

Antecedents of Uncertainty in
Women Experiencing Complications of Pregnancy

by

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presented to the University of Manitoba
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requirements for the degree of
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in
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**ANTECEDENTS OF UNCERTAINTY IN WOMEN EXPERIENCING
COMPLICATIONS OF PREGNANCY**

by

TERRI J. ASHCROFT

A Thesis submitted to the Faculty of Graduate Studies of the University of Manitoba
in partial fulfillment of the requirements of the degree of

MASTER OF NURSING

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Dedication

To Ray,
Who makes all my dreams come true

Abstract

Mishel's (1988) theory of Uncertainty in Illness seeks to explain how people examine what is happening when they are ill. Those unable to make sense of what is happening experience uncertainty. Mishel described six antecedents of Uncertainty: 1) **Structure Providers** - composed of Credible Authority, Social Support, and Education, and; 2) **Stimuli Frame** - composed of Symptom Pattern, Event Familiarity, and Event Congruence. Few studies have examined Uncertainty in complicated pregnancy. None explored the relationship between antecedents of Uncertainty as described by Mishel and levels of Uncertainty perceived by women experiencing pregnancy complications.

A convenience sample of 79 women experiencing pregnancy complications took part in the study. The women completed the Uncertainty Stress Scale - High Risk Pregnancy Version II, Norbeck Social Support Questionnaire, Visual Analogue Scale Form, and Demographic Data Collection Sheet.

Symptom Pattern and Education were the only antecedents described by Mishel (1988) that were significantly related to levels of Uncertainty. Three additional factors, gravidity, parity, and perceived usefulness of information, were also related significantly. Only one Structure Provider (Education) was found to be significantly related to a Stimuli Frame component (Symptom Pattern). Stepwise multiple regression analysis demonstrated that gravidity, perceived usefulness of information received about the woman's pregnancy

complication, and Symptom Pattern, explained 30 percent of variance in total Uncertainty.

Reasons for the disparity between results and Mishel's (1988) theory results are examined. Implications for nursing practice, theory, Education, and research are discussed.

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Table of Contents

Dedication	ii
Acknowledgements	iv
List of Figures	ix
List of Tables	x
Chapter I	1
Overview	1
Problem Statement	1
Study Purpose	3
Research Questions	3
Significance	4
Definition of Terms	5
Conceptual Framework	7

Chapter II	16
Review of the Literature	16
Uncertainty in Illness	16
Uncertainty and Pregnancy	22
Social Support	26
Social Support and Pregnancy	31
Chapter III	40
Methodology	40
Pilot Study	41
Study Setting	42
Study Sample	43
Instrumentation	44
Procedure	51
Data Analysis	52
Ethical Considerations	53
Chapter IV	56
The Sample	56
Uncertainty	59
Research Question One	62
Symptom Pattern	62
Event Familiarity	63
Event Congruence	64

Credible Authority	65
Social Support	65
Education	66
Additional Analyses	67
Research Question Two	70
Credible Authority	72
Social Support	72
Education	76
Research Question Three	78
Summary of Study Results	80
Chapter V	82
Discussion, Nursing Implications, and Recommendations	82
Discussion of Findings	82
Uncertainty: Conceptualization and Measurement	84
Faulty Concepts	84
Faulty Relationship Statements	86
Faulty Empiric Indicators	87
Faulty Operational Definitions	89
Examination of study Results	90
Comparison to Other Studies	90
Research Question One	92
Research Question Two	97

Research Question Three	97
Summary of Discussion of Findings	102
Limitations	103
Implications for Nursing Practice, Theory and Education	104
Implications for Nursing Research	106
Conclusion	107
References	108
Appendices	119
Appendix A	120
Appendix B	121
Appendix C	121
Appendix D	129
Appendix E	132
Appendix F	134
Appendix G	136
Appendix H	138

List of Figures

Figure 1	8
Figure 2	8
Figure 3	69

List of Tables

Table 1	Measurement of Variables	55
Table 2	Reported Pregnancy Complications	58
Table 3	Uncertainty Stress Scale - High Risk Pregnancy Version II Scores	59
Table 4	Uncertainty Stress Scale - High Risk Pregnancy Version II Highest Mean Scores	60
Table 5	Uncertainty Stress Scale - High Risk Pregnancy Version II Correlations Items to Total Uncertainty	61
Table 6	Pearson Correlation Coefficients Between Total Uncertainty and USS-HRPV II Visual Analogue Scales	62
Table 7	Wilcoxon Rank Sum Scores Between Total Uncertainty and Event Familiarity Items	64
Table 8	Pearson Correlation Coefficient of NSSQ Scores and Total Uncertainty Scores	66

Table 9	Pearson Correlation Coefficient of Total Uncertainty and Selected Items	68
Table 10	Pearson Correlation Coefficient of Credible Authority and Symptom Pattern	70
Table 11	Relationship Between Credible Authority and Event Familiarity	71
Table 12	Pearson Correlation Coefficient Between Credible Authority and Event Congruence	72
Table 13	Pearson Correlation Coefficient of Social Support and Symptom Pattern	73
Table 14	Relationship Between Social Support and Event Familiarity	74
Table 15	Pearson Correlation Coefficient of Social Support and Event Congruence	75
Table 16	Relationship Between Education and Event Familiarity	77

Table 17	Pearson Correlation Coefficients of Total Uncertainty and Items Placed in Stepwise Multiple Regression	79
Table 18	Stepwise Multiple Regression Analysis Items to Total Uncertainty	80

Chapter I

Overview of the Study

Problem Statement

Mishel's (1988) theory of Uncertainty in illness seeks to explain how people examine what is happening when they are ill. Those unable to make sense of what is happening experience Uncertainty. Mishel calls "what is happening" the "Stimuli Frame", composed of Symptom Pattern, Event Familiarity, and Event Congruence. Symptom Pattern refers to whether symptoms occur with enough consistency to form a recognizable pattern. Event Familiarity refers to repetitive patterns in the situation. Event Congruence refers to consistency between experience and expectation. Uncertainty and interpretation of what is happening (Stimuli Frame) are affected by "Structure Providers", composed of Credible Authority, Social Support, and Education. Credible Authority refers to how much confidence and trust individuals have in their care givers. Social Support from family and friends assists with interpretation of the situation. Education refers to the patient's level of formal schooling. Mishel suggested this parameter affects how situations are interpreted. The "Stimuli Frame" and "Structure Providers" are called antecedents of Uncertainty, because they occur prior to Uncertainty (Walker & Avant, 1988).

To illustrate Mishel's theory, consider a pregnant woman who is told she has developed hypertension. The individual will examine what is happening within her "Stimuli Frame" in an attempt to understand the situation. She will search for symptoms with a recognizable pattern, compare the situation to previous experiences in a current or previous pregnancy, and compare her present situation with how she expected the current pregnancy to proceed. Her interpretation will be affected by how much she trusts her caregivers, and will be influenced by her social support network and level of Education (Structure Providers). If she is unable to make sense of the situation, she will experience Uncertainty.

Uncertainty has been explored in various populations experiencing cancer (Wong & Bramwell, 1992; Hilton, 1989), peripheral vascular disease (Ronayne, 1989), hysterectomy (Warrington & Gottlieb, 1987), arthritis (Bailey & Nielsen, 1993), and chronic childhood disease (Cohen, 1993). Three studies have examined Uncertainty in pregnancy (Clauson, 1992; Riddell, 1992; Sorenson, 1990). None of those explored the relationship between the antecedents of Mishel's proposed antecedents of Uncertainty and severity of Uncertainty perceived by women experiencing pregnancy complications.

Study Purpose

The purpose of this project was to explore and describe the relationship between antecedents of Uncertainty as described by Mishel (1988) and levels of Uncertainty among women experiencing pregnancy complications.

This was addressed with the following questions:

- 1) What is the relationship between antecedents of Uncertainty (**Stimuli Frame**: Symptom Pattern, Event Familiarity, Event Congruence and **Structure Providers**: Credible Authority, Social Support, Education) and Uncertainty levels perceived by women experiencing pregnancy complications?
- 2) What is the relationship between **Structure Providers** (Credible Authority, Social Support, Education) and **Stimuli Frame** (Symptom Pattern, Event Familiarity, Event Congruence) in women experiencing pregnancy complications?
- 3) Which independent variables predict Uncertainty levels in women experiencing prenatal complications?

Significance

Uncertainty in complicated pregnancy has been examined previously (Clauson, 1992; Riddell, 1992), but the influence of its antecedents has not. Uncertainty in pregnancy, particularly in the presence of complications, may be central to understanding relationships between Uncertainty, stress, and perinatal outcomes. Uncertainty about symptoms, treatments and outcomes has been shown to have a strong relationship to stress (Davis, 1990; Mishel, 1981, 1984). Stress during pregnancy is related to physical effects and outcomes such as catecholamine release and premature birth (Bryce, Stanley, & Enkin, 1988), increased epinephrine levels (Kemp & Hatmaker, 1989), and other complications (Norbeck & Tilden, 1983).

Identifying and understanding the relationship between Uncertainty's antecedents and its severity in complicated pregnancy might clarify whether and how such antecedents should be manipulated to reduce Uncertainty and subsequent stress. If outcomes improve as a result, such knowledge would help planning appropriate and effective care.

Definitions

Uncertainty

Uncertainty was defined as inability to understand the meaning of illness-related events. This may occur when cues are insufficient, the decision maker is unable to assign a specific value to events and/or predict outcomes accurately (Mishel, 1988). For purposes of this project, Uncertainty was measured using the Uncertainty Stress Scale-High Risk Pregnancy Version II (USS-HRPV II) (Hilton, Carty, Clauson, & Riddell, 1991).

Social Support

Kahn's definition of social support (1979) was used as it is congruent with Mishel's. Specifically, Social Support is "The expression of positive affect of one person toward another; the affirmation of another person's behaviours, perceptions, or expressed views; the giving of symbolic or material aid to another" (Kahn, 1979, p.85).

This definition's three key elements of social support are affect, affirmation, and aid (Kahn, 1979). Affect may include expressions of liking, admiration, respect, or love. Affirmation refers to agreement with appropriateness of another person's action or statement. Aid refers to assistance such as caring for the household, providing transportation, and providing relevant information.

Affective, affirmative, and material Social Support transactions are provided by a "convoy", described by Kahn (1979, p. 84) as "the set of

persons on whom he or she relies for support and those who rely on him or her for support". Social Support was measured with the Norbeck Social Support Questionnaire (NSSQ) (Norbeck, Lindsey, & Carrieri, 1981;1983).

Conceptual Framework

The conceptual framework for this study was Mishel's theory of Uncertainty in Illness (Mishel, 1988) (Figure 1). In that pregnancy is a normal physiological process, application of an illness theory to that process may seem inappropriate. However, when complications of pregnancy are severe enough to warrant monitoring in hospital or at home, or when a woman perceives her pregnancy to be at risk, the normal course of pregnancy is altered. The woman might feel well, but perceives potential threat to herself or her fetus. This situation, particularly if unanticipated, may precipitate Uncertainty. Two previous studies (Clauson, 1992; Riddell, 1992) found that women who experienced pregnancy complications perceive moderately low to high levels of Uncertainty. Therefore, Mishel's theory of Uncertainty in Illness may be applied to the experience of pregnancy complications. A modified version of Mishel's theory of Uncertainty in illness guided this study (Figure 2).

Whereas this theory is explained in its entirety here, only the antecedents of "Stimuli Frame" (Symptom Pattern, Event Familiarity, Event Congruence) and "Structure Providers" (Credible Authority, Social Support, Education) were examined in this project. The study is limited to exploration of antecedents in an effort to build on Clauson's (1992) and Riddell's (1992) work.

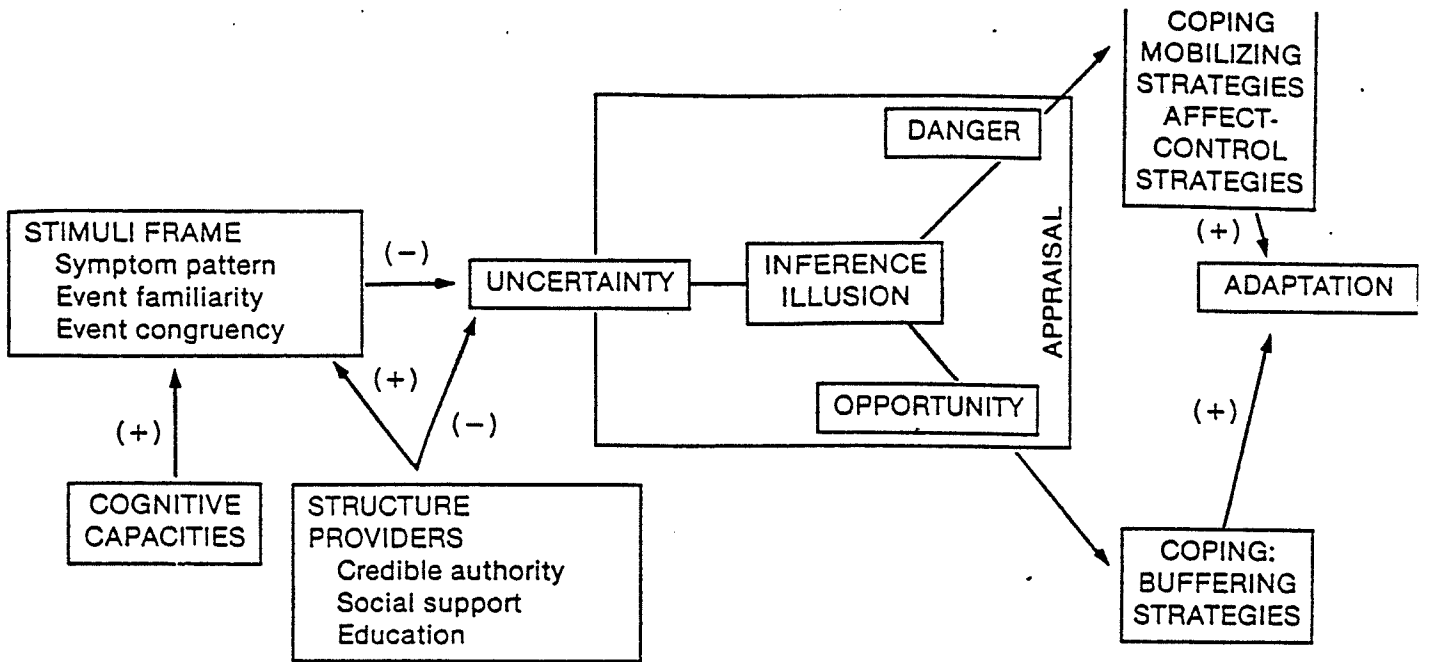


Figure 1: Mishel's Theory of Uncertainty (Mishel, 1988)

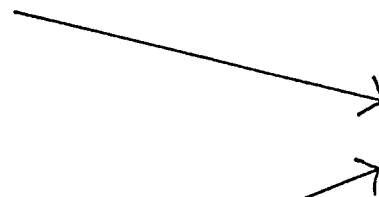
Stimuli Frame

- * What symptoms am I experiencing?
- * Have I experienced anything like this before?
- * Is this what I expected my pregnancy to be like?



