their female friends. A single

participant felt her female friends tried *very often/fairly often* to get her to change. It should be

noted that the RSC measured in the current study tapped the participants' perceptions of conflict

in terms of their *feelings* rather than descriptions of negative interactions, such as the frequency

of quarrels or arguments. Interestingly, the participants' responses to a question asking if they

had experienced serious arguments or problems with their spouse/partner over the past 12

months was only moderately correlated ($r = .41, p < .01$) with RSC scores for spouses/partners.

In addition, conflict operationalized as arguments and problems was not significantly correlated

with DS8, whereas RSC was moderately correlated with DS8 ($r = .36, p < .01$). These results

indicate that measures that include cognitive and affective aspects of conflict as well as

behavioural aspects may be more sensitive to the full range of the domain and improve the

predictive power of the variable.

In searching the PPD literature for what is already known about the effects

of spousal conflict it is apparent that it has been expressed in many forms. For example, the

variables "marital problems" (disagreements, clashes, and beatings),[116] "tension" (tension with

spouses related to children),[39] "marital disharmony,"[109, 118] "marital distress,"(low scores on

sharing of interests, activities, responsibilities, and decision-making),[65] "marital difficulties"[105, 117] (the presence of chronic tension causing periods of hostility),[117] "conflict"[37, 113] (including

conflict about housework[76, 113]) and "poor marital relationship,"[102, 110] were all found to be

significantly associated with PPD. If one agrees that Beck's variable, *difficulties in the marital

relationship*, can be compared to spousal conflict measured in the current sample, then this

study's moderate effect size of $r = .36$ can be compared to the results of her recent meta-analysis

of factors predictive of PPD. Beck's results, based on 14 studies published in the 1990s,

confirmed her earlier meta-analysis and revealed a moderate relationship between marital

relationship and PPD, with a mean r effect size in the range of .38 to .39.[34, 197]

In the current study, the women's perceptions of conflict with their spouses/partners also

exerted indirect effects on DS8 through two hypothesized paths: (a) a negative effect on self-

esteem ($\beta = -.34$, $p \le .001$) and (b) a negative effect on perceived spousal support ($\beta = -.65$, $p \le$

.001) which in turn exerted influence through GPSS and self-esteem. The total indirect effects

exerted by these two pathways were about one half of the magnitude of the direct path between

conflict and DS8 but nevertheless made an important contribution to the total effects.

More frequent conflict with spouses/partners was associated with lower self esteem, an

effect only present for spouses/partners. The three other sources of conflict, conflict with

mothers, mothers-in-law and female friends with children, failed to show any direct effects on

the participants' self-esteem. There are two possible explanations related to these conflict and

self-esteem results. First, the notion of over-investment of one's self-esteem in social

relationships was discussed by Roberts and Gotlib.[201] Within the spousal

relationship specifically, this explanation would propose that some women evaluate their

personal worth according to the quality of their relationship with their spouse. Thus, their self-

esteem fluctuates with the quality of this relationship. Another explanation was presented by

Katz et al.[204] In accordance with the "self-evaluation maintenance model (SEM)," women's

self-view is influenced by two processes, reflection and comparison; both of these processes are

intensified by psychological *closeness* and there is the tendency to experience more intense

emotional or affective reactions when the comparisons involve a close other.[204, p. 270] Given the

SEM model, one could then hypothesize that within the spousal relationship (probably the

closest and most intimate relationship) women entering the role of new motherhood may feel

potentially outperformed by their spouses in numerous self-relevant areas, for example

differential earnings, career possibilities, and decision-making power in important areas. Tesser

(as cited by Katz et al.[204]) predicts that these women would attempt to maintain a positive self-

evaluation by relegating the areas in which they are outperformed by their spouses to a place of

lower personal significance, thus limiting the complexity of their future selves. This state in turn

would render them more vulnerable to feelings of low self-worth and depression, particularly

under stressful conditions like spousal conflict.[14]

Although the strong negative relationship found in the current study between *conflict*

with spouses/partners and *support* from spouses/partners, $\beta = -.65, p \leq .001$, has not been

reported within the PPD literature, researchers have noted this relationship in the social support

literature. For example, Katz et al. stated there was substantial evidence that marital discord

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[14] Although it is important to note that these theorists distinguished between the concept of global self esteem (measured in the current study) and their concept of "negative internal self-models," there is sufficient similarity in the two concepts to justify the present application of their ideas.[204, p. 268]

leads to attenuated levels of available partner support and they suggested that "one causal mechanism linking marital discord and depression could be the lack of needed support associated with being in a discordant marital relationship during difficult times."[204, p. 260] Similarly, Reis and Collins pointed to the evidence that conflict correlates negatively with social support from the same source. They concluded that conflict can be viewed as a relational predictor of support, and furthermore they hypothesized that low social support is related to PPD only because low social support is associated with relational conflict.[57] The results of the current study, namely that RSC but not RSSS was directly related to DS8, are consistent with a relationship perspective of social support that postulates that the properties or qualities of one's relationships (e.g., conflict, intimacy, and trust) rather than the support received in those relationships, lead to both perceived support and health outcomes (e.g., depressive symptoms). Thus, it can be concluded that the observed correlations between RSSS and DS8 in the current study represent a spurious relationship—that is, the women with low RSSS are more likely to have increased depressive symptoms at 8-weeks postpartum only because low support is associated with RSC—it is conflict that has a causal relation to symptoms of depression. [61] Lakey and Cohen suggested that in reality "our cognitions about our social environment are strongly interrelated and overlapping and that measures of support cannot be discriminated from closely associated concepts such as...[relational] conflict." [61, p. 42] In other words, the women's perceptions of the social support provided by their spouses/partners were not based on "objective" responses to each of the support items but were coloured, indeed biased, by the amount of conflict that existed within their relationship.

Perceived conflict with female friends with children also had direct and indirect effects on DS8. The finding that conflict with female friends had a direct path to DS8 with a magnitude of effect similar to that of conflict with spouses/partners is surprising, given the relatively little

attention that has been devoted to the importance of relationships with other women as a risk or protective factor for PPD. One British study measured conflict in terms of women's negative interactions with close relatives and friends and found no significant association with PPD.[62] However, the variable "negative interactions" in the British study was not conceptually operationalized, was assessed via an interview, and combined two sources of negative interactions, relatives and friends. Combining both sources of conflict may have masked the potential outcome of conflict with either family or female friends.

The only other study found that explored how PPD might be linked to conflict with other women was conducted by Mauthner.[131] The 18 women in this study who had experienced PPD talked about their sense of alienation from other mothers. Women who were employed outside their homes talked about their feelings of alienation from local networks of non-working mothers. They had restricted contact with these mothers because of their work hours and also perceived that local mothers held negative judgements about their decisions to continue their employment after the birth of their baby. Although tensions and a sense of alienation between working and non-working mothers may be one possible explanation for conflict between postpartum mothers in the years after the birth of their babies, it is unlikely that this explanation was relevant to the perceptions of conflict with female friends that were directly predictive of DS8 in this sample. There are numerous other factors that could explain why a small number of women experienced conflict in their relationships with their female friends, including pre-existing relationship problems unrelated to childbirth, a previous history of depression or personality disorder, or a sense of need or obligation to maintain conflictual relationships rather than abandon "friends." Although it is beyond the scope of this discussion, it is likely that the friendship literature would provide additional insights into the nature of female friendships and how these are related to depression in women.

The influence of conflict with female friends with children on the perceived supportiveness of these relationships was more complex than the corresponding relationship for spouses/partners. It also had a much smaller effect size, $bs = -1.60$ and -3.57, respectively. The association between these two variables was a simple, inverse, linear relationship in the case of spouses/partners. However, with female friends this systematic relationship was demonstrated from low to moderate conflict but was not found under conditions of high conflict. Surprisingly, "high" levels of conflict were associated with a slight increase in perceived support (see Figure 4.1). Differences in the expectations and meaning of support, provision and receipt of support, and differences in the effects of and responses to relational conflict may contribute to the difference in the observed pattern. The birth of a new baby and the unique status of the spouse as father of the baby may increase a woman's need and expectations of support from her spouse. Unfortunately, as Katz et al. observed, an offer or gesture of support, for example, advice-giving and calming the baby made by spouses in the context of marked relational conflict is often interpreted negatively by women.[204] It is not unusual for male partners in conflict situations to respond by withdrawing from the relationship, resulting in lower perceived support from spouses.[115, 204, 205] On the other hand, women's expectations of support from female friends are likely more circumscribed. Conflict within these relationships is probably less threatening to women's self-esteem. In addition, female friends are less likely to withdraw in response to relational conflict and are more likely willing to actively engage in problem discussion and conflict resolution.[206] Thus, a plausible explanation for the small increase in perceived social support from female friends with children under conditions of high conflict may be women's interpretation of this conflict resolution process as positive and even evidence of care and concern.

Inner-Self Resources and Depressive Symptoms at 8-Weeks Postpartum

In this study, GPSS had no direct effects on DS8 and path analysis revealed that the total effects of the indirect paths between GPSS and DS8 did not closely approximate the observed correlation of -.41. Self-esteem, in contrast was directly related to DS8 and an important predictor of DS8, in fact it was only slightly less important than DS1, the most important predictor in the study. Therefore, numerous aspects of self-esteem are discussed including (a) direct effects, (b) interrelationships with social support (c) factors that negatively influence levels of self-esteem, and (d) the mediating role of self-esteem in PPD.

Self-Esteem

The hypothesized direct effects of self-esteem on DS8 were largely supported in the path analysis with calculated total effects falling short of the observed large correlation ($r = -.50, p = .01$) between the predictor and outcome variable by .10 in the spouses/partners model and about .15 in the remaining models. Over the past decade self-esteem has emerged as a significant predictor of PPD. Beck's recently published a meta-analysis of 84 studies revealed four new risk factors for PPD including self-esteem (mean r ranging from -.45 to -.47)[197] Although the $r = -.50$ found in the current study is outside this range, the difference in magnitude is small.

The direct effect of self-esteem on depressive symptoms at 1-2 months postpartum found in the Hall et al. study was larger than the corresponding standardized beta values in the present study, with a $\beta = -.41, p \le .0001$, compared to the βs = -.26, -.33, -.33, and -.34 for the spouses/partners, mothers, mothers-in-law, and female friends with children models, respectively.[60] However, Hall's beta value may be more similar to the beta value in the current study than it appears. Proper interpretation of the standard multiple regression used in the present study requires one to consider both the full correlation between self-esteem and DS8 as well as its unique contribution. In standard multiple regression each independent variable (IV) is

assigned only the area of its unique contribution, thus making it possible that self-esteem appears less important in the solution because part of its large correlation with DS8 is whittled away by other IVs (in this study, DS1, conflict with spouses/partners, and forgiving self) which are correlated with each other as well as the dependent variable.[170] Therefore, given the large full correlation between self-esteem and DS8 in the present study, one can conclude that the importance of self-esteem as a predictor of depressive symptoms is probably similar in both studies.

Several research teams have investigated the role of self-esteem as a risk factor for PPD.[41, 42] These researchers conceptualized self-esteem and social support as psychosocial and coping resources. As in the present study, they measured self-esteem with the Rosenberg Self-Esteem Scale but social support and depressive symptoms were measured with a variety of instruments. The results of bivariate analyses in these studies showed significant correlations between self-esteem and postpartum depressive symptoms of a smaller magnitude than that found in the present study, $rs = -.29$, and $-.31$, $p < .01$ versus $r = -.50$, $p = .01$. Ritter et al. also found a significant correlation between social support and self-esteem ($r = .31$) and highlighted the importance of clarifying the overlapping influences of multiple resources on depressive outcomes. They further criticized studies that "choose a single resource and examine its protective influence based on theoretical notions that ignore the overlap of resources."[41, p. 583] The correlation between global social support and self-esteem found in the current study ($r = .48$, $p = .01$) was larger than Ritter et al.'s finding and consistent with their observation that these resources overlap. According to Cutrona et al., other studies have also found significant correlations between self-esteem and social support.[207]

These results lend support to the model in the present study that conceptualizes self-esteem and social support as resources in the same inner-self or intrapersonal dimension of

women's experience. Although these concepts are also called personality variables,

it should be emphasized that they reflect a conceptualization of personality variables as

interpersonal process variables. Katz et al. pointed out that "these perspectives allow personality

styles to be conceptualized in terms of more basic, transactional processes...[with the result that]

personality is reconceptualized at a different level of analysis that is largely nonoverlapping with

symptoms of depression."[204, p. 274] The personality process view is attractive. According to Katz

et al. it may address the problem of discriminant validity between personality variables and

depression, and additionally, personality as processes is more amenable to change or

modification than personality as static traits.

Comparison of the bivariate results of the Ritter et al. and Terry et al. studies,[41, 42] that is

the correlations between self-esteem, social support and PPD, is more straight forward than

comparisons of the results of their multivariate analyses in the prediction of PPD. Because

depressive symptoms were measured more than once, the researchers investigated the

relationship of self-esteem to pre-and postpartum depression. Both research teams found that

self-esteem was significantly related to *prenatal* depressive symptoms. Although these results

highlight the role of self-esteem as an important risk/protective factor for depressive symptoms

in pregnancy, the role of self-esteem and social support in postpartum depressive symptoms was

more complex. Ritter et al. found that while controlling for prenatal depression, self-esteem was

not related to depressive symptoms at 7-to 9-weeks postpartum but prenatal social support was.

Terry et al. reported that self-esteem was a significant predictor of depressive symptoms at 5

months postpartum ($\beta = -.19$, $p < .05$) but not at 4 weeks postpartum ($\beta = .04$) (also controlling

for prenatal depression). It appears that there may be a temporal dimension affecting the

relevance and impact of some risk and protective factors over the childbearing phases. Thus,

considering the influence of time, one could ask if low self-esteem in pregnancy is a more potent

risk or protective factor for PPD than low self-esteem in the postpartum period. One might also ask if depressive symptoms at 4-or 8-weeks postpartum are sensitive to the same factors as depressive symptoms measured at 5-months postpartum. Furthermore, one must ask if self-esteem measured prenatally (as it was in the Ritter et al. and Terry et al. studies) is equivalent to self-esteem measured at 1-week postpartum (as it was in the present study).

In considering the above mentioned questions, it may be helpful to recall Affonso's continuum of pregnancy-postpartum adaptation.[35] The idea of a continuum extending from conception through the first year postpartum, adds a temporal dimension to interpretations of the findings of the three studies regarding the role of self-esteem and social support in postpartum depression. In applying Affonso's model, one could imagine that childbearing women's psychosocial resources (i.e., their self-esteem and social support) are "tested" by the challenges imposed throughout their transition to motherhood. Symptoms of depression could be understood as cues indicating the extent to which these resources support women's coping, adaptation, and sense of well-being. Over each woman's continuum of transition, one could imagine that challenges and stresses fluctuate and interact with personal resources. For example, some women may feel fulfilled, high in self-esteem, and well supported during pregnancy but may evaluate themselves and their social support less positively after the arrival of a baby that is "very fussy" and inconsolable. Conversely, other women may feel when pregnant that personal and relationship resources are inadequate but then with the birth of their babies they experience personal fulfilment, improved status, and increased support.

Affonso's continuum provides an alternative perspective from which to interpret the Ritter et al. and Terry et al results.[41, 42] Rather than concluding that self-esteem predicts depressive symptoms during pregnancy but is a less relevant in the prediction of PPD, one could imagine an unfolding of events that draw on women's coping resources along that continuum of

pregnancy-postpartum adaptation. Thus, in Ritter et al.'s study, prenatal depressed mood, low family income, and low satisfaction with social support (all measured prenatally), outweighed the influence of self-esteem in the prediction of postpartum depression (measured at 2-months postpartum). Similarly, in the Terry et al. study, the influence of baseline (prenatal) self-esteem was less important in the first month postpartum when the women's depressive symptoms were more strongly associated with dealing with a temperamentally difficult infant and family support in caring for the fussy baby. However, the baseline measure of self-esteem assumed more importance, relative to the importance of family support, and emerged as a significant predictor of depressive symptoms at 5 months postpartum. These findings evoke an image of women's coping and personal resources fluctuating in their salience along the continuum of pregnancy-postpartum adaptation—perceived social support waxing and waning, and self-esteem rising and falling interactively with other contextual variables such as stress and conflict for example. Since Ritter et al. and Terry et al. did not include repeat measures of the women's self-esteem and social support such interpretations of their results remain speculative. However, such a process-oriented analytical strategy would enhance understanding of how PPD is related to the interactive fluctuations in women's personal resources over the period of transition to motherhood.

It is intriguing to conjecture that over women's transition to motherhood it may be fluctuations in self-esteem that are predictive of depressive symptoms. As in the above mentioned studies, self-esteem in the current study was only measured once at 1-week postpartum. Thus, a fluctuation could not be detected because it was not measured again at 8-weeks postpartum. Sichel and Driscoll (as cited in Beck[197, p. 282]) referred to *changes* in self-esteem in their statement that the postpartum period "is a fragile time for the self-esteem of the ablest of women and is made much worse by the occurrence of depression." The self-esteem of

the women in the current study was negatively influenced by numerous variables, depressive symptoms in the first week postpartum, conflict with spouses/partners, lack of self-forgiving, and low income. It is possible that these and other factors caused a decrease in self-esteem over the 7-week interval of the study. It is also possible that such a *change* in self-esteem is a potent predictor of PPD. Roberts and Gotlib stated that changes (or decay) in self-esteem constitute a more potent risk factor for depression than a chronic state of low self-esteem. [201] Their work on risk factors for general depression also pointed to the effects of *instability in self-esteem* related to depression and proneness to depression. They concluded that "persons with difficulties in regulating and maintaining stable levels of self-esteem...with temporally unstable self-esteem or self-esteem that is highly reactive to minor events, are at risk for developing depressive symptoms following the occurrence of stressful life events." [201, p. 199]

Although the path model in the current study appears to suggest the direction of causality among the variables that negatively and positively influence self-esteem, there is a need for caution in making such assumptions. In actuality, the direction of influence may be in the other direction or the relationship may be bidirectional. In other words, low self-esteem may have contributed to more depressive symptoms, difficulties forgiving oneself, and conflict with spouses. In addition, the effect of GPSS on self-esteem in the study model was significant but the effect may have been in the opposite direction, or in both directions. In support of these alternative explanations, Turner and Lloyd discussed the plausibility of reciprocal causation between social support and self-esteem, thus supporting these alternative explanations. [59] They stated, "Surely, the experience of being supported by others contributes to more stable and positive self-esteem, while our level of self-esteem must set broad limits on level of perceived social support." [59, p. 650]

It is interesting to note that although the hypothesized direct effect of spousal conflict on self-esteem was supported in the current study, spousal support did not have a direct effect on self-esteem. In addition, the hypothesized indirect effects of spousal support on DS8 through the mediation of GPSS and self-esteem were not supported. In other words, though women with lower spousal support had a lower global sense of social support and lower self-esteem, this path was an inadequate explanation for the observed correlation between spousal support and DS8. In contrast to these findings, Hall et al. used path analysis and found support for their hypothesis that partner support directly influenced self-esteem which in turn predicted depressive symptoms at 1to 2-months postpartum.[60] However, they did not measure spousal conflict, and the results of the current study indicate that it was the quality of the spousal relationship that shaped and determined the women's perceptions of the support that was available to them from their spouses, and that ultimately predicted their depressive symptoms.

Depressive Symptoms at 1-Week and 8-Weeks Postpartum

The results of the current study reveal the important influence exerted by DS1 on DS8 and add to other recent evidence that depressive symptoms detected in the early postpartum should be viewed as a significant risk factor for later depression. In addition, the results pertaining to the indirect effects of DS1 provide preliminary evidence for some of the mechanisms by which early depressive symptoms may be linked to later depression. These indirect effects have not been well studied in the PPD literature.

In this sample of postpartum women the mean score for depressive symptoms measured with the EPDS at 1-week postpartum was 7.0 ($SD = 4.9$) compared to a mean score of 5.8 ($SD = 4.4$) for depressive symptoms measured with the same instrument at 8-weeks postpartum. There was a significant and strongly positive correlation between the two measures ($r = .54, p = .01$). The pattern of change in severity of depressive symptoms revealed that EPDS scores for 112

(68.5%) women decreased over the 7 weeks and scores for 63 (31.5%) women increased over the same interval. At 1-week postpartum 58 of the women (28.6%) scored 10 or greater on the EPDS compared to 38 (18.7%) at 8-weeks postpartum. Of the 58 women who scored 10 or greater at 1-week postpartum, 25 or 43% continued to score 10 or above at 8-weeks postpartum. Multivariate analysis showed that DS1 was the most important predictor of depressive symptoms in the study model at 8-weeks postpartum with path coefficients slightly larger than those for the effects of self-esteem (βs = .34, .37, .37, and .35 across the four models compared to βs = -.26, -.33, -.33, and -.34 for self-esteem).