Structure Providers

- * How much confidence do I have in my nurses & doctors?
- * How much support am I getting from family & friends?
- * Am I well educated enough to understand my situation?



Uncertainty

Figure 2: Uncertainty in Complicated Pregnancy

Mishel's theory (1988) seeks to explain how people make sense of illness, with Uncertainty resulting when they are unable to do so. This section will attempt to explain this complex theory clearly, while maintaining Mishel's meaning and intent.

Mishel (1988) suggested that people examine illness related stimuli and construct meaning for such phenomena. If this does not occur, Uncertainty can develop. Such Uncertainty was specified as existing in four forms: 1) ambiguity when illness cues are vague and overlap; 2) complexity when information regarding treatment is intricate and difficult to understand; 3) lack of information about the diagnosis and seriousness of the illness; and 4) unpredictability of the course and prognosis of disease.

Uncertainty's antecedents include Stimuli Frame, Structure Providers and Cognitive Capacity. Stimuli Frame is composed of Symptom Pattern, Event Familiarity and Event Congruency, and is influenced by cognitive capacity and Structure Providers. Structure Providers including Education, Credible Authority, and Social Support, are resources available to assist with interpretation of the Stimuli Frame.

Mishel (1988) asserted that Uncertainty is neither negative nor positive until it has been appraised, either through processes of inference or illusion. Such situations may be perceived as either danger or an opportunity. Different coping strategies are used, depending on interpretation of the situation.

The components of Mishel's theory (1988) are described in greater

detail below:

Stimuli Frame

This refers to the form, composition, and structure of stimuli the woman perceives. Its three components are a) Symptom Pattern; b) Event Familiarity; and c) Event Congruence.

a) Symptom Pattern refers to whether symptoms occur with enough consistency to form a recognizable pattern. In such circumstances, ambiguity and Uncertainty are reduced. Patterns may be determined in number, frequency, location, intensity, and duration of symptoms. For example, if a woman experiencing gestational diabetes has symptoms which are predictable, consistent, salient and distinguishable, her Uncertainty may diminish. If she senses no difference from the normal changes of pregnancy, her Uncertainty may increase (Riddell, 1992).

b) Event Familiarity refers to the patterns within a situation. This familiarity is developed through contact and experience with the setting, or the experience. New events are compared with her understanding and past experience. If such events are familiar within her cognitive map, Uncertainty is reduced. If they are novel, complex, or inconsistent with her cognitive map, Uncertainty will increase. For example, the rapid events which ensue when "fetal distress" occurs usually would be novel and complex, resulting in increased

Uncertainty.

c) Event Congruence refers to the consistency between expectation and experience. Incongruence results in Uncertainty. A woman who expects a normal pregnancy, but is admitted to hospital for complications experiences event incongruence.

It should be noted that any or all of these factors (Symptom Pattern, Event Familiarity, Event Congruence) may be operating in a particular situation.

Cognitive Capacity

Mishel (1988) defined Cognitive Capacity as "the information-processing abilities of persons" (p.227). This characteristic directly affects interpretation of Stimuli Frame components. Ability to process information can be affected by factors such as physical illness, pain, drugs, perception of danger and autonomic nervous system activity. Sorenson (1990) noted that chronic fatigue from pregnancy may impede Cognitive Capacity. Earlier studies (Greenleaf & Koslowski, 1982; Tompkins, 1980) found that patients on long term bedrest may experience fatigue and inability to concentrate. When a person perceives their environment to be dangerous, cognitive capacity may diminished, and fewer cues may be processed. The individual may focus on cues deemed

most important.

Women with obvious cognitive impairment or who were experiencing extreme emotional distress or fatigue were excluded from this study. The effect of cognitive capacity on Uncertainty was not explored.

Structure Providers

Structure Providers are resources available to help interpret the Stimuli Frame. They influence Uncertainty directly by providing structure to events and indirectly by helping to discern Stimuli Frame components. The three Structure Providers identified by Mishel (1988) were a) Credible Authority; b) Social Support; and c) Education.

a) Credible Authority refers to the degree of trust and confidence placed in health care providers. In this model, when a woman evaluates such resources as trusted and credible, her Uncertainty is reduced. Health professionals may affect Uncertainty indirectly by providing information that aids recognition of Symptom Pattern, Event Familiarity and Event Congruence.

b) Social Support can influence Uncertainty by providing feedback on events, affirming interpretation and adding other's perspectives. A situation may be clarified through discussion and supportive interaction.

c) Education affects Uncertainty by enlarging the knowledge base within which Stimuli Frame components are assessed. In Mishel's theory, Education refers to level of formal Education, rather than information from health care professionals or other sources.

Uncertainty and Appraisal

Mishel (1988) suggested that when Uncertainty exists, the situation is appraised, using either a) inference and b) illusion.

a) Inference is built on personality dispositions, experience, knowledge, and contextual clues. Personality dispositions are beliefs about oneself and one's relationship with the environment, incorporating such concepts as mastery, locus of control and learned resourcefulness. Uncertain events appraised by personality dispositions favouring mastery and control, are likely to be seen as difficult to manage. Inference can also be based on past experience. Recalling events similar to those occurring presently may help reduce Uncertainty.

b) Illusion refers to beliefs constructed out of Uncertainty. These are associated with maintenance of hope, and may protect in the presence of threat and when coming to terms with difficult information. For illusion to exist and protect, Uncertainty must exist. According to this theory, once a situation is clear or certain, it is impossible to reconstruct it into an illusion.

Once the situation has been appraised by either inference or illusion, it will be interpreted as a danger or an opportunity.

Danger, Uncertainty and Coping:

Uncertainty appraised as danger is the result of an inference appraisal. Loss or absence of Credible Authority, Event unfamiliarity, and lack of a Symptom Pattern are antecedents influencing appraisal of Uncertainty as a danger. With such an appraisal, coping mechanisms of either mobilizing or affect control will be used. Mobilizing tactics include direct action, vigilance and information seeking (the most commonly used strategy). In affect control, negative emotions are restrained and emotional responses are blunted by self administered "pep talks", using wishful thinking, and attempting to redefine the situation.

Opportunity, Uncertainty and Coping

Uncertainty appraised as opportunity is the result of either an inference or an illusion appraisal. Opportunity appraisal tends to occur in situations with a recognized downward trajectory. Uncertainty may be the preferred to alternative negative certainty. This allows for preservation of hope. In opportunity appraisal, coping strategies are selected which support the Uncertainty. These may include avoidance, ignoring selectively, reordering priorities and neutralizing. If Uncertainty is removed, the illusionary structure is destroyed.

Uncertainty and Adaptation

If coping strategies selected are effective for the illness, adaptation will

occur. Mishel defined adaptation as biopsychosocial behaviour within the person's normal range of behaviour. Poor adaptation is indicated by behaviour outside the individual's normal range.

Chapter II

Review of the Literature

The literature review is divided into four sections:

- 1) Uncertainty in illness; 2) Uncertainty in pregnancy; 3) social support; and
- 4) social support in pregnancy.

1) Mishel's Theory of Uncertainty in Illness

Mishel (1988) defines Uncertainty as "inability to determine the meaning of illness-related events" (p. 225). According to her, it occurs when people are unable to decide the value of objects or events and/or unable to predict the outcome of their illness. Mishel's Uncertainty theory describes a process by which she believes people evaluate illness-related stimuli and determine the meaning of potentially relevant events. Evaluation of the situation is influenced by the Stimuli Frame, composed of Symptom Pattern, Event Congruence and Event Familiarity and the Structure Providers of Education, Social Support, and Credible Authority.

Stimuli Frame - Symptom Pattern

Symptom Pattern, a component of the Stimuli Frame, refers to the consistency or pattern of symptoms experienced (Mishel, 1988). Mishel suggests that Uncertainty will be decreased when symptoms form a consistent predictable, discrete pattern. If the person is unable to discern such a pattern,

or symptoms are indistinguishable from another condition, Uncertainty will increase.

Five studies were identified which explored the influence of Symptom Pattern on Uncertainty (Hilton, 1992; Lynne & Braden, 1987; Mishel, 1987; Mishel & Braden, 1988; Mishel, Hostetter, King, & Graham, 1984). Three of these found Symptom Pattern to predict Uncertainty. In a study of 54 women experiencing various types of gynaecological cancer, Mishel et al. (1984) found Symptom Pattern to be significantly correlated to Uncertainty. Lynn and Braden's (1987) study of 287 arthritis patients found Symptom Pattern to account for a significant amount of Uncertainty. In her examination of 49 women who were 8 months post-treatment for gynaecological cancer, Mishel (1987) also found support for Symptom Pattern as a predictor of Uncertainty.

Mishel and Braden (1988) used a different application of the concept of Symptom Pattern in their study of 61 women receiving treatment for gynaecological cancer. They measured it on a seven point scale which graded how much control respondents felt they had over their physical functions. The investigators reasoned that ability to control physical functions is reflective of predictability of symptom occurrence. Symptom Pattern was not a significant predictor of general Uncertainty, but was a significant predictor of ambiguity, a component of general Uncertainty. Hilton (1992) used her Uncertainty Stress Scale to investigate levels of Uncertainty in 221 patients (47% women) experiencing all types of cancer. Uncertainty was found to increase as

instability of the medical condition increased. Hilton's Uncertainty Stress Scale and Mishel's Uncertainty in Illness Scale are similar reflections of the state of Uncertainty (Hilton, 1992).

In different applications, Symptom Pattern has been shown to be a relatively strong predictor of Uncertainty.

Stimuli Frame - Event Congruence

Event Congruence describes consistency between expectations and experience. Incongruence between the two results in Uncertainty. Only one study was located which examined the effect of Event Congruence on Uncertainty. Lynn and Braden (1987) measured Uncertainty in 287 arthritis patients, and found Event Congruence to account for some variation in Uncertainty.

Stimuli Frame - Event Familiarity

Event Familiarity refers to patterns within the situation, and is developed as the woman spends time in the setting (Mishel, 1988). When events are repetitive and contain recognizable cues, Uncertainty decreases. Novel occurrences are compared to what is already known about the environment, and if they are consistent, are evaluated as non-threatening. When a setting is unfamiliar or when upsetting events occur, Uncertainty increases.

Three studies were located which explored the influence of Event

Familiarity on Uncertainty. Lynn and Braden (1987), studying 287 arthritis patients, found Event Familiarity to predict Uncertainty. Similar findings emerged in two other studies. Mishel (1987) examined Uncertainty in 49 women who had completed treatment for gynaecological cancer. Event Familiarity was measured using six items drawn from the Mishel Uncertainty in Illness Scale (MUIS). Event Familiarity was found to predict Uncertainty. In 1988, Mishel and Braden investigated Uncertainty among 61 women receiving treatment for gynaecological cancer. Event Familiarity, measured with the MUIS, was found to predict Uncertainty.

Structure Providers - Education

Mishel (1988) suggested Education, defined as formal Education, influences Uncertainty by providing a greater knowledge base within which illness related stimuli may be assessed.

There is conflicting evidence on this assertion. Christman, McConnel, Pfeiffer, Webster, Schmitt & Ries (1988) studied Uncertainty levels of 70 subjects who had experienced myocardial infarction. All participants had completed at least high school education. Those with more Education experienced less Uncertainty at three and seven days post-discharge. However, this difference had disappeared by 4 weeks post-discharge. Mishel et al. (1984) studied 54 women who were recently diagnosed with cancer. All had high school education, and 23 had some college education. Less

educated subjects had more Uncertainty about complexity of treatment, a form of Uncertainty, but their overall Uncertainty was similar to that of subjects with more education.

Contrarily, Bailey and Nielson (1993) measured Uncertainty in 23 patients with rheumatoid arthritis. Eighty-one per cent of participants were high school graduates and 52 per cent had attended college. There was no relationship between Education attained and Uncertainty. The lack of a relationship between Education and Uncertainty was also noted in three other studies (Mishel, 1984, 1987; Mishel & Braden, 1988). Most subjects in these three studies had completed high school education, and many had attended college. None of these reports had large numbers of participants with less than high school education. It may be that Education as an antecedent to Uncertainty would be evident in a study using a more diverse sample.

Structure Providers - Social Support

According to Mishel, Social Support prevents Uncertainty by providing supportive interactions, giving information and feedback on the meaning of events, and by providing material aid such as assistance with household tasks.

Mishel and Braden (1987) followed 44 women with gynaecological cancer through diagnosis, treatment and stabilization of their illness. They found the relationship between Uncertainty and Social Support sought

changed over time. During diagnosis and treatment phases, women with higher levels of affection and affirmation experienced less ambiguity (a form of Uncertainty), while during the stabilization period, those with greater levels of aid experienced less overall Uncertainty. A change over time in Social Support needs and Uncertainty was also found by Redecker (1992), in her study of 129 post coronary artery bypass surgery patients. Subjects sought support from health care professionals and other patients during hospitalization, and from friends and family after discharge. Study participants sought informational, material, and emotional support in response to Uncertainty.

A 1988 study by Mishel and Braden showed social affirmation to be a significant predictor of the complexity aspect of Uncertainty. In an earlier study of 49 women who had completed cancer treatment, Mishel (1987) found that receiving support decreased Uncertainty, as did knowledge that assistance was available if needed. Davis (1990) studied 109 patients (66% male) who were recovering from major illness or surgery, paired with their family caregivers. In both caregivers and patients, less perceived Social Support and less use of the social support network were related to increased levels of Uncertainty.

As Social Support decreases, Uncertainty increases. The type of Social Support sought and type of Uncertainty experienced appears to change over the course of an illness.

Structure Providers - Credible Authority

With this term, Mishel referred to the degree of trust and confidence vested in health professionals. When those individuals are seen as highly credible, Uncertainty decreases (Mishel, 1988). Strong support for Credible Authority as a predictor of Uncertainty was found in Mishel and Braden's 1988 study of 61 cancer patients.

2) Uncertainty and Pregnancy

Few studies have examined perceived Uncertainty during pregnancy. Patterson, Freese and Goldenberg (1986) conducted interviews of 30 pregnant or postpartum women to discover how women make a self diagnosis of pregnancy. They found the process of determining pregnancy status was designed to reduce Uncertainty. During the self diagnosis process, multiparous women compared their symptoms to those of past pregnancies, while nulliparous women compared them to illness and other experiences. They also consulted their social support system for information regarding pregnancy symptoms and for confirmation of their self diagnosis. Finally, women consulted health care professionals for laboratory testing, as many respondents had little confidence in their own diagnostic abilities. These activities correspond with Mishel's Uncertainty theory components of Symptom Pattern, Social Support and Credible Authority.

Sorenson (1990) interviewed an unspecified number of women to

explore the presence of the antecedents of Uncertainty in pregnancy. Participants monitored symptoms in an attempt to construct a recognizable pattern. Many found their symptoms changed from trimester to trimester, or even from day to day. Event Congruence also was important for some respondents. Those whose experience did not meet expectation expressed feelings of Uncertainty and anxiety. Participants also experienced changes in "cognitive capacity" due to fatigue and stress. Some respondents reported that Social Support assisted them through their pregnancies, while those without it experienced anxiety. Credible Authority in the form of a physician was sought and valued by women whose pregnancies had been designated as "at risk".

Two Canadian researchers attempted to quantify Uncertainty during pregnancy identified as at risk (Clauson, 1992; Riddell, 1992). Riddell (1992) described levels of Uncertainty and coping strategies among 46 women labelled as "gestational diabetic". Subjects completed the Uncertainty Stress Scale - High Risk Pregnancy Version (USS-HRPV) (Hilton, Carty, Clauson & Riddell, 1991). Uncertainty levels ranged from "quite low" to "quite high", with a mean score of 109.6 (range 0 - 280) indicating moderately low Uncertainty levels. Uncertainty arose primarily from concerns about fetal health and the meaning of the diabetes label. Symptoms of gestational diabetes were difficult to discern from pregnancy symptoms, possibly contributing to perceived Uncertainty. There was significant positive correlation between perceived

seriousness of gestational diabetes and Uncertainty levels.

Clauson (1992) examined levels of Uncertainty among 58 women hospitalized for "high risk" pregnancy. Subjects completed the USS-HRPV at 48 hours after admission (Time 1) and at the time of discharge (Time 2). Participants had "moderately low level Uncertainty" at 48 hours after admission ($M=113.9$, $SD=38.5$), which dropped further and significantly by discharge ($M=95.7$, $SD=35.9$). At Time 1, Uncertainty was related to lack of knowledge about the cause of the condition provoking admission, or the stability of that condition, and from concern for fetal health. At Time 2, Uncertainty arose from unpredictability of symptoms, whether the condition would return, and again concern for fetal health. Increased length of hospitalization was associated with significantly higher levels of Uncertainty, as was gestation under 28 weeks.

Stainton, McNeil and Harvey (1992) conducted a longitudinal, phenomenological study to gain understanding of what it is like to be in a high risk perinatal situation. Twenty-seven women participated in unstructured interviews throughout their childbearing experience. Hermeneutic methods of interpretation were applied to the 174 interviews and 13 diaries generated. The Uncertainty of becoming a mother was foremost in the womens' concerns. The women experienced an altered form of the maternal tasks described by Rubin (1975). The elements of each task changed by the high risk status are identified by capital letters. The task of "seeking SAFE passage for self and

infant" predominated and persisted for several months for mothers of high risk neonates. The task of "seeking acceptance by OTHERS" was intensified in high risk pregnancy. The situation placed more demands on husband and significant others than those of normal pregnancy. Mothers worked to have the infant accepted by their social network. In terms of "binding-in to the infant" the participants experienced a range of responses to that maternal task. Some attempted to avoid or postpone binding-in to protect themselves from the pain of loss. Eventually, the mothers did experience binding-in, finding it intense. The final maternal task, "GIVING of oneself", was intensified in the at risk pregnancy. The women gave up life style, social events, and independence in hopes of preserving the threatened fetus, and gave of themselves in an effort to maintain family functioning.

There has been little investigation of the experience of Uncertainty in the context of pregnancy. Sorenson's (1990) qualitative work suggested antecedents of Uncertainty are experienced during the prenatal period. Stainton et al. (1992) described maternal tasks of uncertain motherhood as experienced by women in adverse perinatal situations. Riddell (1992) and Clauson (1992) described Uncertainty levels among women experiencing "high risk" pregnancy and explored factors which might affect Uncertainty in that population.

However, Mishel's Uncertainty theory "Stimuli Frame" components of Symptom Pattern, Event Congruence and Event Familiarity have not been

extensively examined in the prenatal context, nor have "Structure Providers" of Credible Authority, Social Support and Education. The relationships between these factors and Uncertainty levels experienced by women with complications of pregnancy have not been explored. This study contributes to understanding Uncertainty in the context of pregnancy and Uncertainty in broader health contexts, tests the applicability of Mishel's ideas in a cohort of pregnant women identified as having pregnancy complications, and builds on the work of Riddell (1992) and Clauson (1992).

3) Social Support

Interest in the importance of social support to health and illness has grown greatly since the term began to appear in the 1970s. Its effects on people's lives have been investigated by researchers in the biomedical, behavioral, and social sciences. House and Kahn (1985) suggested the concept's popularity lies in the fact that it is a common element in diverse phenomena and a shared experience. Social support has been described as providing armour to individuals who need it, can find it, and can use it in coping with stress, such as job loss and bereavement (Bruhn & Phillips, 1984). Pregnancy has been identified as a stressful life event due to increased physical and emotional demands (Curry, 1990; O'Hara, 1986).

Commonly, social support has been investigated in populations undergoing stressful life events, but there has not been consensus on its

conceptualization and measurement, to the extent that the concept is in danger of losing its distinctiveness (Berrera, 1986; House & Kahn, 1985).

Kahn (1979) defined social support as "interpersonal transactions that include one or more of the following: the expression of positive affect of one person toward another; the affirmation or endorsement of another person's behaviours, perceptions, or expressed views; the giving of symbolic or material aid to another" (p.85). The key elements of social support were specified as affect, affirmation, and aid, which are the person's "convoy". Kahn suggested that people move through life surrounded by a group of significant others who give and receive social support with the focal person. The term "convoy" denotes figurative movement through the stages of life, and literal movement, such as from job to job, or between geographic regions. Kahn's concept of social support can be summarized in three general propositions. Firstly, adequacy of a person's social support partially determines their well being, role performance and success in managing changes. Secondly, adequacy of social support is determined by the formal properties of the person's "convoy". Thirdly, the formal properties of the convoy are determined by demographic and situational variables. A causal sequence exists from demographics to the "convoy" structure, from convoy structure to social support adequacy, and from social support adequacy to individual well being.

Cobb's (1976, 1979) description of social support is similar to Kahn's. "Communicated caring" , according to Cobb's term, is composed of 1)

information or "emotional support" leading people to believe they are cared for and loved; 2) information or "esteem support" leading people to believe they are esteemed and valued; and 3) information leading people to believe they belong to a network of communication and mutual obligation, similar to Kahn's concept of "convoy". Other forms of support are "instrumental" support or counselling, active support such as a mother provides to her infant, and material aid.

Cobb suggested that community services such as hospitals should not be considered forms of social support. This is because goods and services such as hospitals foster dependency, while informational and esteem support as well as belonging to a network foster independence. Similarly, Bryce, Stanley, and Enkin (1988) suggested that social support is best given in a nonauthoritarian relationship, as it may be less effective if linked to advice from authority figures such as health professionals.

House (1981) offered another view of social support. He described it as an interpersonal transaction involving one or more of: 1) emotional concern (liking, love, empathy); 2) instrumental aid (goods and services); 3) information about the environment; or 4) appraisal (information relevant to self evaluation).

Kaplan, Cassel and Gore (1977) offered a similar definition of social support, as the degree to which basic social needs of affection, esteem and approval are met through "socioemotional" or "instrumental" aid. Socioemotional aid includes affection of, acceptance by, and esteem from

others. Instrumental aid includes advice, information, or financial assistance. The authors defined the social network as those persons relied on for socioemotional and instrumental aid.

Such definitions of social support illustrate the range and variety of interpretations of the term. Many and various definitions are used throughout social support research, making it difficult to compare studies and draw conclusions from such comparisons.

As well, a myriad of tools to measure social support have been developed, reflecting its diverse definitions (Brandt & Weinert, 1981; Norbeck, Lindsey & Carrieri, 1983; Schaefer, Coyne, & Lazarus, 1981). The literature contains three major components of social support research: a) measurement of the size of the social network; b) examination of its structure and function; and c) analysis of the types of support given in the relationship (Berrera, 1986; Bruhn & Phillips, 1984; Gottlieb, 1983; House & Kahn, 1985).

Counts of social contacts are relatively reliable and simple to obtain through self report, observation, or examining records. Social relationships such as marriage, contacts with friends and relatives, church participation and volunteerism are frequently examined. The Social Support Questionnaire (Schaefer, Coyne, & Lazarus, 1981) and the Norbeck Social Support Questionnaire (NSSQ) (Norbeck, Lindsey, & Carrieri, 1981, 1983) both examine the size of the subject's social network. House and Kahn (1985) suggested that assessment of existence, quantity, and contact frequency of major

relationships should be standard in social support research.

Structure and function of the social support network is another focus of research. Social network analysis involves structured procedures for identifying individuals who have an important relationship to the subject (Barrera, 1986). Size and composition of the network, linkages among members, homogeneity, and geographic dispersion are components of network analysis (Gottlieb, 1983).

The type of support exchanged in a relationship also should be examined, be it emotional, informational, or material. The NSSQ for example, asks the respondent to identify the extent and type of support that can be expected from each person in the network. Barrera's (1981) Inventory of Socially Supportive Behaviours investigates tangible and intangible forms of assistance. Using a five point scale, respondents indicate how often they receive support. Examples of items on the Inventory include "told you that she/he feels very close to you" and "was right there with you in a stressful situation".

Any tool used to measure social support should measure at least two and preferably three aspects of relationships, specifically their existence or quantity, structure and type of support given (House & Kahn, 1985). It has been recommended elsewhere that investigators should identify social support concepts that fit their research questions and use measures that reflect those concepts (Barrera, 1986, Lindsey, 1988).

4) Social Support and Pregnancy

In studies examining the relationship between social support and pregnancy outcomes, it is necessary to recognize and account for the plurality of both the outcomes and factors which might influence them. Research examining the relationship between social support and pregnancy outcomes should control for factors such as previous illness, lifestyle factors such as tobacco, drug and alcohol use and demographic features (Pagel, Smilkstein, Regen, & Montano, 1990).

Studies of social support during pregnancy have recognized that pregnancy and childbirth are major and potentially stressful life events. Social support might reduce the negative impact of stress on the pregnancy. A number of studies have examined the size and content of social network during pregnancy, as well as the types of support they provide. Three studies (Cronenwett, 1985; Norbeck & Anderson, 1989; May, 1992) used either the NSSQ or Social Support Inventory to determine network size and content, whereas St. Clair and Anderson (1989) used structured interviews. Despite their participants' varied marital statuses, ages, socioeconomic levels, and ethnic groups, results were consistent. Norbeck and Anderson (1989) and Cronenwett (1985) reported mean social network sizes of 7.1 and 8.5, respectively. May's (1992) sample of 31 low income single adolescent mothers reported a mean social network size of 5.8. Networks were composed of partners, mothers, family, and friends. Support from mother or family was

more important to unmarried participants than partner support, whereas the opposite was true of married women.

Cronenwett (1985) and Brown (1986b) examined social support networks of pregnant couples. In both studies, these were dominated by relatives, with the partner's support being most important. Brown found that partner support was more important to fathers. In addition, Cronenwett noted that fathers tended to have more males in their support network, whereas mothers had a greater number of females.

The type of support provided was also consistent across studies. Emotional support was most common, followed by tangible support, such as financial aid (Cronenwett, 1985; May, 1992; Norbeck & Anderson, 1989).

The effect of social support on pregnancy and its outcomes has been studied within two categories: a) social support supplied by family and friends; and b) social support supplied by health care professionals. Different definitions of social support, and research designs have been used, and as expected different conclusions are reached.

a) social support from family and friends

Nine longitudinal studies were located which examined the effect of social support from friends and family on pregnancy outcomes. Sample sizes ranged from 89 to 313. Support was measured with various instruments, including the Norbeck Social Support Questionnaire (NSSQ) (Norbeck &

Tilden, 1983), the Support Behaviours Inventory (Brown, 1986a, 1986b), and the Maternal Social Support Index (Pascoe, Chessare, Baugh, Urich, & Ialongo, 1987).

One of the earliest studies examining the effect of social support on perinatal outcomes was Nuckolls, Cassel, and Caplan's (1972) study of 170 wives of American military men. At 32 weeks' gestation the women completed the Test for Adaptive Potential of Pregnancy (TAPPS) on enrolment and the Schedule of Recent Experience, which measures stressful events. Social support was not defined, nor was it measured, but rather came under the umbrella term "psychosocial assets". In a subsample of 26 participants who reported high life stress, those with low psychosocial assets had a complication rate of 91 per cent, while those with high psychosocial assets had a 33 per cent complication rate. Fifty per cent of enrolled subjects dropped out. The study did not control for demographic, biomedical, or lifestyle factors.

Norbeck and Tilden's (1983) partial replication of Nuckolls' work produced similar results. Participants experiencing increased stress, low social support, and high levels of emotional disequilibrium had more frequent complications. This prospective study of 117 women, most married and well educated, used Kahn's definition of social support, and measured it with the NSSQ. Biomedical, demographic and lifestyle variables were controlled.

Norbeck and Anderson (1989) studied 208 Black, Hispanic and

Caucasian women of lower socioeconomic status and came to a somewhat different conclusion. That study was guided by an adaptation of stress, social support and health theory developed by House (1981). Participants completed the Life Events Questionnaire, NSSQ, and Spielberger Anxiety Scales. Social support was positively related to prenatal women's health in the Black group, but not in any other. The authors suggested their lack of significant findings may indicate the theoretical model they used may not be applicable to women of lower socioeconomic status.

In their study of 513 rural Missouri women, Williamson, LeFevre, and Hector (1989) found an increase in stressful events between 20 and 34 weeks gestation to be associated with an increase in adverse outcomes. Presence of social support did not ameliorate the effect of stress. However, social support was not defined and was measured on an untested 12 item questionnaire developed by the authors.

Brown (1986b) examined influence of social support on 313 expectant couples' health. Participants completed the Support Behaviours Inventory, Health Responses Scale, and Stress Amount Checklist. Social support was positively related to prenatal women's health. In a Canadian study, Turner, Grindstaff, and Phillips (1990) examined the effect of social support on health and birth problems among 268 adolescent mothers. Among teenagers from lower socioeconomic backgrounds, level of family support was related to infant birthweight and incidence of mothers' depression. Family support did

not influence infant outcomes in the higher socioeconomic group, but did mediate the impact of stressful experiences.

Pagel, Smilkstein, Regen & Montano (1990) used a prospective design to study effects of social and psychological factors on pregnancy outcome. Demographic, biomedical and lifestyle characteristics such as smoking and drinking were controlled prior to entering social and psychological factors into the regression analysis. Social support was found to be predictive of Apgar scores. Women with high anxiety and low social supports were younger, single, had lower education levels, smoked more and had higher pregnancy risk than well supported women with low anxiety. Unfortunately, the authors did not define social support but measured it using the Family APGAR Measure (Smilkstein, Ashworth, Mantano, 1982). This tool is supposed to measure satisfaction with social support within the family, but does not allow such measurement outside the family.