The large effect size, r = .54, for the magnitude of the relationship between DS1 and DS8 in this study contrasts with the moderate r effect size for the relationship between maternity blues and PPD (mean r range = .25-.31) reported by Beck in her meta-analysis of five studies that included self-esteem.[197] Furthermore this effect size is larger than her strongest predictors of PPD: self-esteem (.45-.47), prenatal depression (.44-.46), and childcare stress (.45-.46). Part of the explanation for this difference may be related to methodological differences, namely whether the outcome variable was based on standardized diagnostic criteria or self-reported depressive symptoms, sample size differences, or choice of instrument to measure depressive symptoms at both time intervals. The use of the EPDS at both time intervals in the current study may have contributed to the higher correlation between the two measures. Two other research teams also used the EPDS to measure depressive symptoms in the first week postpartum and again at 6-weeks postpartum.[67, 84] Interestingly, the magnitude of the relationship between the two measures observed in these two studies was greater than Beck's mean r range. Hannah et al. reported a Spearman rank correlation, r = .60, p < .0001, N = 217, and Lane et al. reported a correlation, r = .43, p = .001, N= 224, thus creating a range into which the results of the current

study fall. It is also notable that as with the sample in the present study, their

samples were 200 women or more.

In the current study, there was a significant difference between the mean EPDS scores at

1- and 8-weeks postpartum, t (199) = 3.93, p = .0001. However, in the Lane et al. study the mean

score at 5 days postpartum was almost identical to the mean score at 6-weeks postpartum.[84]

Interestingly, the mean EPDS scores in Lane's and in the present sample were very similar,

differing by only .2 and 1.1 points (in a potential range of 30 points). These results attest to the

comparability of women's responses to the instrument across the two samples.

The finding in the current study that 43% of the women who scored 10 or above on the

EPDS at 1-week postpartum also scored 10 or above at 8-weeks postpartum is consistent with

other studies that revealed a significant overlap between women who were depressed at both

times. For instance, Yamashita et al. stated that 10 out of 15 or 67% of their small sample of

Japanese women who were diagnosed as depressed at 3-weeks postpartum already had

depressive symptoms at 5 days postpartum.[68] Hannah et al. concluded that women scoring 10

or more in the first week postpartum were approximately eight times more likely to have a score

of 10 or more at the later interval.[67] As in the current study, researchers who also conducted

multivariate analyses to determine the predictive power of early depressive symptoms relative to

other factors, confirmed the significant influence of depressive symptoms in the first week

postpartum to the variability in later depressive symptoms.[84] Overall, these results lead to a

similar conclusion—that early depressive symptoms may overlap with the onset of PPD and can

be used to identify women at risk for PPD.

Depressive symptoms at 1-week postpartum were postulated to exert direct effects on the

women's social and inner-self resources. Results of the path analysis showed that DS1 had a

significant direct influence on women's social resources. In particular, more depressive

symptoms were related to higher perceived conflict with spouses/partners, mothers, and female friends with children, as well as with lower perceived social support from spouses/partners and female friends with children. DS1 also had a significant direct influence on women's inner-self resources. Specifically, more depressive symptoms were related to lower GPSS and lower self-esteem. The hypothesized indirect effects of DS1 on DS8 were also largely upheld by path analysis although they proved considerably less important than the direct effects. The total indirect effects representing the summation of the indirect paths in the model were about one-third the magnitude of the direct effects. The following discussion of these potential mechanisms of early depressive symptoms on later depressive symptoms is based on insights found in the PPD, social support, personality, and general depression literatures.

The women in the present study who had more DS1 had higher scores on perceived conflict with their spouses/partners ($\beta = .32$, $p \leq .001$). Although the relationship between DS1 and RSC was modeled uni-directionally, the study design does not support a definitive causal interpretation. The literature suggests that the relationship may be bidirectional in nature. George (as cited by James[115]) referred to the bidirectional nature of relationship conflict and depression by labelling the phenomenon the "circle of despair,"[115, p. 95] and Whiffen called it "a negative feedback loop" that maintained both depression and poor spousal relations.[14] Research investigating social relationships and depression reveals that while depression can lead to increased conflict, distressed relationships can result in depression. There is also some evidence that depressive symptoms detected very early in the postpartum period may represent, at least partially, a continuation of distress that originated in pregnancy.[63, 208, 209] Katz et al. cited a number of studies demonstrating the effects of depressive symptoms including an increased risk of developing a first episode of major depression, and heightened reactivity to both stressors in general and marital discord in particular.[204] Thus, the link between early depressive symptoms

and perceived conflict with spouses/partners should be considered in evaluating the

risk for development of later depression.

Women who had more depressive symptoms at 1-week postpartum also had higher

perceived conflict with their mothers and with female friends with children (βs = .27 and .30, $p \leq$

.001, respectively). Descriptive statistics of perceived conflict within the four interpersonal

relationships revealed that the mean scores for conflict ranked highest for mothers (M = 6.83, SD

= 4.60) and lowest for female friends with children (M = 3.96, SD = 3.03). There is little in the

PPD literature that would identify factors associated with childbearing women's high levels of

perceived conflict with their mothers or explain the relationship between depressive symptoms

and conflict with their mothers. It could be that women with depressive symptoms are more

sensitive to their mothers' criticism in general. They could also perceive a lack of acceptance,

especially in their role as new mothers. Women suffering low mood may be more prone to

comparing their mothering abilities with those of their mother and feel criticized. Differences in

opinion regarding various approaches to infant care may be interpreted as conflictual in nature

for those mothers already feeling emotionally low.

Consideration of the effects of DS1 on both relational conflict and social support is more

informative than attempting to consider them in isolation. Comparison of the standardized beta

values for the paths between DS1 and conflict and DS1 and social support reveals that DS1

exerted a more negative influence on women's perceptions of conflict than it did on their

perceptions of social support from their spouses/partners and female friends with children.

Interestingly, there was no significant relationship between DS1 and the perceived support from

mothers and mothers-in-law. It appears that the variance in perceived support from the latter two

relationships was explained by conflict within these relationships rather than the effect of the

women's depressive feelings.

To further analyse the effects of both conflict and DS1 on relationship-specific social support (RSSS) from spouses/partners and female friends, a more detailed analysis was conducted. The effects of conflict and DS1 on each of the six social provisions constituting the total RSSS scales (attachment, social integration, opportunity for nurturance, reassurance of worth, and reliable alliance, and guidance) were examined. The results revealed that for the spouse/partner relationship, conflict had a large negative effect on five of the six social provisions. Remarkably, reliable alliance was least affected by spousal conflict, but most affected by depressive symptoms. In other words, it was not conflict with spouses, but depressive symptoms that most negatively influenced the women's sense they could count on their spouses for assistance. In contrast, the same analysis for female friends with children revealed that of the six social provisions, it was social integration, not reliable alliance, that was most affected by these two variables. Social integration was least negatively affected by conflict with friends and most negatively affected by depressive symptoms. Thus, it was not conflict with friends, but depressive symptoms that most negatively influenced the women's sense that they had a network of relationships for companionship and with whom to share interests and concerns. This evidence demonstrates that DS1 affects perceived social support differently than conflict, and that the effects of DS1 are relationship-specific.

There was a marked difference in the magnitude of the combined effects of DS1 and conflict on perceived social support from spouses/partners than the combined effects on support from female friends with children. Although conflict *and* depressive symptoms explained 48% of the variance in women's perception of spousal support, these two variables explained only 10% of the variance in women's perceptions of support from female friends with children. Other factors that explain the remaining 90% of the variance are unknown. They may include gender-related differences in the conduct and meaning of relationships. For example, Bell and Ribbens

discussed research findings that described how women engaged in minutely detailed discussions about childrearing with other mothers—an activity in which spouses/partners were unlikely to participate to the same extent.[210] Friendships with other women play a distinctive, but clearly important role in the mental health and well-being of postpartum mothers.

Consideration of how low mood, conflict, and perceived support are interrelated within the spousal relationship reinforces the previously mentioned notion of spousal withdrawal as a mechanism for lower perceived support from spouses/partners. The expression of depression in the marital context has been found to be different than in the context of other interpersonal relationships. Writing about PPD, one author pointed to research evidence that depressed persons react more negatively with their partners: One study estimated that expressions of hostility occurred twice as often as sadness.[115] Thus, women who experience low mood tend to express more hostility toward their partners who may then respond to the hostility by withdrawing. Munro described this phenomenon in her research of women's experiences of seeking and receiving help for postpartum depression.[205] The women in her sample described feeling angry and hostile toward their spouses/partners and irritated with their spouses' efforts to help them. Munro observed that "as the men became more frustrated with their unsuccessful efforts to help they began to back off and leave the women to solve the problem on their own."[205, p. 54] In sum, the net effect of the spouses' withdrawal is diminished perceived social support.

The effects of depressed mood early in the postpartum period also lead to new mothers' perceptions that their female friends with children are less supportive. This may not be because of their friends' withdrawal, but because of their *own* withdrawal from their female friends. The results of Mauthner's qualitative investigation of the significance of social contacts between postpartum mothers are consistent with this explanation.[131] The women in her study recalled feeling depressed and comparing their experience with those of other women who also had a

new baby. They observed that whereas other mothers were happy, coping well and successful, they were unhappy, not coping, and less successful at motherhood. These unhappy mothers recalled their process of *actively withdrawing* from relationships with other women whom they thought neither shared, nor would understand their feelings, and would even be critical of them. They consequently hid their true feelings, silenced their own voices, and "acted out a part, pretending to be happy mothers."[131, p. 316] In essence, their unhappiness and emotional distress led them to perceive that they were or would be criticised and alienated. Their self-protective withdrawal from relationships with their female friends resulted in further depression. Jack, studying depression in women, proposed that the loss of authentic connection with others (such as experienced by the women in Mauthner's study) is a mechanism for the onset of depression.[58] The women in Munro's study also felt that alienation from other female friends was linked to their depression.[205]

In this sample, DS1 also had significant indirect effects on DS8 through a negative impact on the women's inner-self resources. The effects of DS1 on GPSS (the women's sense of being loved, accepted and worthy of assistance) was larger than the influence of DS1 on the women's sense of self-worth. Since the relationship between DS1 and self-esteem were discussed earlier along with spousal conflict, the following comments focus on the effects of DS1 on GPSS and the indirect pathway from DS1 to DS8 through the mediation of GPSS and self-esteem.

The influence of DS1 on GPSS in the present sample was similar in magnitude (and opposite in direction) to the influence of RSSS on GPSS. Across the four relationship models, all beta values were highly significant and ranged from -.30 to -.38, $p \leq .001$, for the paths between DS1 and GPSS and .23 to .40, $p \leq .01$ and $p \leq .001$ for the paths between RSSS and GPSS (see Figure 4-5). These similar and opposing influences on GPSS suggest that the beneficial influence

of support from specific individuals in their social environment on their overall

sense of the availability of support from others was negated for those women who are

experiencing depressive symptoms. Additional analysis was done to determine if the influence of

DS1 on each of the six subscales that make up the total score for GPSS differed in importance.

When the total score for each of these provisions was regressed onto DS1 and RSSS from each

of the four relationships, DS1 was significantly and negatively related to five of the six

provisions—opportunity for nurturance (the sense that others rely upon one for their well-being)

was the one exception. The strongest effect of DS1, however, was on reassurance of worth (β

=-.45, $p \leq 001$) and social integration ($\beta = -.30, p \leq .001$). In other words, the women who had

more depressive symptoms felt that they were less valued and less recognized for their

competence and skills by others within their general social network. Similarly, the women who

were more depressed at 1-week postpartum also had a diminished sense of belonging to a group

that shared similar interests, concerns, and recreational activities. In turn, these women also had

lower self-esteem and higher DS8. Thus, early depressive symptoms seemed to stimulate a

"cascade of effects" leading to increased DS8. The women's inner-self resources, GPSS and

self-esteem were significant mediators of these effects—mechanisms that have been proposed by

other social support theorists.[61, 123, 201]

Interpretations of the indirect effects of DS1 must be considered in light of previously

mentioned limitations in the design of the current study. All of the indirect pathways (involving

the influence of one independent variable on another) represent findings from the cross-sectional

measurement of these variables. A major assumption of path analysis is that the flow of

causation is unidirectional making path analysis limited as a statistical technique to investigate

relationships that may in fact be in the reverse direction or even bidirectional.[193] Therefore,

since all of the predictor variables were measured cross-sectionally and the theoretical model is

inconclusive about the direction of effects between many of the variables, caution must be exercised in making causal interpretations.

Spiritual Resources and Depressive Symptoms at 8-Weeks Postpartum

Knowing God forgives me

Knowing that God forgives me was directly and negatively predictive of DS8. In other words, the women in this study who were more confident at 1-week postpartum that God was consistent in forgiving them also had less severe depressive symptoms at 8-weeks postpartum. The magnitude of this relationship can be compared to the magnitude of the four other variables in the model, DS1, self-esteem, and RSC with spouses/partners and female friends with children that predicted the change in severity of depressive symptoms over the 7-week interval of the study. Beta values indicate that the effect of confidence in God's forgiveness was approximately one half the magnitude of DS1 and self-esteem, and equal to that of conflict with spouses and conflict with female friends. One might interpret these results by drawing a parallel between the effects of the women's perceived conflict in their relationship with God and perceived conflict in their relationships with their spouses and friends. However, this interpretation is based on several unfounded assumptions: (a) that the women understood and interpreted the question similarly; (b) that they thought of God in personal terms; (c) that they believed that forgiveness was an attribute of an interpersonal relationship with God; and (d) that the 26 (12.8%) of the participants who did not respond to the question could be assigned a score equal to the 11 (5.4%) who responded *never* in response to the statement *I know that God forgives me.*

Since the *knowing God forgives me* variable was constituted by the women's responses to a single item that read, "I know that God forgives me," one could not begin to understand what this statement may have meant to the participants. However, an examination of the interrelationships of this variable with the other variables in the study may offer some insight.

Firstly, it is important to recall that in this sample women's perceived confidence in God's forgiveness was positively correlated to self-proclaimed strength of religiousness ($r = .57$, $p = .01$). Figure 4.4 presents a graph that illustrates the nature of the relationship. This suggests that women who perceived themselves as more religious also had more confidence in God's forgiveness. These women may have been reassured by religious teachings that God forgives, or they have felt that their religiosity made them more meritorious of forgiveness.

Correlations between knowing God's forgiveness and the key variables in the theoretical model may also provide additional understanding. Knowing God forgives was not significantly correlated with either conflict or support within the four interpersonal relationships in the social dimension, nor was it significantly correlated with the two inner-self resources, GPSS and self-esteem. The correlation between knowing God forgives and depressive symptoms at 1-week postpartum and annual household income was zero. In contrast, correlations between knowing God forgives and the seven remaining variables in the spiritual dimension were large and highly significant. The highest r value with respect to the later group of variables was between knowing God forgives and *relationship-specific support from God* ($r = .72$, $p = .01$) and the lowest two were with *forgiving oneself* ($r = .34$, $p = .01$) and *forgiving others* ($r = .38$, $p = .01$). It seems that the women who were confident in the consistency of God forgiveness were also highly confident in the availability of God's support, but not so confident that they could consistently forgive themselves for the thing they had done wrong or forgive others who hurt them.

Finally, additional analysis of the correlations between knowing God forgives and several of the individual items that composed the scale measuring relationship-specific support from God sheds more light on what knowing God forgives meant to the women in the study. The perception that God consistently forgave them was strongly related to the women's sense that (a) they were loved by God ($r = .72$, $p = .01$), (b) they were accepted by God for who they were ($r =$

.73, p = .01), (c) they could look to God for strength, support and guidance (r = .60, p = .01), (d) they expected God's comfort and help in labour and delivery (r = .53, p = .01), and (e) they expected God's wisdom and guidance to help with parenting (r = .63, p = .01). These correlations provide evidence that the women in the sample who responded to the questions thought in terms of a personal God, a God who cared about them, and who was involved in their life experiences. These correlations, however, do not shed light on the women who did not respond to the question.

It is challenging to offer explanations as to why confidence in God's forgiveness (measured at 1-week postpartum) predicted a portion of the variance in depressive symptoms at 8 weeks. Literature was not found that dealt specifically with forgiveness in the context of motherhood. The forgiveness literature, once confined to theology, has appeared at an increasing rate over the last two decades in publications of the social and psychological disciplines, particularly those associated with counselling and psychotherapy.[211, 212] However, the majority of this literature deals with both theoretical and empirical aspects of *interpersonal* forgiveness[180, 213, 214] which was not found to be directly or indirectly predictive of DS8 in the current study. Although forgiving self is a concept that appears in the depression literature as well as the forgiveness literature, this type of forgiveness was not found to be directly related to DS8. Additionally, the indirect effect of forgiving self on DS8, mediated by self-esteem, failed to explain the observed correlation (r = -.35, p = .01) found in the study. *Divine* forgiveness, particularly divine forgiveness in the context of motherhood, does not appear in the social and psychosocial literatures.

Before one can begin to explain why the women who had less confidence in God's forgiveness had more DS8, one must establish some links between forgiveness, God, and the perception of need for God's forgiveness. Within the context of PPD, these concepts then need

to be linked to childbearing and motherhood. The concept of forgiveness is deeply embedded within our culture and exists in the background of most peoples' awareness.[212] Although beliefs about forgiveness probably influence people's thinking, feelings, and behaviour when they confront moral issues—issues of "right and wrong," "good and bad"—people may have difficulties articulating what exactly they believe about forgiveness, as well as identifying the source of their beliefs. Nevertheless, the concept of forgiveness is probably always associated with the concept of morality. Though the standards of morality are changing in society and are increasingly reflecting subjective and personally-defined values, there is evidence that religious traditions and ideals of higher or divine standards still influence people's basic moral codes.[212, 215, 216] Findings from Bibby's Canadian surveys provide support for the claim that the basic moral code of the majority of Canadians includes notions of God, God-centred standards, and the consequences of offending God and violating those higher standards.[15] The conceptual definition used in the study for the variable *knowing God forgives one* stated that such knowledge occurs as one perceives that God's view of oneself is not judgmental but characterized by compassion, benevolence, and love. It is apparent that this definition implicitly appeals to notions of God-centred standards. It also includes the idea that God is aware of and concerned with the moral nature of one's actions but that in forgiveness the response is compassion, benevolence, and love rather than negative judgment. Although this definition of

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[15] In Bibby's national surveys in Canada, in 1985 he began asking people, "Do you believe God exists?" (In the decade previous to 1985, Bibby had asked people what they believed about God.) He reported that over a decade and a half from 1985 to 2000, "positive belief in the existence of God has remained very consistent over time, at just above 80%."[217, p. 140] In addition, 73% of respondents in the 2000 survey stated that they were "definitely sure" or "think" that God is concerned about them personally and "70% of people across the country agree with the statement, "Somehow, some day, injustices will be made right."[217, p. 176] Bibby also found that people in general are very private about what they believe and tend not to share their beliefs even within their own religious circles. These findings reveal a pervasive, but hidden belief in God and in the relevance of God's care and God's concern with what is right and just.

forgiveness may only reflect Christian and Jewish religious traditions[212, 215, 216] one can argue that this is appropriate in a study in which a majority of the women identified as Christian.

Having established some links between forgiveness, God, and morality, one can now ask the question of how these concepts relate to postpartum women. "Are there aspects of motherhood that are linked to morality?" and "Why might God's forgiveness be more salient than forgiving oneself and forgiving others in PPD? A few PPD researchers have linked motherhood and morality and PPD and morality.[58, 89, 218] Brown and Small explored the concept of a 'good mother' in their sample of 90 women in Australia, half of whom had experienced postpartum depressive symptoms. They found that regardless of whether they had experienced depression, the women in their sample held similar and highly idealized views of motherhood. The researchers concluded that these views reflected "shared beliefs [that were] culturally pervasive and therefore normative in society.[89, p. 197] Mauthner observed that the women in her English sample who experienced PPD, "Constructed motherhood in idealized and moral terms, which were informed by dominant representations of motherhood within Western societies.[131, p. 318] She described how these depressed women, feeling that they had fallen short of cultural expectations of motherhood, criticized themselves on moral grounds. They used moral terms such as "should," "ought," "must," "wrong," and "bad" in talking about motherhood.[131, p. 318] Thus, these researchers have noted the link between morality and motherhood related to normative cultural expectations of motherhood that were evidently internalized by these mothers.

Mauthner identified several sources contributing to the moral standards that the mothers used to judge their mothering performance. "The moral voices of the experts and the childcare manuals," (as they are called by Mauthner) were one contributor.[131, p. 318] Another source that

reinforced the moral standards for motherhood was the women's relationships with other mothers with young children. They "were particularly important because cultural notions of motherhood took on meaning and became concrete for the women through a process of checking out their feelings and comparing their experiences with those of other mothers."[218, p. 155] For those mothers who begin feeling that they are falling short of the moral standard of motherhood (for whatever reason) it is understandable that they would avoid "confession" of their failures to female friends with children whom they perceived to be both upholding and successfully meeting the standards. In fact, as has been previously stated, these mothers tend to actively withdrawal from their social relationships. To admit to their friends that they are not coping well with mothering would confirm that they had fallen short of the cultural expectation that mothers should be able to cope single-handedly. Moreover, such admission may provoke criticism and negative judgement from their friends. Likewise, these mothers would tend to avoid the health-care and child-care experts who are also in a position to judge. It is thus plausible that as these women struggle with feelings of failure and fear of negative judgment, those who have confidence that God is consistently forgiving of them (even if they have fallen short of divine standards of motherhood) would have a source of support. This same support would be perceived as less available to women who were less confident about God's forgiveness.