Pascoe et al.'s (1987) prospective study examined the relationship between social support and birthweight. One hundred and ninety eight indigent women completed the Maternal Social Support Index (MSSI) during social work evaluation at their prenatal clinic. The MSSI assesses help received for daily tasks, satisfaction with kin visits, communication with other adults, communication from a male support figure, community involvement, and resources available to assist with crisis or emergency child care. Low availability of help with daily domestic tasks was associated with lower infant

birthweight. Other social support parameters were not significantly associated with birthweight. The investigators did not examine participants' nutritional status, nor did they control for tobacco, drug or alcohol use.

Boyce, Schaefer, and Uitti (1985) investigated effects of social support and "sense of permanence" on perinatal outcomes of 89 unmarried adolescents. Sense of permanence is described as the belief that certain central, valued aspects of life were stable and enduring. A structured interview was conducted during the third trimester with 58 subjects and postpartum period with 31 participants. The interview evaluated social network size, duration of relationships, and sources of tangible and emotional support, and sense of permanence. The investigators did not control for biomedical, socioeconomic or lifestyle factors, in the multiple regression analysis. Neonatal complications were more likely to occur among mothers with a low "sense of permanence" and those with smaller and less established social networks.

In summary, there is some evidence for a relationship between social support and pregnancy outcomes. Women with low social support, particularly in the presence of high stress or anxiety had more maternal and infant complications. Two identified studies with contrary findings either had methodological problems (Williamson, LeFevre, & Hector, 1989) or used a conceptual model which might not have been valid for the population studied (Norbeck & Anderson, 1989).

b) social support as an intervention by health professionals

A second group of studies examined the effect of interventions by health care professionals on pregnancy and pregnancy outcomes. These large studies use multisite randomised controlled trials designed to investigate the influence of home visits as a form of social support on perinatal outcomes. Bryce, Stanley and Garner (1991) conducted an Australian multicentre randomized controlled trial to investigate the effects of antenatal social support on frequency of premature birth. The participants were 1,970 multiparous women with complicated obstetric histories. The experimental group (n=983) were visited monthly by midwives, who provided emotional social support in the form of sympathy, empathy, and affection. There was no evidence that such support influenced the rate of premature birth. In a similar randomized control trial, Villar, Farnot, Barros, Victora, Langer, and Belizan (1992) investigated influence of psychosocial support on low birth weight incidence. The 2235 participants were recruited from four Latin American centres prior to 20 weeks gestation. Intervention group members identified a support person to assist them throughout pregnancy. Female social workers visited the woman and her support person four times prenatally to encourage social support and provide health education. There was little difference in obstetrical outcomes between intervention and control groups. Oakley, Rajan, and Grant (1990) recruited 509 women with previous low birthweight infants for their randomized control trial. The intervention group received three

prenatal home visits and two telephone contacts from midwives during their pregnancies. Participants could also contact the midwife at any time through a paging system. There were no significant differences between groups, but intervention mothers and infants were judged to be "significantly healthier" than control pairs.

In these trials, interventions such as midwife or social worker home visits were considered to be forms of social support. They typify the confusion in social support research. Only Oakley (1985) defined social support. No study described its guiding conceptual framework. Bryce (1991) offered some explanations as to why social support interventions do not affect pregnancy outcomes. It simply may be that the interventions are not supportive enough. He also suggests that social support such as this has no effect on the physical outcomes of pregnancy, therefore no perinatal change is observed. Home visits may not provide true forms of social support. There is some evidence that such approaches create dependency and lower self-esteem in recipients (Gross, Wallston, & Pilivian, 1979). It is possible that interventions such as home visits may not be useful in preventing maternal and infant complications.

In summary, a positive relationship appears to exist between social support from family and friends and pregnancy outcomes. Women with low social support and high stress had more maternal and neonatal complications. Social support provided by health professionals does not appear to influence

pregnancy outcomes. The relationship between social support from family and friends and Uncertainty during pregnancy has not been investigated.

This study contributes to knowledge of the effect of social support on Uncertainty in women labelled as having pregnancy complications.

Summary

There has been little investigation of the experience of Uncertainty during pregnancy. Mishel's Uncertainty theory "Stimuli Frame" components of Symptom Pattern, Event Congruence and Event Familiarity have not been extensively examined in the prenatal context, nor have the "Structure Providers" of social support, Credible Authority and Education. The relationships between these factors and Uncertainty levels among women experiencing pregnancy complications has not been explored.

Social support, a structure provider in Mishel's theory, has been extensively explored throughout the childbearing year. Two main categories of studies have emerged: those examining social support from family and friends, and those examining social support from health care professionals. However, the effect of social support on Uncertainty levels experienced by women with complications of pregnancy has not been examined.

Chapter III

Methodology

This chapter will outline the design and methodology used for this quantitative study. The sample size, criteria for selection, setting, instruments, procedure and methods of data collection and analysis are reported. Changes made to the present study as a result of the pilot study are also discussed.

Research Design

A descriptive correlational design was used as described by Brink and Wood (1989) and Polit and Hungler (1991). This design is appropriate to examine relationships among several variables which must be measured as they exist, without manipulation. Variables of interest in this study, Uncertainty and its influencing factors of Stimuli Frame and Structure Providers, cannot be manipulated, and must be measured as they occur.

The study was undertaken in two phases. A pilot study completed in December, 1994 constituted the first phase. Changes were made to the Demographic Data Collection Form as a result of this pilot. Consultation with M. Clauson, who is currently refining the Uncertainty Stress Scale High Risk Pregnancy Version II, was also undertaken following the pilot. Changes resulting from the pilot study are described in the following section. Phase two was the completion of the present study, details of which are described herein.

Pilot Study

The pilot study was undertaken to determine if changes were necessary in study design or data collection forms. After attaining access to St. Boniface General Hospital, ten women hospitalized for complications of pregnancy were approached and agreed to participate in the pilot study. Written informed consent was obtained, and participants completed the Demographic Data Collection Form, Visual Analogue Scale, Norbeck Social Support Questionnaire, and the Uncertainty Stress Scale - High Risk Pregnancy Version II (USS-HRPV II).

Two changes were made to the Demographic Data Collection Form as a result of the pilot study. First, separate forms were designed for hospital participants and those recruited from the Antenatal Home Care Program. This was done to simplify items regarding previous experience with either the Antenatal Home Care Program or hospitalization related to pregnancy. As well, the item regarding bedrest was divided into two questions about complete and partial bedrest, with both of these terms defined.

Several participants in the pilot study expressed difficulty in understanding the instructions for the USS-HRPV II. Each item of the questionnaire begins with the phrase "I am uncertain...". Pilot participants stated they were unsure what this phrase meant. M. Clauson, who was consulted regarding this issue, stated she substitutes this phrase with the

words "I have doubts" (personal communication, M. Clauson, December, 1994). The suggested substitution was made by crossing out "I am uncertain" and adding "I have doubts" when the questionnaire was explained to each participant. Subjects stated it was easier to comprehend than the original phrase.

In addition to these two changes, the pilot study determined that participants took an average of 40 minutes to complete the data collection forms, rather than the twenty minutes originally estimated. This information was added to the invitation to participate and consent form.

Study Setting

Participants were recruited from the antenatal inpatient units of St. Boniface General Hospital and Health Sciences Centre, both tertiary care centres in Winnipeg, Manitoba. Although it was originally anticipated that only one acute care setting would be required, after one month of data collection, it became apparent that it would be difficult to obtain the desired sample size within a reasonable time period. Therefore, application for access to Health Sciences Centre was made in February, 1995, and obtained the following month. Subjects were also obtained from the Antenatal Home Care Program. The Home Care program is designed to allow women with prenatal complications to remain at home, supported by daily visits from program nurses. The Home Care Program averages 18 new clients per month (personal communication, L. Dacombe, September, 1994).

Study Sample

Burns and Grove (1987) state that as the number of variables under study increases, the needed sample size also increases. A convenience sample of 100 participants was originally planned for this study. After five months of data collection 79 women experiencing pregnancy complications had been recruited for this study. Consultation with Annette Gupton RN, PhD, Thesis Committee Chair and Jeff Sloan, statistician for the Manitoba Nursing Research Institute advised this would be an adequate sample size for this study. Convenience samples are adequate for studies which seek to investigate and describe the relationship between variables (Brink & Wood, 1988). This method can lead to sampling bias. However, to reduce the likelihood of bias, a relatively large sample was recruited and extraneous variables such as chronic conditions predating pregnancy and low gestational age were accounted for in sample criteria. As this was a descriptive study, there were no implications for a cause and effect relationship.

Criteria for admission into the study included:

1. hospitalized on the antepartum units of St. Boniface General Hospital, or Health Sciences Centre or participating in the Antenatal Home Care Program.

2. diagnosis of unanticipated complication(s) of pregnancy. Women with a pre-existing chronic condition may not have the same experience as women

who do not anticipate pregnancy complications, and therefore were excluded from the sample.

3. ability to speak, read, and write English
4. no active psychiatric condition
5. gestational age of 26 weeks or greater
6. stated intent to keep the infant, as women intending to relinquish their infant may have a different experience than those intending to keep their child.
7. Women who had experienced extreme emotional upset or were fatigued were not approached. Staff nurses were consulted prior to approaching each woman, and no potential subjects were deemed too upset or tired to approach.

Instrumentation

Data was collected using the Uncertainty Stress Scale High-Risk Pregnancy Version II (USS-HRPV II) (Appendix A), and the Norbeck Social Support Questionnaire (Appendix B), as well as the Demographic Data Collection Sheet (Appendix C) and Visual Analogue Scale Form (Appendix D). Clauson (1992) reported Uncertainty among hospitalized prenatal women decreased significantly from 48 hours post admission to time of discharge. Therefore, data was collected between two and 10 days after admission to hospital or Antepartum Home Care Program. Effect of length of admission

on Uncertainty was examined.

Uncertainty Stress Scale High-Risk Pregnancy Version II

The Uncertainty Stress Scale High-Risk Pregnancy Version II (USS-HPV II) was developed by Hilton (1992) to measure Uncertainty in complicated pregnancy and stress, threat, and opportunity arising from the uncertain state. The scale has three components. Part A consists of 71 items which ask participants to rate Uncertainty related to their pregnancy on a five point "Likert" scale and to rate their stress related to each item on a three point scale from "no stress" to "high stress". Part B consists of three visual analogue scales for participants to indicate their Uncertainty level and amount of stress and threat they feel from that Uncertainty. Part C asks subjects if they have any positive feelings about their Uncertainty and to rate these feelings on a visual analogue scale.

The USS-HPV I has been used in two studies, which report an internal consistency of 0.96 (Clason, 1992) and 0.97 (Riddell, 1992). Content validity was achieved by submitting the tool to a panel of obstetrical nursing experts. Information regarding the instrument's test-retest reliability is not available. The USS-HPV II, which was used in this study, is currently being refined and tested (Appendix A).

The USS-HPV II was used rather than Mishel Uncertainty in Illness Scale, because the latter has a distinct illness focus unsuitable for use in this population. The USS-HPV II is designed for use with pregnant women and

contains items reflecting concerns specific to that group.

Norbeck Social Support Questionnaire

The Norbeck Social Support Questionnaire (NSSQ) (Norbeck, Lindsey & Carrieri, 1981;1983) is based on Kahn's definition of social support (1979), specifically interpersonal transactions including the expression of positive affect, affirmation of another's views, and provision of symbolic or material aid to another. Uncertainty researchers have frequently used the NSSQ and the affirmation subscale has been found to predict Uncertainty (Mishel & Braden, 1987).

The NSSQ (Appendix B) assesses functional aspects of social support including affect, affirmation, and aid. Network properties of number of persons in it, duration of relationships, and frequency of contact are also assessed. The instrument obtains the number of sources of support lost in the past year and the perceived amount of support lost.

This self-administered tool first asks respondents to list each significant person in their life, then rate the extent of support supplied by them on a five point scale ranging from "not at all" to "a great deal".

Norbeck, Lindsey and Carrieri (1981, 1983) have extensively tested the NSSQ. Over one week interval, each of the functional items (affect, affirmation, and aid) and network property items had high test-retest reliability, ranging from .85 to .92. Correlations for loss items ranged from .71 to .83.

Validity of the NSSQ was established through examination of response

bias, concurrent validity, and construct validity. To test for response bias, the short form of the Marlowe-Crowne Test of Social Desirability was administered concurrently with the NSSQ, to 76 subjects. None of the NSSQ items were significantly related to the social desirability measure. Concurrent validity was tested by administering the NSSQ concurrently with the Social Support Questionnaire (Schaefer, Coyne, & Lazarus, 1981), which has reliability and validity data available. Medium levels of concurrent validity were found. The construct validity of the NSSQ has been explored through the examination of the correlations between NSSQ subscale and composite variables and interpersonal constructs thought to be related and unrelated (Norbeck et al., 1983). Participants completed the NSSQ as well as the Fundamental Interpersonal Relations Orientation (FIRO-B)(Schultz, 1978). "Construct validity was demonstrated by statistically significant correlations between the NSSQ subscales and composite variables and the FIRO-B constructs of need for inclusion and affection, but not between the NSSQ and the construct need for control" (Norbeck, Lindsey, & Carrieri, 1983, p.6).

Predictive validity was tested by examining the predictive value of the NSSQ in relation to the stress buffering role of social support. Subjects completed the NSSQ, Profile of Moods States (McNair, Lorr, & Droppleman, 1971) and the Personal Resources Questionnaire (Brandt & Weinert, 1981). "A significant main effect was found for the duration of relationships subscale in predicting negative mood, as well as two significant interactions (the

product of life stress and duration of relationships and the product of life stress and aid)" (Norbeck et al., 1983, p.9).

Demographic Data Collection Sheet

This tool produces information about participants' diagnosis, location of care, information received about their condition, and demographic features such as age, marital status and family income. Event Familiarity is also assessed. When the situation is novel, Uncertainty increases, and as it becomes familiar, Uncertainty decreases (Mishel, 1988). The Event Familiarity item was introduced with the question "Have you had any problems in previous pregnancies?" and "Has anyone close to you had problems during pregnancy?" (Appendix C).

Visual Analogue Scale Form

Visual analogue scales are used to gather information about continuous variables such as internal feelings, perceptions or sensations that are difficult to measure using scales with discrete predetermined intervals (Lee & Kieckhefer, 1989). Such scales are composed of 100 millimetre lines anchored by bipolar antonyms. Participants make a vertical mark through the line to indicate their self measurement of each item. The line is measured to compare subjects' responses.

Visual analogue scales are easy for respondents to use and allow them

to make as fine a discrimination as they wish between extremes of the scale. Respondent bias is minimized because of lack of numeric labels and through the use of reverse end anchors (Lee & Kieckhefer, 1989). Visual analogue scales provide quantitative, interval level information, as is required for descriptive correlation studies (Brink & Wood, 1989).