Questions must be raised about the 20 (9.8%) women who responded that they never or seldom knew that God forgives. It seems important to stimulate interest in understanding not only how confidence in God's forgiveness may be a protective factor in depressive symptoms at 8-weeks postpartum, but how lack of confidence in God's forgiveness may be a risk factor for depressive symptoms. As pointed out earlier in this section, the study data showed strong correlations between the variable *knowing God forgives* and the women's sense that they were

loved, accepted, and helped by God both generally and specifically in their

parenting responsibilities. Although caution must be used in making assumptions about women

who lacked confidence in God's forgiveness, the data indicates that there is considerable overlap

between women who have such low confidence and those who feel less loved, accepted, and

supported by God. Therefore, one must ask why those women who identified themselves as

never sure that God forgives may also be at increased risk for depression.

One possible explanation for the link between lack of confidence in God's forgiveness

and increased postpartum depressive symptoms includes the concepts of shame versus guilt, and

the relationship between shame and specific forms of violence against women. In their review of

the health effects of three of the most common types of violence against women, Bohn and

Holz[219] highlighted the links between women who have experienced abuse and higher rates of

depression, lower self-esteem, and shame and guilt. They noted that sexual abuse, particularly

rape and childhood sexual abuse, is associated with shame and self-blame. Rape victims report

poor self-esteem due to self-blame and the sexually abused child incorporates the blame for the

abuse, "accepting that she is the bad or the guilty one."[219, p. 445] Tangney et al. distinguished

between the concept of shame and guilt in their study of the relation of shame proneness and

guilt proneness to constructive versus destructive responses to anger.[220] Their results affirmed

known phenomenological differences between the moral emotions of shame and guilt as well as

the differing implications of shame and guilt in terms of managing anger in everyday contexts.

However, for the purposes of this discussion it is the phenomenological difference in shame and

guilt that is of interest, and the possibility that these are related to differences in knowing that

God forgives.

Although shame and guilt are both "negative self-relevant emotions," events that lead to

shame and guilt are construed differently in terms of one's sense of self.[220, p.797] These two

moral emotions are also associated with important differences in affect, cognition, and motivation. The person who is *shamed* by a sense of personal failure or negative behaviour evaluates their entire self negatively, feeling small, powerless, and exposed. The consequences include a global sense of low self-esteem or unworthiness, anger (self- or other-directed), and a sense of need to hide, or withdraw in self-protection. On the other hand, when a person experiences *guilt* because of a specific behaviour or sense of failure, it is the behaviour, not the entire self, which is negatively evaluated resulting in "tension, regret and remorse over the bad act that was done."[220, p. 798] The self remains relatively intact and unimpaired in the processes of guilt, but the tension and remorse about the bad act or moral failure motivates reparative action. This action may include, for example, the process of seeking forgiveness. Thus, one could hypothesize that women who are shame-prone may have less confidence as well as less motivation than those who are guilt-prone, to believe or seek God's forgiveness. Although the observed correlation between forgiving self and DS8 ($r = -.35$, $p = .01$) in the current study was poorly explained by the path mediated by self-esteem, the potential interrelationships among shaming events such as sexual abuse, and factors such as forgiving self, self-esteem, and knowing that God forgives, in the development of postpartum depressive symptoms are intriguing and merit further study.

Religiousness/Spirituality: A Comparison with Canadian Data

The women enrolled in the current study answered a number of questions that provided a snapshot of their religiousness/spirituality. They gave information about their religious affiliation, self-rated strength of religiousness and frequency of religious and spiritual practices. They also described aspects of their personal spiritual experience and prayer. Perhaps the most useful discussion of these data presented in tabular form (see Table 4-5) is a comparison with Bibby's Canadian research that has spanned the years 1975 to 2000.[217] His findings are based

on a series of national surveys carried out every 5 years monitoring Canadian social and religious trends. All the samples[16] are highly representative of the Canadian population; he has provided information on how he met the two key criteria of size and representativeness to generalize with accuracy to the Canadian population.[17] Finally, Bibby frequently evaluated the effect of gender, and age on the data. Surprisingly, gender did not make a significant and consistent difference in the numbers.

Fifty-seven percent of the women in the current study identified "Christian" as their religious affiliation, with 14% in "Other" categories and 36% claiming no religious affiliation. Bibby's description of Canada's "Religious Families" in 2002 show that by adding together Catholic and Protestant religious groups, the category Christian represents approximately 74% of the Canadian population; "Other Faith Groups" represent 6% and "Religious Nones" account for 20%.[217] On the basis of this comparison, it is clear that this sample is different from the overall national picture with a smaller proportion of Christians; there are more than double the proportion of other faiths and close to double those who do not identify with a religion. Bibby's analysis of these categories in Canada's profile led him to conclude that the Religious None category is characterized by a very high level of "switching in" and "switching out" with "latent religious identification" surfacing on occasions of weddings, the arrival of a baby, or the need for funeral arrangements.[217, p. 53] Interestingly, in rating their strength of religiousness only 23% of the women in this sample stated they were "not at all religious." This raises the possibility that

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[16] Bibby stated that "each survey sample since 1980 has consisted of (a) a core of people who participated in the previous survey and (b) new participants, who created a full national sample of about 1,500 cases."[217, p. 250] The return rates for his national surveys have been between 52% and 65% over the years with about 65% of the people being previous participants and just over 50% being new participants.

[17] Bibby informs the reader that "a representative sample of about 1,000 cases is sufficient to claim a confidence level of 95% and a confidence interval of four percentage points when generalizing to the Canadian adult population."[217, pp. 249-250] His sample sizes have exceeded the number of cases needed. With respect to representativeness, the researcher has stratified the nation by province and community size, with samples drawn proportionate to the populations involved.

13% of the 36% of those who claimed no religious affiliation in this sample may have represented a latent religious group that at the time of the study would not claim a religious affiliation.

The question in this study asking respondents about the frequency of their religious or spiritual practice is not directly comparable with Bibby's data on church attendance in the year 2000. Women in the study may have included the frequency of their private spiritual practices as well as their church attendance. This is apparent in their responses—only 4% of the women stated they practiced *once a week* whereas 28% practiced more frequently than weekly, from *several times a week* to *three or more times a day*. Thus, a total of 32% of the sample practiced at least one a week. At the opposite end of the continuum, an almost equal number of women (32%) stated they *never* engaged in religious or spiritual practices. In the middle area of the practice continuum another third (29%) of the women practiced "a couple of times a year" or "occasionally but not weekly." The 58% of monthly and yearly attendees in Bibby's national sample fall into a similar category as the 29% of women who practiced *a couple of times a year* or *occasionally*. The 22% of Canadians who never attend church may be comparable to the 31.5% of women who *never* practiced in this sample. To summarize the results of this comparison of *somewhat* similar categories of practice, one might conclude that the present sample represents a population that is more polarized at either end of the religious/spiritual practice continuum than the national population.

Experience is a dimension of spirituality along with belief, practice, and knowledge that Bibby identified in his survey. His question, "Do you believe that you have experienced God's presence?"[217, p. 146] is comparable to two of the questions in the current study, "How often have you felt as though you were very close to a powerful spiritual force that seemed outside of yourself?" and "How close do you feel to God?" In 2000, 47% of Bibby's national sample

claimed that they had experienced God's presence. Forty-four percent of the women in this sample reported that they had *very often, often, sometimes,* experienced a powerful spiritual force and 72% stated they felt *very close, close, and sometimes close* to God. It is apparent that experience of the transcendent was prevalent in the present sample—more prevalent than national rates. Interestingly, more women stated they never had an experience of a powerful spiritual force (33%) than those who stated they felt *not at all close* to God (11%) or *not very close* (14%).

Bibby observed that a large number of Canadians in 2000 (47%) claim to be "talking to God on a fairly regular basis" (28% daily and 19% weekly).[217, p. 156] Those who prayed less frequently fell into the categories of *less than weekly* (27%) and *never* (26%). Similarly, in the current study, 47% of the women prayed weekly or more frequently, and 33% prayed less frequently. Only 20% of the women stated they never prayed. Bibby highlighted the fact that 1 in 3 Religious Nones in Canada (people not affiliated with any religion) stated they prayed whereas almost 1 in 2 of those who claimed no religious affiliation in this sample prayed. In addition to the frequency of prayer, the women responded to a question about the circumstances in which they prayed. The women were encouraged to respond to more than one circumstance if applicable, but it is evident that more women prayed when they were stressed (59% prayed in response to stressful circumstances such as family illness, work, etc.), and feeling low (40%) than those who prayed as part of a daily routine (33%) or to talk to someone who cared (33%). This is consistent with Bibby's conclusions that many Canadians in the course of coping with life and death "reach out to a higher power—because it seems like the appropriate thing to do. Prayer seems to be almost our default mode."[217, p. 158] He wondered if this automatic or default response might be "an important clue that our existence is tied to the gods."[217, p. 158]

The final two spirituality items considered in this discussion are specific to the context of childbearing and motherhood. These items asked about the extent to which the women in the current study expected God's comfort and help during labour and delivery and God's wisdom and guidance to help with parenting. In both circumstances, the majority of women *somewhat* to *very much expected* God's assistance: A larger majority (69% versus 54%) expected God's wisdom and guidance with parenting. Given the magnitude of the responsibility of motherhood and the associated task of parenting it is not surprising that more women felt the need for assistance. Given Bibby's finding that, in 2000 no less than 73% of Canadian respondents were either *definitely sure* or *think* that God or a higher power cared for them personally,[217] it should not be surprising that a similar proportion of the women, feeling that God cared about them personally, expected supernatural help with their heavy responsibility of parenting.

Summary

Overall, discussion of the findings has focused on those variables that were found to be directly predictive of depressive symptoms at 8-weeks postpartum, namely, conflict with spouses/partners and conflict with female friends with children, self-esteem, depressive symptoms at 1-week postpartum, and knowing that God forgives. Other studies have reported that spousal conflict and depressive symptoms in the first week postpartum were predictive of PPD thus confirming the results in the current study. Self-esteem was also confirmed as an important predictor of postpartum depressive symptoms. The theoretically proposed relationships among the independent variables that were found to be statistically significant in all four of the study models as well as the indirect paths from conflict and depressive symptoms at 1-week postpartum that were found to be correctly specified by path analysis, stimulated

consideration of how these mechanisms compare to other theories and hypotheses found in the literature. Implications of these findings are discussed in the sixth and final chapter of this thesis.

CHAPTER SIX: IMPLICATIONS FOR RESEARCH AND PRACTICE

Overview

The final thesis chapter presents a discussion of some implications for practice and research that arise from the results of the study. Attention is first paid to the need for health-care professionals to develop better awareness, understanding, and responsiveness to the influence of women's spiritual beliefs and practices on their experiences of childbearing, motherhood and PPD. Next, recommendations are made about how researchers and practitioners might respond to what has been learned about the influence of women's close personal relationships and self-esteem on postpartum depressive symptoms and to the additional questions that have been raised by the study. Finally, implications of the research finding that depressive symptoms in the first week postpartum are strongly predictive of later depressive symptoms are discussed.

Spirituality and Postpartum Depressive Symptoms

This study provides preliminary evidence that there is a relationship between PPD and childbearing women's spirituality. It also provides a snapshot of the importance of religion and spirituality in the lives of these women. What are the implications of these findings for research and practice? Becker concluded, after reviewing the research linking religion/spirituality and health in a volume of works examining the relationship of the behavioural and social sciences to public health, maintaining the status quo in health-care is not a reasonable response to the evidence.[169] She noted that religion/spirituality was integral to the lives of diverse populations and had a salutary effect in these populations, even when controlling for other health and social variables. She also noted the evidence that the public still perceives public health and medical care strategies as unresponsive to their spiritual perspective. She stated, "The sheer scope of religious involvement in the population simply cannot be relegated to the obscure mystical position it holds among many scientists and health-care professionals, nor can it be assigned a

neutral position in the lives of the people for whom it is integral."[169, p.364] Although Becker's conclusions identify an inappropriate response to the evidence, defining what constitutes an appropriate response will require the concerted effort of scientists, practitioners, and educators who are committed to holistic approaches to health care.

There is a need for further research that illuminates the meaning of divine forgiveness in the experience of childbearing women's lives, primarily as it relates to their sense of well-being. A phenomenological approach seems particularly appropriate. Sims describes this approach as one essential step in bridging the twin universes of religion and psychiatry because it entails an exploration of the person's subjective experience of belief as a motivating force "without embellishing those events with explanation of cause or function."[153, p. 441] Research questions should lead to greater understanding of the meaning of divine forgiveness in terms of the unique self-experiences and the shared assumptions of religious groups. Studies should seek to illuminate possible interrelationships among shame, guilt, and self-esteem, and what creates or undermines confidence in God's forgiveness.

Religiousness/spirituality may be a significant factor in PPD in numerous ways and merits further investigation. The qualitative data in the current study, in which women discussed their spirituality, point to a possible relationship between spirituality and *recovery* from PPD. Most notable in this respect was the woman who believed that it was her relationship with God that kept her sane, kept her from giving up, and gave her hope while she was going through the worst of her postpartum depression. It is interesting that recovery from general depression has been related to religious faith.[221] Spiritual resources also may be related to prevention of PPD, or conversely to PPD that becomes chronic or recurring. The fact that the majority of mothers in the study expected God's help with parenting raises further questions about how spiritual resources may also be important to women's ability to cope with the cultural expectations of

motherhood, and the heavy responsibility of parenting. The results of Kushner and Harrison's grounded theory research revealed that some of the women used spiritual support to cope with the competing demands of multiple role expectations.[222] These findings and the finding that the majority of women in the current study expected God's wisdom and guidance to help with parenting support a recommendation that the role of spirituality in motherhood and coping with parenting be examined further.

Educational preparation of members of the health and social work professions is needed if practitioners are expected to have some understanding of religious and spiritual issues, how their clients' beliefs influence their health behaviour, and how to address religious and spiritual factors during assessment and intervention. The inclusion of content on religion and spirituality in the basic curriculum for the helping professions is controversial[223] and will require the establishment of processes to gain the support of educators. Sheridan et al.'s work is an example of one approach that could contribute to a support-building process.[224] They conducted research to survey educators in schools of social work to collect systematic information on their views of appropriate religious and spirituality content, and how to design and deliver such curriculum in the education of social workers. McSherry and Draper called on nurses to become involved in similar work arguing that "by gaining insights into how nurses perceive this dimension of care, educational programmes can be developed which accommodate both nurse and patient perspectives, which will in turn ensure that spiritual care is delivered appropriately."[199, p. 690] Levin et al. reported that the number of US medical schools that taught courses on religious and spiritual issues increased ten-fold from 3 to 30 between the years 1994 and 1997.[152] It is expected that this progress will be supported and enhanced by conferences, such as the one described by Levin et al., in which deans and faculty of medical schools focused on the topic of spirituality in medicine and the associated curricular development. Such

leadership and initiatives will be required to promote the inclusion of the spiritual dimension of persons in the current biopsychosocial conceptualization of persons that guide the basic education of the health and social work professions.

Health and social work professionals in the community setting are ideally positioned to provide holistic, spiritually-sensitive care to childbearing women. Family physicians, public health nurses, and social workers have unique opportunities to become familiar with new mothers and their families and their community context, including cultural and religious practices and rituals associated with birth and parenting. However, some practitioners may be reluctant to raise religious or spiritual issues with new mothers, even those who indicate that they are feeling emotionally distressed, in spite of the fact that such discussion may reveal that religion/spirituality is an important source of meaning, support, *or* distress for these mothers. Sims observed that the reluctance of health care-practitioners to speak about spiritual concerns is known to patients and they respond by not talking about personal religious concerns.[153] Many factors have contributed to professional reluctance to talk about religion or spirituality with clients. There are persistent beliefs that religion and science, and religion and medicine do not mix. Some may think that religious commitment may be a risk factor for psychiatric problems, and others may have a fear of proselytizing.[46, 149, 225] A "religiosity gap" between the religious beliefs of health-care professionals and patients is yet another factor that may contribute to reluctance to discuss patients' spirituality. In general, health-care professionals have been found to be "less likely than their patients to practice religion or hold a religious belief."[149, p.157]

There is help for practitioners who are interested in developing sensitivity and skills in providing spiritually sensitive health care. A few simple guidelines have been taken from the literature that may be applied in the postpartum context:

1. "Know thy-self—in religious or spiritual orientation."[226, p. 200] Sheridan et al. highlighted the importance of self-knowledge gained through openness and reflection. They assumed that practitioners' personal beliefs vary; some adhere to a particular faith, some embrace secular philosophies, and some consider themselves antireligious. Nevertheless, the researchers concluded that "just as it is important to continually examine one's views on diversity of culture, race, ethnicity, gender, and sexual orientation, it is equally essential to have awareness about personal beliefs, biases, or prejudices concerning religiosity or spirituality."[226, p. 200]

2. Invite clients to talk about how their spirituality/religion relates to their present illness or distress. Matthews et al. suggested that family physicians should integrate two questions into their initial interviews with patients.[46] They might ask, "Is your religion (or faith) helpful to you in handling your illness?" and if the answer is yes, they might follow this question with, "What can I do to support your faith or religious commitment?" They concluded that physicians who asked these questions and appropriate follow-up questions "would gain access to potentially valuable information on how to integrate religious factors into the care plans of particular patients."[46, p. 123]

3. "Avoid falling into the trap of offering ready answers."[147, p.31] Wright et al. acknowledged the challenges that health-care professionals face when working with family members experiencing spiritual distress and offered this caution. They recommended that practitioners listen, accept, and be curious about the meaning their patients find in the events of their lives and their beliefs about health and illness.

4. "Think about your work with people who have strong religious beliefs as cross-cultural communication."[227, p. 52] In their discussion of spirituality and social work,

Sheridan et al. made this recommendation and added that practitioners
need to understand that for many people their world view is shaped by their religious
beliefs. They quoted a social worker who reported the following discovery, "Once I
start listening to the language of the client and using their terminology while
advocating that a client start listening to their wisdom, I am amazed how many
people begin to describe a greater sense of comfort regarding their decisions."[227, p. 52]

In summary, an implication for practice that arises from the findings of this study is
the need to be aware of the place and importance of spirituality in postpartum women's lives and
to develop a level of comfort and skill in providing care that is consistent with its importance and
appropriate to the role of the health professional. Although the link between divine forgiveness
and depressive symptoms needs to be replicated before it is established as a risk factor for PPD,
numerous of the religious/spiritual characteristics of this sample are strikingly similar to those of
the general Canadian population. This similarity supports a conclusion that for a majority of
childbearing women, spirituality holds an important place in their lives.

Interpersonal Conflict and Postpartum Depressive Symptoms

The findings of this study pertaining to the influence of conflict within women's close,
personal relationships on the development of depressive symptoms at 8-weeks postpartum raise
further questions for research. The examination of conflict within specific relationships revealed
that not all relational conflict is equal in effect—conflict with their spouses/partners means
something different to women than does conflict with their mothers, mothers-in-law, and female
friends with children. These specific effects have been hidden in research that measures conflict
from aggregated sources, thus highlighting the importance of relationship-specific measures. The
knowledge that conflict with female friends has an almost equal and direct effect on depressive
symptoms at 8-weeks postpartum suggests that PPD research must expand its focus to include an

examination of these hitherto neglected relationships. Bell and Ribbens described

them as "apparently insignificant or invisible women's networks" and further noted that social

researchers have neglected "sustained examination of the social relationships within which many

or perhaps most mothers are involved on a day-to-day basis."[210, p. 227] It is not known why

conflict with female friends predicts depressive symptoms at 8-weeks postpartum yet conflict

with mothers does not. It is also mysterious why the nature of the relationships between conflict

with female friends and perceived social support from them are different than those between

conflict with and support from spouses, mothers, and mothers-in-law. These questions suggest

new research hypotheses that are consistent with a *relationship perspective of social support.*

These hypotheses state that relationship properties or qualities (such as conflict) lead to both

support and outcomes such as PPD.[57, 61] The measurement of relationship processes with

respect to *particular* social relationships, including women's female friends with children, would

add a new perspective to the traditional approaches to the study of social support and PPD and

perhaps yield new and important insights.

The study's hypothesized indirect effect of spousal conflict on postpartum depressive

symptoms through the mediation of women's self-esteem was supported, thus providing a

plausible mechanism to explain the well-established association between spousal conflict and

PPD. Although neither conflict nor self-esteem was measured in Misri et al.'s randomized

controlled trial of partner support in the treatment of postpartum depression, one wonders if

reductions in conflict and increases in self-esteem may have been the mechanisms explaining the

positive results of their study.[29] Relative to the control group, those women whose partners

were involved in the support group treatment showed marked improvements from baseline

scores in depressive symptoms. Further randomized controlled trials in which couples are

involved in treatment approaches that target couple conflict (such as integrative behavioural

couple therapy[228]) and that include measures of self-esteem as well as depressive symptoms would identify the characteristics of effective interventions and clarify the causal relationships.