Visual analogue scales were used in this study to measure the Stimuli Frame components of Symptom Pattern and Event Congruence, and the structure provider of Credible Authority. How serious the participant perceived her condition to be, and how useful she found the information provided about her condition was measured by using visual analogue scales as well.

Symptom Pattern, the degree to which symptoms have enough consistency to form a pattern (Mishel, 1988), is introduced with the question "Are your symptoms the same all the time?". The bipolar antonyms are "always the same" and "always different".

Event Congruence, the consistency between expectations and experience, is introduced with the question "how much is your present situation what you expected your pregnancy to be like?". The bipolar antonyms are "exactly what I expected" and "not at all what I expected".

Credible Authority, the degree of trust and confidence women have in their health care providers (Mishel, 1988), was assessed by two questions. The first asks participants "how much confidence do you have in your nurses?". Anchor phrases are "no confidence" and "extreme confidence". The

second item asks "how much confidence do you have in your doctors?" and is followed by the same anchor points.

Two visual analogue scales were used to evaluate participants' perceptions of the seriousness of their conditions. These were included based on a finding of Riddell's (1992) investigation of coping strategies and Uncertainty in women with gestational diabetes. Riddell used a visual analogue scale to ask participants how serious they considered gestational diabetes to be for their pregnancy. There was significant positive correlation between Uncertainty and the perceived seriousness of gestational diabetes. These items explored a possible relationship between levels of Uncertainty and perceived seriousness of the participants' conditions. The first item asked "how serious do you feel your pregnancy complication is to your own health?", with anchor points of "not at all serious" and "extremely serious". The second item asked "how serious do you feel your pregnancy complication is to your baby's health?" and used the same anchor points.

The final Visual Analogue Scale was intended to explore the relationship between patient education and Uncertainty. Patient education was defined as information the woman has received about her condition. Participants were asked to evaluate the usefulness of such information, with the assumption that patient education is successful when the individual understands it and can apply it. The specific question is "How useful is the information you have received about your pregnancy complication?". Its bipolar antonyms are "not

at all useful" and "extremely useful" (Appendix D).

Procedure

The researcher met with nursing personnel of the antepartum units of St. Boniface General Hospital and Health Sciences Centre, as well as the Antenatal Home Care Program to explain the study and answer questions.

In the hospital setting, potential participants were identified by the investigator. Permission to speak to potential participants was obtained from the nurse caring for them prior to approaching hospitalized women. In the Antenatal Home Care Program, potential participants were identified by the nurse caring for them and informed that a nursing study of the experience of complicated pregnancy was currently being conducted. The women were told they were potential subjects and if they were interested in learning more about it, the nurse researcher would be pleased to discuss it with them. Home Care Program participants were called by the program nurse for permission to release their telephone numbers to the researcher. Hospitalized women were approached in person (Appendix E) while Antenatal Home Care Program women were telephoned (Appendix F). Women on the Antenatal Home Care Program were met in their homes for data collection. The study was explained verbally and in writing (Appendix G). A consent form was signed by those willing to participate (Appendix H). The women received a copy of the study

description and their signed consent.

After consent was obtained, the women completed the Uncertainty Stress Scale - High Risk Pregnancy Version II (USS-HRPV II), the Norbeck Social Support Questionnaire (NSSQ), the Demographic Data Collection Sheet, and the Visual Analogue Scale Form. Participants received the questionnaires in a random order.

Ethical Considerations

Ethical approval was obtained from the Ethical Review Committee of the Faculty of Nursing at the University of Manitoba. Access to the antepartum units of St. Boniface General Hospital, Health Sciences Centre and the Antenatal Home Care Program was also obtained prior to commencement the study.

Verbal and written explanations of the study were given to all participants (Appendix F). Informed consent was obtained and a copy of the signed form was given to the participant (Appendix G). Subjects were assured that participation was voluntary and they could withdraw from the study at any time without influencing their care. Participants were told they could receive a copy of study results if they wished (Appendix H). To preserve anonymity, participants were not identified in any way. Raw data is stored in a locked filing cabinet, and will be destroyed after seven years. Only the investigator, thesis committee, and statistician had access to these data.

Data Analysis

Study results were scored, data coded and transferred onto Epi Info, (Centers for Disease Control & World Health Organization, 1992) a data management software package. This file was then transferred to SAS (SAS Institute, 1978) for further analysis. Demographic features were summarized using descriptive statistics including frequency distributions, measures of central tendency, and variability. Measurement of variables is summarized in Table 1.

Research question number one "what is the relationship between levels of Uncertainty perceived by women experiencing pregnancy complications and the antecedents of Uncertainty (Symptom Pattern, Event Familiarity, Event Congruence, Credible Authority, Social Support, Education)" was then examined. This was done through use of the USS-HRPV, Visual Analogue Scale, Demographic Data Collection Sheet and Norbeck Social Support Questionnaire (NSSQ). A correlation matrix, a table of correlation coefficients that shows all pairs of correlations of a set of variables, was constructed. The Shapiro-Wilks statistic determined there was a normal distribution, therefore Pearson's correlation coefficient was used to construct the matrix. The level of significance was set at 0.05. The Pearson correlation coefficient describes the degree to which the antecedents are related to Uncertainty levels. The relationship between Uncertainty levels and six other independent variables were explored in the manner just described. These additional variables are:

perceived usefulness of patient education, perceived seriousness of the complication to maternal and fetal health, and whether the woman has had an ultrasound, seen the neonatologist, or toured the Neonatal Intensive Care Unit.

The multicollinearity of variables were examined to explore if any of the antecedents are highly correlated. When independent variables are highly correlated, it is difficult to determine their separate effects on the dependent variable (Vogt, 1993). Parity was found to be highly correlated with gravidity, and thus was dropped from the subsequent regression analysis.

Question number two "what is the relationship between Structure Providers and Stimuli Frame" was explored through the construction of a correlation matrix. Pearson correlation coefficient was used to construct the matrix as all variables were normally distributed. This test describes the degree to which Structure Providers are related to Stimuli Frame components.

Question three "which independent variables are significantly predictive of levels of Uncertainty in women experiencing complications of pregnancy" was examined next. The relevant variables as specified by Mishel (1988) and determined as significant in the correlation matrix were put into a stepwise multiple linear regression analysis to determine which variables were significantly predictive of Uncertainty. This method uses more than one independent variable (antecedents) to predict the dependent variable (Uncertainty) (Vogt, 1993).

Variable	Measurement Approach	Data Type	Range
Uncertainty	Uncertainty Stress Scale High Risk Pregnancy Version	ordinal	0-284
Stimuli Frame Symptom Pattern	Visual Analogue Scale	ordinal	1-100
Stimuli Frame Event Familiarity	Demographic Questionnaire	nominal	
Stimuli Frame Event Congruence	Visual Analogue Scale	ordinal	1-100
Structure Providers Credible Authority of Nurses	Visual Analogue Scale	ordinal	1-100
Structure Providers Credible Authority of Doctors	Visual Analogue Scale	ordinal	1-100
Structure Providers Social Support	Norbeck Social Support Questionnaire	ordinal	
	Total Functional (affect + affirmation + aid)	ordinal	0-720
	affect	ordinal	0-240
	affirmation	ordinal	0-240
	aid	ordinal	0-240
	Total Network (no. listed + duration + freq)	ordinal	2-264
	no. listed	ordinal	0-24
	duration	ordinal	1-120
	frequency of contact	ordinal	1-120
	Total Loss (loss + loss no. + loss amt.)	ordinal	
loss	ordinal		
loss number	ordinal		
loss amount	ordinal		
Ultrasound	Demographic Questionnaire	nominal	
Met Neonatologist	Demographic Questionnaire	nominal	
NICU Tour	Demographic Questionnaire	nominal	
Seriousness to Mother's Health	Visual Analogue Scale	ordinal	1-100
Seriousness to Fetal Health	Visual Analogue Scale	ordinal	1-100
Usefulness of Information	Visual Analogue Scale	ordinal	1-100

Table 1: Measurement of Variables

Chapter IV

Results

Data collection occurred over a five month period from January, 1995 to May, 1995. Seventy-nine subjects were recruited, 68 from the antenatal units of St. Boniface General Hospital and Health Sciences Centre and six from the Antenatal Home Care Program. The researcher recruited the first 64 participants, with a research assistant recruiting the final 15.

This chapter contains the results of data collection and subsequent analysis. Demographic information is reported. Results from the Uncertainty Stress Scale-High Risk Pregnancy Version II (USS-HRPV II) are presented as well. Data analysis is directed at examining each of the three research questions.

The Sample

Seventy-nine women experiencing complications of pregnancy took part in the study. Three of the women approached refused to participate, two citing fatigue, and the other not giving a reason. Most of the women were married, with a mean education level of 12.8 years (SD 2.9). Their mean age was 27.6, with a range of 16 to 44 years. Fifty-nine (74.7%) of participants were Caucasian, and 14 (17.7%) Aboriginal, with the remaining six participants

identifying themselves as Asian, Afro-Canadian or Hispanic.

Twenty-nine (36.7%) of the women were primigravidas. Mean gestation was 33 weeks, with a range of 26 to 40 weeks. The most commonly identified pregnancy complication was pregnancy induced hypertension (32.9%), followed by antepartum haemorrhage (11.4%), and spontaneous premature rupture of membranes (11.4%) (Table 2). Many participants (44.3%) had experienced complications in previous pregnancies, with 35.4% being admitted to hospital during a previous pregnancy. Approximately half (46.2%) of participants stated someone close to them had experienced pregnancy complications.

Table 2 Reported Pregnancy Complications

Complication	Frequency	Percent
pregnancy induced hypertension	26	32.9
antepartum haemorrhage	9	11.4
premature rupture of membranes	9	11.4
preterm labour	7	8.9
placenta previa	7	8.9
gestational diabetes	6	7.6
PIH & gestational diabetes	4	3.8
twins & APH	1	1.3
deep vein thrombosis	1	1.3
pulmonary embolism	1	1.3
abdominal pain not diagnosed	1	1.3
mastitis	1	1.3
renal calculi	1	1.3
APH & gestational diabetes	1	1.3
"baby's stomach not closed"	1	1.3
vomiting & dehydration	1	1.3
PIH & breech	1	1.3
twins & PTL	1	1.3
hyperemesis & intrauterine growth retardation	1	1.3

Uncertainty

Uncertainty was measured using the USS-HRPV II. The total Uncertainty score ranged from 7 to 219, ($M=76.9$, $SD=48.9$, median 70) (Table 3). The USS-HRPV II items eliciting the highest Uncertainty scores are presented in Table 4.

Table 3

Uncertainty Stress Scale - High Risk Pregnancy Version II Scores

	Score	Frequency
No Uncertainty	0	0
Low Uncertainty	1-71	40
Moderate Uncertainty	72-142	32
High Uncertainty	143-213	5
Very High Uncertainty	214-284	2

Table 4

Uncertainty Stress Scale - High Risk Pregnancy Version II
Highest Mean Scores

Item	Mean	SD	<u>Total Uncertainty</u>	
			Pearson r	p value
I am uncertain:				
whether my condition will return with the next pregnancy	2.6	1.3	0.55	0.001
about the length of my hospital stay	2.2	1.4	0.58	0.001
about my baby's chances to be healthy	2.1	1.4	0.68	0.001
what to expect next	2.1	1.3	0.72	0.001
what caused my condition	2.1	1.5	0.59	0.001

These five USS-HRPV II items did not have the strongest relationships with total Uncertainty when examined using Pearson correlation coefficient. The USS-HRPV II items having the strongest relationship with total Uncertainty are presented in Table 5.

Table 5

Uncertainty Stress Scale - High Risk Pregnancy Version II
Pearson Correlations Items to Total Uncertainty

Item	Mean	SD	Total Uncertainty	
			Pearson r	p value
I am uncertain:				
whether my children will be well cared for while I am in hospital	0.93	1.35	0.75	0.001
whether following the treatment program recommended to me will help	1.05	1.20	0.75	0.001
whether my condition is under control	1.67	1.21	0.73	0.001
what to look for to check the state of my condition	0.81	1.13	0.73	0.001
how to choose the treatments I will have	1.04	1.28	0.73	0.001

The visual analogue scale measuring overall Uncertainty was also examined. Visual analogue responses ranged from 2 to 99, with a mean of 44.6 (SD 26.3). A Pearson correlation matrix was used to determine the relationship between total Uncertainty and visual analogue scores of overall Uncertainty level, stress level, and threat level. There were significant relationships between total Uncertainty and each of the visual analogue scales (Table 6).

Table 6

Pearson Correlation Coefficients Between Total Uncertainty and
USS-HRPV II Visual Analogue Scales

	<u>Total Uncertainty</u>	
	Pearson r	p value
Uncertainty Visual Analogue Scale	0.62	0.001
Stress Visual Analogue Scale	0.56	0.001
Threat Visual Analogue Scale	0.60	0.001

Research Question One

The first research question explored the relationship between levels of Uncertainty perceived by women experiencing pregnancy complications and the antecedents of Uncertainty (Symptom Pattern, Event Familiarity, Event Congruence, Credible Authority, Social Support, Education).

Symptom Pattern

Symptom Pattern refers to whether symptoms occur with enough consistency to form a recognizable pattern. The concept was measured using a visual analogue scale, with the question "Are your symptoms the same all the time?" with anchor points of "always the same" and "always different". Responses ranged from 0 to 100, with a mean of 59.7.

Results indicated a significant relationship between the two variables ($r=-0.247$, $p=0.03$). As consistency of symptoms increased, levels of Uncertainty decreased.

Event Familiarity

Event Familiarity was assessed through four nominal level items on the Demographic Data Collection Tool, which asked participants 1) if they had experienced problems in previous pregnancies; 2) had been hospitalized; or 3) on the Antenatal Home Care Program during previous pregnancies, and; 4) if someone close to them had problems during pregnancy. These variables were compared to total Uncertainty scores using Wilcoxon rank sum scores. There were no significant relationships between items (Table 7). Previous experience with a similar situation in the form of having complications in a previous pregnancy, being hospitalized or on the Antenatal Home Care Program, or having a significant other who had pregnancy complications, did not have any bearing on levels of Uncertainty.

Table 7

Wilcoxon Rank Sum Scores Between Total Uncertainty and
Event Familiarity Items

	<u>Total Uncertainty</u>	
	Wilcoxon Score	p value
Complication in previous pregnancy	4.21	NS
Hospitalized in previous pregnancy	4.42	NS
AHCP in previous pregnancy	0.74	NS
Significant other had pregnancy complications	1.75	NS

note: NS = not significant

Event Congruence

Event Congruence, the consistency between expectations and experience, was measured using a visual analogue scale. Participants were asked "How much is your present situation what you expected your pregnancy to be like?", with anchor points of "exactly what I expected" and "not at all what I expected". Results ranged from 0 to 100, with a mean of 26.3.