Health and social-work professionals consistently communicate information about sources of support available to postpartum mothers. For example, maternity nurses alert public health nurses if it appears that a newly delivered mother lacks support. Public health nurses routinely inquire of new mothers whether they have support or help available to them. This practice is based on the belief that mothers need varying types of assistance to cope with the demands of a new baby. However, the results of this study suggest that relationship-specific conflict, not relationship-specific support, directly and indirectly predicts the development of depressive symptoms and that conflict greatly diminishes new mothers' perceptions of the support that is available to them. These findings imply that there is a need to evaluate the quality of women's relationships if a practitioner is interested in assessing risk for depression. Practitioners should look beyond the spousal relationship to the quality of women's friendships with other mothers because perceived conflict with these friends may be another risk factor for the development of depressive symptoms. A review of nursing assessments with new mothers—the timing, purpose, and content of the assessments—is needed to clarify what should be assessed, when, and how.

Health-care service agencies and practitioners are increasingly aware of the need to shift from an emphasis on treatment to prevention. What is known about social relationships as important predictors of PPD should be reflected in agency policies and programs. For instance, prenatal education should include content that stimulates pregnant couples to explore relationship issues, to talk about conflict within their relationships, the effects of that conflict, and ways to resolve conflict. Ideally, prenatal educators would have access to counsellors and therapists to assist in this group work and who could offer follow-up therapy for couples who

identify the desire or need for it. Evaluation of these components of prenatal classes should be an essential aspect of programming.

Self-Esteem and Postpartum Depressive Symptoms

In this study self-esteem was modelled as an intrapersonal factor (also referred to as an inner-self, personality, or individual difference factor) and was measured as a global sense of self-worth at 1-week postpartum. Although self-esteem was found to be an important predictor of depressive symptoms at 8-weeks postpartum, Katz et al.'s comments are instructive when one contemplates the implications of this finding.[204] In their review of the research focused on individual differences, social support, and depression, these authors made several recommendations that have implications for future research.

Katz et al. emphasized that since individual differences or personality factors are not causes, but at most, correlates of other causes, it is important to exert research efforts to "specify the mechanisms through which these individual differences operate and the social conditions that may maintain them."[204, p. 268] With respect to women's social conditions, the current study revealed that perceived conflict within women's relationships with their spouses/partners is related to self-esteem and to postpartum depressive symptoms. However, the study design imposed limitations on any conclusions that can be drawn. The cross-sectional measurement of conflict and self-esteem limits causal interpretations; it cannot be concluded that spousal conflict causes poor self-esteem. Path analysis is restricted to modelling relationships between variables in one direction whereas the nature of this relationship is likely reciprocal or feedback mechanisms. Future research examining the interrelationships among women's social conditions and personality variables with respect to postpartum depression should, at minimum, include the longitudinal measurement of these variables and, ideally, employ techniques that accommodate interactional and bidirectional models.

Katz et al.'s above mentioned recommendation also suggests that researchers should specify the mechanisms through which personality factors such as self-esteem operate to effect depression. The current study's indirect path linking spousal conflict to depressive symptoms through the mechanisms of decreased perceived social support from spouses, which in turn affects women's global sense of support and self-esteem, was statistically significant and provides variables of interest for further investigation. However, the limitations of the current study apply in this instance as well and underscore the need for longitudinal measurement of these interrelated variables.

Two alternative mechanisms have been postulated to explain how self-esteem is related to depression, which may have promise in the study of PPD. These mechanisms were previously mentioned and merit attention. One explanation postulates that individuals "who overinvest their sense of self-esteem in either social or achievement domains are at increased risk for developing depression following life stress."[201, p. 199] After the birth of their babies some women may feel that their identity and self-worth are even more inextricably tied to the quality of their relationship with their spouses. An alternative explanation proposed by Katz et al. states that self-evaluation maintenance processes (SEM) may be one of the mechanisms by which personality processes create vulnerability to depression—especially in women. According to this theoretical explanation, childbearing women may compare themselves negatively to their spouses in areas of career, future earning potential, and decision-making powers. In addition to the possible direct effects of this comparison on their affect, there may be indirect effects leading to depressive feelings. These women may attempt to maintain a positive self-evaluation by distancing themselves emotionally from their spouses (to relieve the intensity of the distress) and/or excluding these performance domains from their self-definition. Both of these actions have negative consequences—deterioration in the quality of the spousal relationship and reduced

complexity of women's future selves. The theory further postulates that reduced

cognitive complexity and a smaller range of perceived functional competence decreases global

self-esteem and increases women's susceptibility to depression when they are faced with

negative life events.

Further investigations of PPD should attend to the complex interrelationships between

individual difference variables and situational variables. Katz et al. observed that "to simplify

their work, many researchers seem to concentrate on the effects of the situation and ignore

personal attributes. Conversely, other researchers focus on individual differences while ignoring

situational factors."[204, p. 270] These authors contend, however, that depression is an outcome that

is best understood by examining both the main and interactive effects of personality and the

social environment.

Further research should also look for personality constructs that capture the reality of

postpartum women's intrapersonal experience and that have greater predictive power in terms of

depression in the postpartum context. Global self-esteem may not be the most important

construct. The research of Brown et al. (as cited in Katz et al. [204]) suggests that negative and

positive attitudes about the self should be considered separately, "as it is only negative self-

attitudes (rather than positive attitudes or global evaluations) that are likely to predict greater

vulnerability to depression."[204, p. 268] Qualitative research documenting postpartum women's

accounts of their journey in and out of depression may lead to the identification of intrapersonal

variables that are more significant than conventional personality factors. For example, recent

research showed that the variable "high interpersonal sensitivity" was a more potent predictor of

the development of general depression in a sample of non-depressed women than was the

traditional personality variable, "neuroticism." Forgiving oneself is another construct that may

contribute to conceptualizations of personality. In the current study, this variable was moderately

correlated with self-esteem and maintained its significance as a direct predictor of self-esteem. It was not related to strength of religiousness in the same way as forgiving others and knowing God forgives. However, understanding the phenomenon of forgiving oneself may lead to identification of new facets of individual differences, or personality factors that are significant in PPD.

It is important that health-care professionals who work with postpartum women are aware that low self-esteem is a risk factor for the development of depressive symptoms. In addition, health-care professionals, who have routine contact with postpartum women, need to be alert to the increased risk of depression in women who are low in self-esteem *and* who are experiencing conflict with their spouses/partners. A few sensitive and well-placed questions in the context of conversation focused on mothers' feelings are needed to uncover these issues. Too often conversations are focused on the health and care of infants and exclude meaningful discussion of how a mother is feeling. If issues of marital conflict and low-self esteem become apparent, couple counselling early in time may prevent the development of clinical depression in these susceptible women.

Depressive symptoms at 1-Week Postpartum and Postpartum Depressive Symptoms

The study findings call attention to the need for research that improves our limited understanding of the phenomenon that has been commonly dismissed as just the "maternity blues." Depressive symptoms at 1-week postpartum (DS1) and depressive symptoms at 8-weeks postpartum were highly correlated in the present study ($r = .54$) and DS1 was the most important predictor of DS8. These depressive symptoms, detectable in the first week after the birth of the baby, can no longer be considered benign, nor should they be ignored. On the other hand, further research is needed to allow us to distinguish between, for example, a temporary tearfulness and sub-clinical or clinical depression. Beck's review of the maternity blues research indicated that

such distinction may be possible.[81] Cluster analysis with the newly developed

Kennerley's Blues Questionnaire revealed a cluster the researchers labelled the "primary blues"

and another cluster they labelled "depression."[81, p. 295] These findings hold promise of more

accurate and early detection of potential morbidity.

The present study showed that DS1 was significantly correlated with relationship-specific

conflict (with spouses/partners, mothers, and female friends), relationship-specific social support

from spouses/partners and female friends, global perceived social support, and self-esteem.

These results suggest that in the first weeks postpartum, when women are adjusting to the added

demands of a new baby, those who also are suffering with depressive symptoms perceive they

have more conflict, less support from spouses and friends as well as less overall support, and

lower self-esteem. Although these results are correlational, they identify variables that may be

included in future research that is designed to answer questions of causality and how and if these

factors are involved in a downward spiral from sub-clinical to clinical depression.

There are important implications for practice that are related to the current study finding

that DS1 is a strong predictor of DS8 and that DS1 is readily detectable with the EPDS screening

tool. If women who experience depressed mood at 1-week postpartum are at imminent high risk

for the development of PPD, then one of Munoz et al.'s approaches to the prevention of general

depressive disorder may be particularly applicable to the prevention of PPD. This approach

involves the identification of high levels of depressive symptoms at 1-week postpartum as the

target of the preventive efforts. The authors argue that "if depressive symptoms are viewed as a

gateway toward clinical episodes of depression, the reduction of such symptoms ought to reduce

the incidence of clinical episodes...[and] preventive programs that successfully increase a

person's ability to manage moods so that frequency, intensity, and duration of symptoms are

reduced could theoretically forestall such episodes."[32, p. 45] Public health nurses, who devote a

considerable proportion of their services to early maternal child care, could consider

the use of a screening tool to detect women with high levels of depressive symptoms at 1-week

postpartum and evaluate the need for intervention

Numerous authors have discussed the need for a simple and acceptable tool to detect

depressive symptoms in postpartum women, the issues that should be considered in the

implementation of screening in primary care settings and the experience of selected health

services.[24, 115, 184, 229, 230] Most of the literature refers to clinical trials in which screening was

implemented later in the postpartum period (approximately 6 weeks) but the results of this study

support a case for the consideration of earlier screening. However, no screening should be

undertaken without careful study and planning and the implementation of small pilot projects to

evaluate feasibility.

In summary, this final chapter has included a discussion of the implications for research

and practice of the major study findings. Religious faith and spiritual experience were integral to

the lives of many women in this study. Greater confidence in God's forgiveness predicted fewer

depressive symptoms at 8-weeks postpartum. Researchers who investigate PPD should consider

the spiritual dimension of women's lives including the meaning of forgiveness and the

mechanisms between perceived divine forgiveness and postpartum depressive symptoms.

Practitioners who seek to provide holistic care to postpartum women can invite women to talk

about if and how religion (or faith) is helpful to them. Conflict with spouses/partners and female

friends with children had main and indirect effects on postpartum depressive symptoms. Conflict

with spouses increased the risk for women who were low in self-esteem and thus already more

vulnerable to depressive symptoms. Many questions remain unanswered about how women's

social situation interacts with their inner-self resources to influence their vulnerability to

depression, but health and social work practitioners can identify and intervene with these women

at risk. Finally, women who are feeling depressed at 1-week postpartum are at significantly more risk for the development of depressive symptoms at 8-weeks postpartum. More understanding of the phenomenon that has traditionally been viewed as the benign maternity blues is needed to direct health-care decisions about early detection and ways to intervene to prevent the development of PPD.