The relationship between Event Congruence and Uncertainty was not significant ($r=-0.048$ $p=0.68$). Event Congruence as measured, had no apparent effect on levels of Uncertainty.

Credible Authority

Credible Authority was measured using two visual analogue scales which asked respondents to indicate how much confidence they had in their nurses and physicians.

Mean confidence in nurses was 80.02 (SD 17.2), while mean confidence in physicians was 82.48 (SD 17.3). Confidence in nurses was significantly related to confidence in physicians ($r=0.859$, $p=0.001$). The item measuring confidence in nurses was not significantly related to total Uncertainty ($r=-0.097$, $p=0.39$), nor was the item regarding confidence in physicians ($r=-0.095$, $p=0.40$). Levels of Credible Authority had no relationship with levels of total Uncertainty.

Social Support

Social Support was measured using the Norbeck Social Support Questionnaire (NSSQ). Mean total functional support was 176.67 (SD 91.7), mean total network support was 96.68 (SD 47.54), while mean total loss was 1.13 (SD 2.29).

None of the Social Support items were significantly related to total Uncertainty (Table 8). Social Support was not related to total Uncertainty.

Table 8

Pearson Correlation Coefficient of
NSSQ Scores and Total Uncertainty Scores

NSSQ Scores	<u>Total Uncertainty</u>	
	Pearson r	p value
Total Functional Support	0.013	NS
Total Network	0.001	NS
Total Loss	-0.09	NS
Aid	0.052	NS
Affirmation	0.003	NS
Affect	-0.02	NS

note: NS = not significant

Education

The relationship between Education and total Uncertainty was examined using Pearson correlation coefficient. The relationship between Education and total Uncertainty was significant ($r=-0.26$ $p=0.01$). As Education level increased, total Uncertainty scores decreased.

additional analyses

The relationships between selected items and total Uncertainty were also explored. These items were perceived seriousness of condition, time from admission to hospital or AHCP, gravidity, parity, and perceived usefulness of information received about the pregnancy complication.

Riddell (1992) found a significant positive correlation between Uncertainty and perceived seriousness of gestational diabetes. In this study, participants were asked to rate how serious they felt their pregnancy complication was for their baby's health and their own, using two visual analogue scales. The relationship between perceived seriousness of condition and Uncertainty levels was examined using Pearson correlation coefficient. Riddell's findings were not supported as no significant relationships emerged (Table 9). Perceived degree of seriousness of condition for mother or baby's health did not influence Uncertainty levels.

Clauson (1992) reported Uncertainty among hospitalized prenatal women decreased significantly from 48 hours post admission to time of discharge. In this study, data was collected at only one time point, which varied between participants. The relationship between time of admission to hospital or Antenatal Home Care Program and Uncertainty levels was examined using Pearson correlation coefficient. No significant relationships emerged (Table 9). Uncertainty levels were not related to length of time in hospital or on the Antenatal Homecare Program.

The relationship between three other factors and Uncertainty was also explored. Gravidity, parity and perceived usefulness of information received about the pregnancy complication were all significantly related to Uncertainty (Table 9).

Table 9

Pearson Correlation Coefficient of
Total Uncertainty and Selected Items

	<u>Total Uncertainty</u>	
	Pearson r	p value
Seriousness for baby's health	0.124	NS
Seriousness for own health	0.105	NS
Time from admission	-0.094	NS
Gravidity	0.40	0.001
Parity	0.29	0.01
Usefulness of Information	-0.37	0.001

note: NS = not significant

Uncertainty increased with the number of pregnancies and births and decreased as perceived usefulness of information increased.

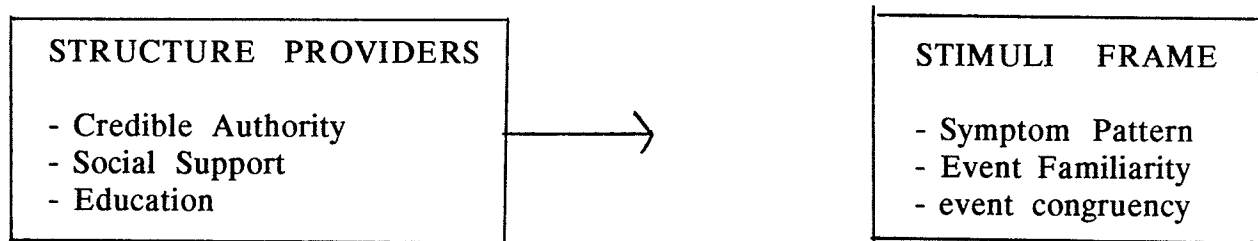
Summary

The relationships between levels of Uncertainty perceived by women experiencing pregnancy complications and the antecedents of Uncertainty were explored. Symptom Pattern and Education were the only antecedents identified by Mishel (1988) which were significantly related to total Uncertainty. Three other factors, gravidity, parity, and perceived usefulness of information, also were significantly related to levels of Uncertainty.

Research Question Two

The second research question explored the relationship between Structure Providers (Credible Authority, Social Support, Education) and Stimuli Frame (Symptom Pattern, Event Familiarity, Event Congruence). Mishel (1988) asserts Stimuli Frame is influenced by Structure Providers (Figure 3). Relationships between Structure Providers and Stimuli Frame variables are presented separately.

Figure 3: Influence of Structure Providers on Stimuli Frame



Credible Authority

The structure provider Credible Authority was assessed using two visual analogue scales measuring confidence in nurses and physicians.

1) Symptom Pattern: Symptom Pattern was measured on a visual analogue scale. The relationship between Credible Authority and Symptom Pattern was examined using Pearson correlation coefficient. There were no significant relationships between Symptom Pattern and Credible Authority items (Table 10). Participants' confidence in their health care professionals did not influence their Symptom Pattern scores.

Table 10

Pearsons Correlation Coefficient of Credible Authority and Symptom Pattern

Credible Authority	<u>Symptom Pattern</u>	
	Pearson r	p value
Confidence in nurses	-0.14	NS
Confidence in physicians	-0.10	NS

note: NS = not significant

2) Event Familiarity: Event Familiarity was assessed via four nominal level questions regarding past experiences during pregnancy. Relationships between Credible Authority and Event Familiarity were examined using Wilcoxon rank sum scores. There were no significant relationships between the items (Table 11). Participants' confidence in their health care professionals did not influence Event Familiarity.

Table 11

Relationship Between Credible Authority
and Event Familiarity
(Wilcoxon Rank Sum Scores)

	<u>Confidence in Nurse</u>		<u>Confidence in Physician</u>	
	Wilcoxon score	p value	Wilcoxon score	p value
Complication in previous pregnancy	1.73	NS	1.36	NS
Hospitalized in previous pregnancy	2.06	NS	1.61	NS
APHCP in previous pregnancy	2.85	NS	3.26	NS
Significant other had complication	0.02	NS	1.1	NS

note: NS = not significant

3) Event Congruence: Event Congruence was measured using a visual analogue scale. Relationships between Credible Authority and Event Congruence were examined via Pearson correlation coefficient. There were no significant relationships among the items (Table 12). Participants' confidence in health care professionals did not influence Event Congruence.

Table 12

Pearson Correlation Coefficient Between
Credible Authority and Event Congruence

Credible Authority	<u>Event Congruence</u>	
	Pearson r	p value
Confidence in nurses	0.01	NS
Confidence in physicians	-0.10	NS

note: NS = not significant

Social Support

The structure provider Social Support was measured using the Norbeck Social Support Questionnaire (NSSQ) Total Functional, Total Network, Total Loss, Aid, Affect and Affirmation subscales.

1) Symptom Pattern: Relationships between NSSQ items and the Symptom Pattern were examined via Pearson correlation coefficient. There were no significant relationship between items (Table 13). Social Support did not influence Symptom Pattern.

Table 13

Pearson Correlation Coefficient of
Social Support and Symptom Pattern

Social Support	<u>Symptom Pattern</u>	
	Pearson r	p value
Total Functional	-0.15	NS
Total Network	-0.13	NS
Total Loss	-0.05	NS
Aid	-0.19	NS
Affirmation	-0.10	NS
Affect	-0.15	NS

note: NS= not significant

2) Event Familiarity: Relationships between NSSQ items and Event Familiarity items were assessed using Wilcoxon rank sum scores. There were no significant relationships between items (Table 14). Social Support had no effect on Event Familiarity.

Table 14

Relationship Between Social Support and Event Familiarity
(Wilcoxon Rank Sum Scores)

NSSQ Items	<u>Event Familiarity Items</u>							
	1		2		3		4	
	Wilcoxon	p value	Wilcoxon	p value	Wilcoxon	p value	Wilcoxon	p value
Total Functional	1.13	NS	1.29	NS	0.16	NS	0.45	NS
Total Network	0.15	NS	0.74	NS	0.11	NS	0.86	NS
Total Loss	7.02	NS	5.23	NS	4.22	NS	0.05	NS
Aid	1.58	NS	1.24	NS	0.82	NS	0.14	NS
Affirm	0.75	NS	1.04	NS	0.07	NS	0.93	NS
Affect	1.35	NS	1.14	NS	0.14	NS	0.21	NS

Note:

1 = complication in previous pregnancy
2 = hospitalized in previous pregnancy

3 = APCHP in previous pregnancy
4 = significant other had pregnancy complication
NS = not significant

3) Event Congruence: Relationships between NSSQ items and the Event Congruence item were examined via Pearson correlation coefficient. There were no significant relationships between items (Table 15). Social support had no effect on event congruence.

Table 15

Pearson Correlation Coefficient of
Social Support and Event Congruence

Social Support	<u>Event Congruence</u>	
	Pearson r	p value
Total Functional	-0.07	NS
Total Network	0.05	NS
Total Loss	-0.01	NS
Aid	-0.08	NS
Affirmation	-0.11	NS
Affect	-0.04	NS

Education

The structure provider Education was assessed through an item on the demographic questionnaire.

1) Symptom Pattern: The relationship between Symptom Pattern and Education was explored using Pearson correlation coefficient. A significant relationship existed between the two items ($r=0.26$, $p=0.02$). Increased Education level was associated with increased consistency in Symptom Pattern. This supports Mishel's (1988) assertion that formal Education influences perceived consistency of symptoms.

2) Event Familiarity: The relationship between Event Familiarity and Education was examined using Wilcoxon rank sum test. There was no significant relationship between items (Table 16). Education level did not influence Event Familiarity.

Table 16

Relationship Between Education and
Event Familiarity
(Wilcoxon Rank Sum Scores)

Event Familiarity	Education Wilcoxon score	p value
Complication in previous pregnancy	1.12	NS
Hospitalized in previous pregnancy	3.03	NS
ANHCP in previous pregnancy	0.99	NS
Significant other had pregnancy complication	0.63	NS

note: NS = not significant

3) Event Congruence: The relationship between Event Congruence and Education was examined using Pearson correlation coefficient. There was no significant relationship between items ($r=-0.01692$, $p=0.89$). Education level did not affect the similarity between expectations and actual events.

Summary

Mishel asserts Structure Providers (Credible Authority, Social Support, Education) influence how Stimuli Frame components (Symptom Pattern, Event Familiarity, Event Congruence) are interpreted and experienced (Figure 3). In

this study, only one structure provider (Education) was found to be significantly related to one Stimuli Frame component (Symptom Pattern). All other relationships were not significant.

Research Question Three

The third research question determined which independent variables were significantly predictive of levels of Uncertainty in women experiencing complications of pregnancy. The five variables assessed as significant in the correlation matrix were put into a stepwise multiple regression analysis. In addition to the two variables identified as significant in the first research question, three demographic features were identified as significant in the correlation matrix, and were also entered in the stepwise regression (Table 17). The three additional variables were gravidity, parity, and perceived usefulness of information received about the woman's pregnancy complication.

Table 17

Pearson Correlation Coefficients of
Total Uncertainty and Items Placed in Stepwise Multiple Regression

	<u>Total Uncertainty</u>	
	Pearson r	p value
Symptom Pattern	-0.25	0.03
Education	-0.26	0.01
Gravidity	0.40	0.001
Parity	0.29	0.01
Information	-0.37	0.001

Three variables emerged in the resulting regression model, which when combined, explained 30 percent of the variance in total Uncertainty. The variables were gravidity ($r^2=0.1423$), perceived usefulness of information ($r^2=0.1157$), and Symptom Pattern ($r^2=0.0444$) (Table 18).

Table 18

Stepwise Multiple Regression Analysis
Predictors of Total Uncertainty

Step	Variable	Partial r^2	Model r^2	Prob>F
1	Gravidity	0.1423	0.1423	0.0008
2	Information	0.1157	0.2580	0.0012
3	Symptom Pattern	0.0444	0.3023	0.0358

Probability of this model explaining variance in total Uncertainty is significantly better than chance. A model composed of gravidity, perceived usefulness of information, and Symptom Pattern was significantly predictive of levels of Uncertainty in women experiencing pregnancy complications.

Summary of Study Results

The first research question explored relationships between levels of Uncertainty perceived by women experiencing pregnancy complications and the antecedents of Uncertainty. Symptom Pattern and Education were the only antecedents included in Mishel's (1988) theory of Uncertainty which were significantly related to total Uncertainty. Three other factors, gravidity, parity, and perceived usefulness of information were also significantly related to levels of Uncertainty.

The second research question explored the relationship between

Structure Providers (Credible Authority, Social Support, Education) and Stimuli Frame (Symptom Pattern, Event Familiarity, Event Congruence). In this study, only one structure provider (Education) was found to be significantly related to one Stimuli Frame component (Symptom Pattern). Women with higher education levels had symptoms which occurred with enough consistency to form a recognizable pattern. All other relationships were not significant.

The third research question explored which independent variables were significantly predictive of levels of Uncertainty in women experiencing complications of pregnancy. A regression model composed of gravidity, perceived usefulness of information, and Symptom Pattern was significantly predictive of levels of Uncertainty in women experiencing complications of pregnancy.

Chapter V

Discussion, Nursing Implications and Recommendations

This chapter commences with a discussion of the findings, and explores conceptualization and measurement of Uncertainty. Results for each research question are examined in light of previous studies. Study limitations, as well as implications for nursing practice, theory and education are discussed. Recommendations for future areas of nursing research are made.

Discussion of Findings

Mishel's (1988) theory of Uncertainty in illness seeks to explain how people examine what is happening when they are ill. Uncertainty during complicated pregnancy has been examined in two Canadian studies. Riddell (1992) described levels of Uncertainty and coping strategies among 46 women with gestational diabetes, while Clauson (1992) examined levels of Uncertainty among 58 women hospitalized for "high risk" pregnancy. Both studies used the USS-HRPV version I, and both samples experienced moderately low levels of Uncertainty.

The purpose of this study was to explore and describe the relationship between the antecedents of Uncertainty as described by Mishel (1988) and levels of Uncertainty among women experiencing pregnancy complications.

Seventy-nine women experiencing pregnancy complications completed the USS-HRPVII, NSSQ, Demographic Data Collection Form, and Visual Analogue Scale Form. Analysis of data included construction of a correlation matrix to examine relationships among antecedents of Uncertainty and levels of Uncertainty. A stepwise multiple regression analysis followed to determine which variables were significantly predictive of Uncertainty. A correlation matrix was also constructed to explore the relationship between Structure Providers and Stimuli Frame.

Analysis revealed that participants experienced moderately low levels of Uncertainty, supporting findings by Clauson (1992) and Riddell (1992). Symptom Pattern and Education level, antecedents specified by Mishel (1988), were significantly correlated with Uncertainty. Gravidity, parity, and perceived usefulness of information were also significantly correlated with Uncertainty. The stepwise multiple regression analysis revealed that gravidity, usefulness of information, and Symptom Pattern were significantly predictive of Uncertainty. Examination of the relationship between Structure Providers and Stimuli Frame showed a significant correlation between Education level and Symptom Pattern. No other significant correlations were produced. Study results did not support the majority of relationships proposed by Mishel's theory of Uncertainty.

Uncertainty: Conceptualization and Measurement

Chinn and Kramer (1991) suggest four possible explanations for disparity between theory and empiric findings: a) faulty concepts; b) faulty relationship statements; c) faulty empiric indicators; or d) faulty operational definitions.

a) faulty concepts

Concepts must be completely and clearly defined or empiric indicators will be unclear (Chinn & Kramer, 1991). Clarity refers to the idea that when different nurses read the theory, a similar reality should come to mind. Barriers to clarity include "excessive verbiage", semantic inconsistency, and lack of structural clarity and consistency.

Mishel (1988) used concepts and their definitions consistently. The theory does have structural clarity, described by Chinn and Kramer (1991) as understandability of connections and relationships within the theory. The reader must take great care and effort, however, to correctly discern and understand these connections. Uncertainty theory also has structural consistency, in that a linear relationship is described from antecedents, through Uncertainty, to assessment of and adaptation to it.

One potential source of conceptual opacity may be the use of a tool developed to examine Uncertainty in complicated pregnancy rather than

illness. Most researchers exploring Uncertainty use the Mishel Uncertainty in Illness Scale (MUIS) (Mishel, 1990). This study used the Uncertainty Stress Scale - High Risk Pregnancy Version II as it was more suited to the population of interest. The USS-HRPV II was developed by Hilton (1994), who uses a definition of Uncertainty which builds on Mishel's. Mishel (1988) defines Uncertainty as:

the inability to determine the meaning of illness related events. It is the cognitive state created when the person cannot adequately structure or categorize an event because of lack of sufficient cues. Uncertainty occurs in situations in which the decision maker is unable to assign definite value to objects or events and/or is unable to predict outcomes accurately (p. 1).

Hilton's (1994) definition of Uncertainty is very similar:

(Uncertainty is) a cognitive perceptual state that ranges from a feeling of just less than surety to vagueness; it changes over time and is accompanied by threatening and or positive emotions. Uncertainty is not being able to foretell the future; a lack of clarity about the present; being in doubt; being undecided because things are not definite, clearcut, or determined; not being able to rely, count, depend on someone or something; having a sense of vagueness about what to do, expect, know and ask (p. 18).

While Mishel's writing is at times verbose and abstract, the theory does possess semantic clarity and consistency, as well as structural clarity and consistency. Faulty conceptualization does not explain the disparity between Uncertainty theory and results of this study.

b) faulty relationship statements

Relationship statements were defined by Chinn and Kramer (1991) as "any statement that sets forth a connection or association between two or more phenomena" (p. 202). These are used to form systematic linkages between and among concepts and thus build the formal theoretic structure. Mishel's (1988) Uncertainty theory has three main relationship statements:

- 1) Components of the Stimuli Frame (Symptom Pattern, Event Familiarity, event congruency) are inversely related to and reduce Uncertainty.
- 2) The Stimuli Frame is influenced by Structure Providers (Credible Authority, Social Support, Education).
- 3) Structure Providers reduce Uncertainty directly by assisting in the interpretation of events, and reduce Uncertainty indirectly by influencing the Stimuli Frame.

These statements describe the linkages between theory components with a logical progression from one statement to the next. Disparity between theory and this study's findings does not appear to be due to faulty

relationship statements.

c) faulty empiric indicators

Chinn and Kramer (1991) define empiric indicators as "the sensory experience related to a concept" (p. 198). Abstract concepts such as Uncertainty require construction of indirect measures that provide an approximation of the concept. In this study, the USS-HRPV II was used to measure Uncertainty levels among women experiencing pregnancy complications. Convergent validity between this tool and the Mishel Uncertainty in Illness Scale (MUIS) has not been explored. However the Uncertainty Stress Scale, upon which the USS-HRPV II is based, has convergent validity with the MUIS (Hilton, 1994). It is possible the USS-HRPV II does not measure the same construct as the MUIS, which might explain dissimilarity between Mishel's theory and study results.

Additionally, the MUIS has four subscales - ambiguity, complexity, inconsistency, unpredictability. Previous assessments of the relationship between Uncertainty and its antecedents have reported significant correlations between the latter and one of these subscales, rather than total Uncertainty score (Mishel, Hostetter, King, & Graham, 1984; Mishel & Braden, 1987; Mishel & Braden, 1988). For example, in Mishel and Braden's 1988 study of 61 women with gynecological cancer, Symptom Pattern was a significant predictor of *ambiguity*, but not of overall Uncertainty. In another study,

Education was significantly related to *complexity*, but not to overall Uncertainty (Mishel et al., 1984). As the USS-HRPV II does not have subscales, it may not be sensitive enough to identify relationships between antecedents and certain aspects of Uncertainty. This potential lack of sensitivity may explain disparity between Mishel's theory and this study's results.

The language level of the USS-HRPV II should also be considered. The tool has an overall SMOG (Redman, 1988) rating of grade nine reading level. Some items, however, are written at a high reading level, for example "I am uncertain whether the treatments I am having will eliminate the condition". This item and others like it were not clear to all participants, some of whose education levels were as low as eight years. If participants do not comprehend questionnaire items, it could cause the tool to be a faulty empiric indicator.

Some pilot study participants had difficulty comprehending the phrase "I am uncertain", which starts each item of the tool. When the phrase "I have doubt" was substituted some participants still could not understand the concept. Other participants expressed frustration because they felt the tool did not capture how they felt about their situation. For example, in response to the item "I am uncertain whether my condition will affect my sex life", one woman stated "I'm not uncertain at all. I know my sex life is over for a while. That doesn't mean it doesn't bother me". Participants expressed similar

reactions to other USS-HRPV II items. Subjects in Clauson's (1992) study had similar difficulties with the USS-HRPV I.

In summary, the USS-HRPV II may not measure the same concept as the MUIS. This, as well as the USS-HRPV II's lack of subscales, and difficulties participants experienced in using it suggest the instrument may have been a faulty empiric indicator of Uncertainty for this sample. This may explain the lack of agreement between Uncertainty theory and study results.

d) faulty operational definitions

Operational definitions are defined as a "statement of meaning that indicates how a term or concept can be assessed empirically" (Chinn & Kramer, 1991) (p. 201). All of this study's antecedents other than Social Support were defined operationally by the researcher and were not tested for validity. For example, Symptom Pattern, event congruency and Credible Authority were assessed using visual analogue scales. Event Familiarity and Education level were assessed using the demographic questionnaire. Use of single item measures may have resulted in faulty operational definitions, causing the disparity between theory and study results. Wewers and Lowe (1990) suggest visual analogue scales have weaknesses, including participant difficulty in understanding instructions, and inability to conceive that a line may represent their experience. As well, Wewers and Lowe discourage the use

of bipolar anchors, suggesting that they introduce two phenomena.

summary of conceptualization and measurement of Uncertainty

Mishel's theory of Uncertainty in illness (1988) describes Uncertainty using clear relationship statements. However, difficulties with the USS-HRPV II and tools designed for this study suggest that faulty empiric indicators and faulty operational definitions may have caused disparity between theory and empiric results.

Examination of Study Results

This section will briefly describe results for each research question and compare them to results from previous studies.

comparison to other studies

Two previous researchers have explored Uncertainty in complicated pregnancy (Clauson, 1992; Riddell, 1992). Riddell used a mail in questionnaire to explore levels of Uncertainty and coping strategies among 46 women with gestational diabetes. The sample participants were all married or in common-law relationships, with a mean age of 31.6 years. Most participants were primigravidas, and the mean gestational age was 31.2 weeks. All participants had high school education, with two-thirds having college or university education. The USS-HRPV II mean Uncertainty level was 109.6. The item generating the highest Uncertainty was related to fetal health.

Clauson (1992) examined Uncertainty levels among 58 women hospitalized for pregnancy complications 48 hours after admission and at discharge. Most participants were multigravidas (72.4%); average gestational age was 30 weeks. Subjects had a mean age of 30.3 years, and half had completed college or university. Two days after admission, participants had a mean Uncertainty level of 113.9 on the USS-HRPV I. At time of discharge, participants had a mean Uncertainty level of 95.7. Items generating the highest Uncertainty levels were related to what caused the mother's condition, and concerns about fetal health.

Both Clauson (1992) and Riddell (1992) used an earlier version of the USS-HRPV, which has 56 rather than 71 items, and employs a 1 to 5 Likert type scale as opposed to the 0 to 4 scale of the USS-HRPV II used in the current study. In consultation with the statistician of the Manitoba Nursing Research Institute, the following method was used to adjust results from this study to allow comparison to Clauson's and Riddell's findings. The first 56 items of the HRPV-USS II are identical to the 56 items in the USS-HRPV I. Therefore, the mean of the first 56 items in the current study was determined. Next, a factor of 56 was added to this mean to account for the use of a 1 to 5 scale on the USS-HRPV I. The adjusted HRPV-USS II mean result for this study was 118.7. This is slightly higher than Riddell's mean of 109.6 and Clauson's means of 113.9 and 95.7.

The higher mean Uncertainty level of the current study may be

explained by comparing the sample characteristics with those of Clauson (1992) and Riddell (1992). Women taking part in the current study had a lower mean age (27.6 years) and were less well educated than Clauson's and Riddell's samples, with an average education level of 12.8 years. Previous studies (Mishel, Hostetter, King & Graham, 1984; Mishel, 1984) have found that younger, less well educated subjects have higher levels of Uncertainty.

Items generating the most Uncertainty in this study were similar to those those identified by Clauson (1992) and Riddell (1992). USS-HRPV II items generating the most Uncertainty were related to whether the condition would return in future pregnancy and concerns about fetal health.

research question one

The first research question was: What is the relationship between antecedents of Uncertainty (Stimuli Frame: Symptom Pattern, Event Familiarity, Event Congruence and Structure Providers: Credible Authority, Education, Social Support) and levels of Uncertainty perceived by women experiencing pregnancy complications.

A significant relationship existed between Symptom Pattern and Uncertainty. As symptom consistency increased, Uncertainty decreased. This is similar to the results of Lynn and Braden (1987) and Mishel & Braden (1988).

There was no relationship between Event Familiarity and Uncertainty.

In contrast, Lynn and Braden (1987), found Event Familiarity to account for 13 percent of variance in Uncertainty about arthritis. Mishel and Braden (1988) found Event Familiarity to account for 13 percent of variance in perceived complexity. In this case an antecedent explained variance in one subscale of the MUIS, but not in overall Uncertainty. Because the USS-HRPV II does not have subscales, it may lack the sensitivity necessary to detect such relationships.

There was no relationship between Event Congruence and Uncertainty. The only other study located which explored Event Congruence was Lynn and Braden (1987), which measured Event Congruence from a single item measure on a demographic sheet. Braden states "My middle range theory of learned response to chronic illness experience differs from Dr. Merle Mishel's middle range theory of Uncertainty in illness. Therefore, the antecedents I look at may differ some from the ones she looks at" (personal communication, C. Braden, May, 1994). A difference in antecedents may explain the disparity in results.

There was no relationship between Credible Authority and Uncertainty. In contrast, Mishel & Braden, (1987 & 1988) found Credible Authority to be a strong predictor of general Uncertainty. As these reports do not describe how Credible Authority was measured, comparison of the operational definition of Credible Authority is impossible.

Social Support did not have any relationship to Uncertainty. In contrast,

Davis (1990) studied 109 patients (66% male) recovering from major illness or surgery, paired with their family caregivers. For both patients and caregivers, less perceived Social Support was related to increased levels of Uncertainty. Mishel and Braden (1987) found Social Support as described by the NSSQ to be significantly associated with the Uncertainty subscale of complexity concerning treatment. These contrasting results may be due to use of a different instrument to measure Uncertainty.

NSSQ scores of this sample vary greatly from Norbeck et al.'s (1981) normative scores. Norbeck's sample, consisting of 136 hospital employees, had a mean Total Functional score of 281.2, compared with 176.7 in the current study. Norbeck's mean scores on the Aid (101.5), Affirm (92.5) and Affect (101.5) scales were higher than those in the current study (Aid 55.1; Affirm 55.4; Affect 63.7). The NSSQ has also been used in other studies of pregnant women (Heaman, 1987; Reece, 1993). Heaman examined the buffering effect of Social Support in 40 women with pregnancy induced hypertension who were either hospitalized or cared for in a community based program. Twenty women from a prenatal class served as a comparison group. Heaman's mean Total Functional score was 208.6, while her other mean scores were similar to those in the current study (Aid 63.8; Affirm 67.6; Affect 77.1). Reece explored Social Support in a group of 91 primiparas over 35 years old. Her mean Total Functional score was 201.2, while her other mean scores were similar to Heaman's and the current study (Aid 52.1; Affirm 92.5;

Affect 78.7). The lower Social Support scores among pregnant women may be due to pregnant women's tendency to withdraw, except to seek out others who are pregnant (Rubin, 1975). As well, participants in the current study were confined to hospital or home, which would further reduce their social contacts. Separation from home and family have been identified as major stressors of antepartum hospitalization (Maloni, Chance, Zhang, Cohen, Betts & Gange, 1993; White & Ritchie, 1984). Carty, Crawford, and Ross (1992) described loss of the social aspects of pregnancy as a major stressor of antepartum hospitalization.

Education and Uncertainty were significantly related. As Education level increased, Uncertainty decreased. This is similar to results from earlier studies (Christman, Pfeiffer, Webster, Schmitt & Ries, 1988; Mishel et al. 1984). Mishel (1988) asserts that greater formal education provides a backdrop against which to interpret events, resulting in reduced Uncertainty.

summary of research question one

Only two antecedents, Symptom Pattern and Education, were found to be related significantly to Uncertainty. Earlier studies found relationships to other antecedents and Uncertainty. Disparity in results may be due to lack of sensitivity of the USS-HRPVII, differing operational definitions for antecedents, and different methods of measuring them.