Study Summary and Conclusions

The study fulfilled the primary purpose of this research—to develop a theory-based model of women's social, spiritual and inner-self resources and depressive symptoms at 1-week postpartum and test its ability to predict depressive symptoms at 8-weeks postpartum. Two secondary objectives were also met in the current research—to provide descriptive data pertaining to the women's spirituality and to conduct the study in an innovative research partnership between academic faculty and practitioners in maternal-child health care services.

Approximately 40% of the variance in depressive symptoms at 8-weeks postpartum was explained by the direct effects of depressive symptoms in the first week postpartum, interpersonal conflict with spouses/partners and with female friends with children, low self-esteem, and lack of confidence in God's forgiveness. Although less important than the direct effects, the significant indirect effects of these variables provide insight into some of the mechanisms by which these variables may influence the development of depressive symptoms later in the postpartum period. Women who were experiencing early depressive symptoms had more interpersonal conflict, less perceived support and lower self-esteem. Women experiencing conflict with spouses had lower self-esteem. Although causal interpretations of these indirect effects are not warranted within the current study design, theories found in the literature provide further support for the proposed direction of effects. Based on the examination and interpretation of the results the following suggestions are made: (a) interactionist models may be more valid

representations of the complex interrelationships among the independent variable,

(b) theoretical models of social support should include the relationship processes perspective in addition to the more traditional stress and coping and social cognitive perspectives[57, 61] to explain how social support is connected to PPD.

A majority of the women in the sample revealed that faith, religion, or aspects of spirituality were significant in their lives and were integral to their role as mothers. A few women offered additional information indicating that spirituality played an important role in their coping and recovery from previous PPD. The spiritual dimension, which has been ignored by PPD researchers and not included in current biopsychosocial models of PPD that guide practice, represents an aspect of women's lives that is "real" and significant to them. There is also preliminary evidence that spirituality may be connected to the development of PPD in some women. Thus, spirituality should be included in further study of significant risk and protective factors for PPD and be considered relevant to women's health and health care.

Limitations of the study have been discussed and can be summarized with respect to the research sample and the major study findings. Results in the current study cannot be generalized to the whole population of women in the Fraser Valley Health Region. The large proportion of Indo-Canadian women who delivered a child during the period of the research was not represented in the sample. Caution must be exercised in making causal interpretations about the direction of effects between the independent variables because they were measured cross-sectionally at 1-week postpartum. The relationships among these predictor variables may be in the reverse direction, or even bidirectional, but path analysis is limited to the investigation of relationships that are unidirectional. Additional analysis is needed to ascertain the similarity or differences between those women who did not respond to the question asking about God's forgiveness and those who responded that they never or seldom knew that God forgives.

Final conclusions are made in consideration of the question "So what?" How will this research make a difference? Recently the impact of PPD and its potential impact on families and on society has moved up on the research and health care policy agendas. Knowledge documenting the effects of PPD on the emotional, social, and cognitive development of children has been added to documentation of the personal suffering of large numbers of postpartum women. The remarkable findings of neuroscientists add biological evidence to the psychological and psychoanalytical evidence that a warm and responsive relationship between mothers (or the primary care giver, although this is usually the mother) and infants is crucial to children's later "capacity for empathy, emotional regulation, and behavioral control."[231] Shore discussed the findings of Dawson and her colleagues who examined the impact of maternal depression on the biological systems of the brain. Employing brain mapping procedures on 30 children of non-depressed mothers and 30 children of depressed mothers, their results showed a clear pattern that "maternal depression can impede healthy brain activity...[and that] when mothers' depression was treated or went into remission, their babies brain activity returned to normal."[231, p. 42] Karr-Morse and Wiley, in their book exploring the roots of violence among people, cited the findings of Dawson and other scientists and made the astounding statement that "the impact of emotional unavailability [of the mother] may be even more stressful on the infant than physical separation."[232, p.213]

In light of these findings, the question of how we can make a difference has added significance and urgency. The evidence indicates there is a window of opportunity—infants of mothers whose depression remitted by the sixth month postpartum did not appear to suffer later cognitive and behavioural problems. Therefore, *early* identification and intervention with mothers at risk are critical. The development of effective interventions requires knowledge of risk and protective factors including knowledge of how these factors are related to PPD. Such

knowledge, supports and enhances the ability to test theory-based interventions and acquire evidence of their effectiveness. Working alliances between researchers and practitioners who share what they know and what they need to know as well as the resources needed to evaluate the effectiveness of community-based approaches, will speed development of the knowledge needed to prevent postpartum depression.

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Guide for Recruitment of Postpartum Mothers to the Study:
The PHN Role

Beginning March 5, many of the mothers coming home from the hospital will have been recruited to the Mothers Helping Mothers study prenatally through their doctor's office, prenatal classes, or other community agencies. However, some mother may not have been introduced to the study. Therefore, when you make your initial post-hospital discharge contact, you should first ask each new mother if she has already been recruited into the study and completed the prenatal questionnaire.

If the mother states that she has completed the prenatal questionnaire, please thank her and remind her that the second questionnaire (much shorter than the prenatal questionnaire!) will arrive in the mail within a few days. We would appreciate it if she would complete this second questionnaire and return it as soon as possible by mail (using the self-addressed stamped envelope), or by returning it to the Health Unit.

If she asks, you can remind her that she will also receive two more questionnaires to be completed: one at 4 weeks postpartum and another at 8-weeks postpartum.

If the mother is not aware of the study or has changed her mind and now would like to participate, please invite her to do so at this point. Your package includes information to assist you in recruiting the postnatal mother to the study (See pink sheet - "Introducing the Postnatal Mother to the Study").

If the new mother is willing to participate in the study, obtain her consent (See cream sheet-"Consent for Postnatal Mothers"). This fax transmittal consent, once completed, should be faxed to the Mission Health Unit immediately. If on the other hand, the new mother does not wish to participate, use the reverse side of the consent form to complete the Non-Participant information. Your copy of the consent/Non-Participant form should be given to office staff to place in the box provided for these forms.

The Research Assistant in Mission, Alana Boucher, will add the information from your fax to a master list of study participants and mail the first questionnaire immediately. This mother will also receive two further questionnaires: one at 4 weeks postpartum and another at 8-weeks postpartum. Both these questionnaires will be mailed out and returned to the Mission Health Unit.

Thank you for helping us recruit mothers into this study.
Your time and effort is greatly appreciated!

MOTHERS HELPING MOTHERS WITH POSTPARTUM DEPRESSION

A Collaborative Research Project between Public Health Nursing In the Fraser Valley Health Region And the University of British Columbia

Attention: Prevention & Early Intervention Office Staff

How You Can Help in the
Mothers Helping Mothers Research Project

Beginning March 5, 2001, we are asking you to assist with the region-wide research project called "Mothers Helping Mothers with Postpartum Depression." Your assistance, as outlined below will be vital to the success of the study. Thank you in advance!

1. Beginning March 5, 2001, please ensure that all Early Maternity Discharge Notices are faxed to the Research Assistant (RA), Mission Health Unit, 826-4719 as soon as they are received from the hospital. This will be used as a "birth notice" so the RA will know when to send the one-week postpartum questionnaire to all mothers involved in the study. If the mother is not in the study, the RA will shred the EMD notice.

2. PHNs will be recruiting mothers who are not already in the study, during their first post-hospital discharge contact. In addition to the standard paperwork used for the first postpartum PHN contact, each nurse should have a copy of the fax form called "Consent for Postnatal Mothers"(Non-Participant form is on the reverse side) Once the PHN has faxed the new mother's consent to the RA in Mission, please retain the hard copy of the consent in a central file. If, on the other hand, the mother refuses, the PHN will give you the Non-Participant form to file. This does not need to be faxed.

3. Beginning at the same time, March 5, 2001, please staple the small, "2 month immunization" reminder (provided) to all new 182s. If your office immunization clinic is computerized, please flag each child record with the reminder.

4. In addition, insert a copy of the Edinburgh Postnatal Depression Scale into each 182 to which you have attached the reminder or provide the clinic nurses with enough EPDS scales for all mothers 2 to three months postpartum at the immunization clinic.

Continue steps 1-4 until October 31, 2001 at which time all babies recruited should be born.

Please contact Terri Gust, Mission Health Unit or Linda Bachmann, Research Coordinator, 5508 if you have questions or suggestions.

Guidelines for PHN Research Coordinator:
A Response to Study Participants Indicating Possible Suicidal Ideation

1.	Any study participant with a positive score on Question 10 of the Edinburgh Postnatal Depression Scale (EPDS) embedded in each study questionnaire, that is any mother scoring 3- "yes, quite often", 2- "sometimes", or 1- " hardly ever" in response to the question "The thought of harming myself has occurred to me," will be taken seriously. The fact that a mother has put down in writing, even the hardly ever response indicates she may be having problems that need to be discussed as soon as possible.

2.	This mother will be called and given an opportunity to discuss what she meant by answering as she did on question 10. She may have misinterpreted the question. If, on the other hand, she is entertaining suicidal thoughts, informal assessment of suicide risk is indicated. The points listed under "Areas to discuss in talking with a woman who indicates suicidal ideation..." below will be used as a guide. It is only a guide to assist in understanding the seriousness of the study participant's suicidal thoughts.

3.	If the mother is deemed at risk for suicide, she will be urged to seek help. Calling her Family Physician will be suggested in the event of lack of other appropriate professionals with whom she is acquainted. If she is hesitant, the research coordinator will ask her to consent to having the call made on her behalf.

Areas to Discuss in Talking with a Woman Who Indicates Suicidal Ideation

(Scores on Item 10 of the EPDS)[18]:

1. How often and how severe is the feeling?

2. Has she made any previous attempts?

3. Has she thought how she would go about?

4. Has she got the means? (Are these likely to be effective?)

5. What has she got to live for?

6. What support does she have at home?

7. If she has a partner, has she talked about how she is feeling?

8. Can she count on her partner to understand and give her emotional support?

9. If she hasn't told her partner, would she like you or her Family Physician to help her explain how she is feeling?

10. If she doesn't have a partner, or feels that she really can't tell her partner, is there anyone else whose support she could realistically call on?

11. Has she told this person or anyone else about her feelings?

12. Could she phone this person and would they come if she feels bad?

13. Do her parents know? (Is she close to them?)

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[18] Adapted from: Holden, J. (1994). Using the Edinburgh Postnatal Depression Scale in clinical practice, In J. Cox, & J. Holden. (Eds). *Perinatal psychiatry: Use and misuse of the Edinburgh Postnatal Depression Scale* (pp. 125-144). London: Gaskell.