NO TEXT MISSING

research question two

The second research question explored the relationship between Structure Providers (Credible Authority, Social Support, Education) and Stimuli Frame (Symptom Pattern, Event Familiarity, event congruency). Only one structure provider (Education) was found to be significantly related to a Stimuli Frame component (Symptom Pattern). This differs from Mishel and Braden's 1988 study, which found Social Support as well as Education to impact Symptom Pattern.. This difference may be due to use of immature, single item measures of antecedents, and use of the USS-HRPV II rather than the MUIS to assess Uncertainty.

research question three

The third research question examined which independent variables were significantly predictive of Uncertainty levels in women experiencing pregnancy complications. Stepwise multiple regression analysis revealed that gravidity, perceived usefulness of information, and Symptom Pattern explained 30 percent of Uncertainty variance. Social Support, Education, Credible Authority, Event Familiarity and Event Congruency did not predict Uncertainty.

Symptom Pattern prediction of Uncertainty supports Mishel's theory and is similar to results of a previous study (Mishel and Braden, 1988). These authors found that it explained ambiguity, a subscale of Uncertainty ($r^2=.12$ $p<.05$). However, in this study Social Support and Education did not have a

direct effect on Uncertainty, and earlier Mishel (1984) found Education did not affect Uncertainty.

Other studies demonstrated that Event Familiarity, Credible Authority and Social Support predicted Uncertainty. Mishel and Braden (1987) found that the affirmation subscale of Social Support had an impact on the complexity subscale of Uncertainty ($r^2=.17$, $p<.01$), and (1988) that women treated for gynecological cancer Event Familiarity explained 13 percent of Uncertainty ($p<.05$). These discrepancies may have been caused by use of the USS-HRPV II, and use of immature, single item measures of antecedents.

Whereas previous studies have not identified gravidity or usefulness of information as predictors of Uncertainty, in this project gravidity was the strongest predictor ($r^2=0.14$). As gravidity increased, Uncertainty increased. Many participants had complications (44.3%) or were hospitalized during a previous pregnancy (35.4%). Mishel suggested that previous experience with a situation (Event Familiarity) should reduce Uncertainty. It might be assumed that previous pregnancy complications and hospitalization should be associated with reduced Uncertainty.

However, a multiparous woman would be concerned about children left at home while she is hospitalized. Separation from family has been found to be a major stressor for women experiencing antepartum hospitalization (Heaman, Gupton, & Ashcroft, 1995, Maloni et al., 1993; White & Ritchie, 1984). The USS-HRPV II item regarding how well children would be cared for

while the woman was in hospital had the strongest relationship to total Uncertainty of all items ($r=.75$).

Additionally, women who experienced complications in previous pregnancies may have delivered premature, ill neonates and lived with the consequent fears and difficulties. Such mothers may have experienced similar Uncertainty to that of parents of chronically ill children (Cohen ,1993):

Their Uncertainty, which until the time of diagnosis had been unidimensional, quickly becomes multidimensional and spreads to every aspect of family life, raising countless unanswerable questions and fears. Parents are now confronted with existential, etiologic, treatment, situational, biographical and social uncertainties (p. 84).

Participants who had this type of Uncertainty with another child might be more knowledgeable about possible implications of their pregnancy complications and fear a repeat of their earlier experience. This, combined with concern for the fetus and its siblings might explain why increased gravidity would predict increased Uncertainty.

The second strongest predictor of Uncertainty was perceived usefulness of information ($r^2=0.12$). In Mishel's (1988) model, Uncertainty has four forms, one of which is lack of information about the diagnosis and severity of illness. Patients will seek clear, understandable information as a primary means of

reducing Uncertainty (Mishel, 1988). Nurses and physicians structure information to prevent Uncertainty and serve as information sources to reduce Uncertainty once it has been generated (Mishel, 1988). Women who indicated that they received useful information, suggest that health professionals succeeded in providing understandable information. This clear, understandable information is used to decrease Uncertainty. This visual analogue may be a serendipitous indicator of Credible Authority, supporting Mishel's assertion that Credible Authority decreases Uncertainty. Informational support has been identified as important in complicated pregnancies (Mercer, May, Ferketich, & DeJoseph, 1986), as has giving information in a non-alarming manner (Gupton & Heaman, 1994).

Symptom Pattern refers to whether symptoms occur with enough consistency to form a recognizable pattern. As Symptom Pattern increases, Uncertainty decreases. Symptom Pattern was the third strongest predictor of Uncertainty ($r^2=0.04$), which supports Mishel's theory. Women with complicated pregnancies often look and feel well (Carty et al., 1992), perhaps making it difficult at times to discern a Symptom Pattern. Being able to identify recognizable patterns decreased Uncertainty in this sample.

summary of research question three

The third research question examined which independent variables predicted Uncertainty in women experiencing pregnancy complications. An

empirical model of gravidity, perceived usefulness of information, and Symptom Pattern explained 30 percent of Uncertainty. While this is not clinically significant, it does provide a starting point for identifying further factors influencing Uncertainty in this population. Differences from previous studies may be due to use of the USS-HRPV II rather than the MUIS to measure Uncertainty, and the use of immature, single item measures of antecedents.

Gravidity is a significant predictor of Uncertainty probably because multiparous women are concerned about the wellbeing of their other children in addition to that of their fetus and themselves. As well, most multiparous participants had experienced complications and/or been hospitalized during previous pregnancies. Information regarding outcomes of previous pregnancies was not collected, however, women who had experienced Uncertainty as a result of poor past pregnancy outcomes may fear repeating the experience and thus have higher levels of Uncertainty.

Receiving useful information, should reduce Uncertainty. The perceived usefulness of information visual analogue scale may be an indicator of Credible Authority, leading this result to support Mishel's (1988) theory.

Symptom Pattern was the third strongest predictor of Uncertainty. This finding supports Mishel's (1988) theory.

Summary of Discussion of Findings

With respect to the relationship between antecedents of Uncertainty and Uncertainty levels among women experiencing pregnancy complications, only Symptom Pattern and Education were significantly related to Uncertainty. Disparity between Mishel's (1988) theory and these results may be due to faulty empiric indicators such as use of a different tool to measure Uncertainty, lack of subscales in the USS-HRPV II, and difficulties the subjects had comprehending some USS-HRPV II items. Faulty empiric indicators, and faulty operational definitions due to the use of immature, single item measures of antecedents also contributed to the discrepancy (Chinn & Kramer, 1991).

With respect to the relationship between Structure Providers and Stimuli Frame components, only Education was significantly related to Symptom Pattern. This result is a consequence of use of single item measures of antecedents.

On the question of which independent variables significantly predicted levels of Uncertainty, gravidity, perceived usefulness of information, and Symptom Pattern explained 30 percent of variance in Uncertainty. Increased gravidity might predict increased Uncertainty because multiparous participants would be concerned about children at home, and may have lived through difficult experiences if their previous pregnancies had poor outcomes. Perceived usefulness of information may be a proxy measure of Credible

Authority. Symptom Pattern as a predictor of Uncertainty also supports Mishel's theory.

Limitations

The limitations which may have inadvertently weakened the validity of findings must be kept in mind when viewing the results of this study.

The small, homogeneous, convenience sample used in this study may be a limitation. Phillips (1986) suggests smaller samples may be less representative of the population. A larger sample might have been more representative of the population and may have provided different results.

Use of the USS-HRPV II, as well as the tool's lack of subscales, and difficulties participants encountered in using it were additional limitations.

Use of single item measures to assess antecedents is a limitation of this study. Such measures may not have actually assessed the construct for which they were designed or may not have been sensitive enough to reflect the participants' experience.

Implications for Nursing Practice,
Theory, and Education

This study has several implications for nursing practice. Firstly, nurses caring for women with pregnancy complications must be aware that Uncertainty increases with the number of pregnancies. Multigravid women tend to have greater Uncertainty than primigravidas. Multigravidas require sensitive support to help them cope with separation from their other children, and assistance with issues such as securing safe childcare. As well, many of the women in this study were hospitalized during previous pregnancies. Previous experience with the situation did not reduce their Uncertainty levels. Rather, it seems that having previously experienced this uncertain situation and its sequelae may have heightened the woman's Uncertainty. Nurses providing care to women with pregnancy complications should assess these women's need for extra support, and explore their past experience in an effort to reduce Uncertainty.

Nurses must also provide clear, useful information regarding the woman's situation, and assess the woman's understanding of this information. Providing understandable information reduces Uncertainty and subsequent stress. Seeman and Evans (1962) suggest that patients who have more information feel less alienated and more powerful. Gupton and Heaman (1994) report that women at risk for premature birth are most interested in information regarding fetal wellbeing and consequences of prematurity. Areas

of particular concern may be fetal health, well being of children at home, and the state of the woman's condition.

Finally, the study supported Mishel's (1988) assertion that Uncertainty decreases as symptoms occur with enough consistency to form a pattern. Nurses should assist women experiencing pregnancy complications in recognizing a discernable Symptom Pattern. Those women who do not feel ill, or are unable to discern a Symptom Pattern experience greater Uncertainty.

The study also has implications for nursing theory. Mishel's theory of Uncertainty in illness provided the theoretical framework for this study. A model of three antecedents was developed which explains 30 percent of Uncertainty experienced by women with pregnancy complications. There is a need to determine which factors explain a greater portion of Uncertainty. Further use of this theory may assist in its refinement and application in the practice area.

In terms of nursing education, the concept of Uncertainty in illness may be of interest to students because of its applicability to diverse situations and patient populations. This study may help students understand the experience of pregnancy complications. Nursing students must recognize the importance of providing support and information to women with pregnancy complications in an effort to reduce Uncertainty.

Implications for Research

The USS-HRPV II needs further revisions. It has proven useful in assessing Uncertainty of women with pregnancy complications. However, it would benefit from further work to develop subscales and improve tool sensitivity, as well as to address difficulties some participants had in completing the questionnaire.

While this study identified factors which explain a third of Uncertainty, there is a need to identify factors which explain the greater proportion of Uncertainty. This would require improved instruments for measuring antecedents, possibly including further refinement of the USS-HRPV II. When such antecedents are better understood, instruments could be developed to quickly assess levels of Uncertainty. The tool could be administered on admission to hospital or the Antenatal Home Care Program, and at repeated intervals. Results might assist nurses to identify factors affecting Uncertainty and providing care directed at reducing that Uncertainty.

This study found significant relationships between Uncertainty and only two of its antecedents (Symptom Pattern, Education), while Mishel's assertion that Structure Providers influence Stimuli Frame was supported in only one case (Education, Symptom Pattern). More reliable and comprehensive measures of uncertainty and its antecedents are required on a larger representative sample of the population.

Further research exploring information needs of women with pregnancy

complications and what information is most useful in decreasing Uncertainty is needed. Health care professionals need to know when and how to best present this information.

Uncertainty levels among women whose pregnancies are uncomplicated, given that pregnancy is a time of great change and potential stress, should be assessed. While Clauson (1992) has done preliminary work on how Uncertainty changes over the course of complicated pregnancy, further research in this area would be desirable.

Conclusions

This study was designed to explore and describe the relationship between antecedents of Uncertainty and its severity among women experiencing pregnancy complications. Participants had moderately low levels of Uncertainty, as measured by the USS-HRPV II. Only two antecedents (Symptom Pattern, Education) were found to be significantly related to Uncertainty.

The study produced a theoretical model of Uncertainty antecedents composed of gravidity, usefulness of information, and Symptom Pattern which explains a third of it. Elaboration of this model could be used to assess Uncertainty and assist nurses in directing care at reducing it thereby decreasing stress and perhaps improving perinatal outcomes.

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APPENDICES

Appendix A

Uncertainty Stress Scale - High Risk Pregnancy Version II

UNCERTAINTY STRESS SCALE HIGH-RISK PREGNANCY VERSION II

Please read the following statements. To the right of each statement you will see five columns labelled from 0 - No uncertainty to 4 - Very high amount of uncertainty. **Circle the number that most closely measures how you feel now about your uncertainties related to your high-risk condition.**

To the far right of each statement you will find three more columns of numbers. **Circle the number in the column that most closely reflects the degree of stress you feel related to the uncertainty you identified.**

Please respond to every statement. There are no "right" or "wrong" answers.

- | | |
|------------------------------------|---------------------------------|
| 0) No uncertainty | 0) No stress or very low stress |
| 1) Low amount of uncertainty | 1) Moderate stress |
| 2) Moderate amount of uncertainty | 2) High to very high stress |
| 3) High amount of uncertainty | |
| 4) Very high amount of uncertainty | |
| N/A Not applicable | |

I am uncertain:

- | | | |
|--|---------------|-------|
| 1. whether changes in my condition will be detected early | 0 1 2 3 4 N/A | 0 1 2 |
| 2. about the stability of my condition | 0 1 2 3 4 N/A | 0 1 2 |
| 3. what caused my condition | 0 1 2 3 4 N/A | 0 1 2 |
| 4. whether I will be able to maintain my present level of functioning . . | 0 1 2 3 4 N/A | 0 1 2 |
| 5. about the present state of my condition | 0 1 2 3 4 N/A | 0 1 2 |
| 6. what questions to ask my doctors about my condition | 0 1 2 3 4 N/A | 0 1 2 |
| 7. whether changing my lifestyle behaviours will help my condition
(e.g. diet, activity, smoking, etc.) | 0 1 2 3 4 N/A | 0 1 2 |
| 8. how to make sense of what I am told about my condition | 0 1 2 3 4 N/A | 0 1 2 |
| 9. about the effectiveness of my treatments | 0 1 2 3 4 N/A | 0 1 2 |
| 10. whether my condition is under control | 0 1 2 3 4 N/A | 0 1 2 |
| 11. whether my condition will cause me to have symptoms | 0 1 2 3 4 N/A | 0 1 2 |
| 12. what to say to others about my condition | 0 1 2 3 4 N/A | 0 1 2 |
| 13. about differing explanations I have been given | 0 1 2 3 4 N/A | 0 1 2 |
| 14. about my chances to be well during this pregnancy | 0 1 2 3 4 N/A | 0 1 2 |
| 15. about my baby's chances to be healthy | 0 1 2 3 4 N/A | 0 1 2 |
| 16. whether my condition will be the same with the next pregnancy . . . | 0 1 2 3 4 N/A | 0 1 2 |
| 17. whether my symptoms can be controlled | 0 1 2 3 4 N/A | 0 1 2 |
| 18. whether my condition will interfere with my ability to do my
regular activities | 0 1 2 3 4 N/A | 0 1 2 |

- 0) No uncertainty
 - 1) Low amount of uncertainty
 - 2) Moderate amount of uncertainty
 - 3) High amount of uncertainty
 - 4) Very high amount of uncertainty
 - N/A Not applicable
- 0) No stress or very low stress
 - 1) Moderate stress
 - 2) High to very high stress

I am uncertain:

19. about my doctors' abilities	0 1 2 3 4 N/A	0 1 2
20. how to manage my symptoms (e.g. bleeding, contractions, etc.)	0 1 2 3 4 N/A	0 1 2
21. about choices I have made regarding my treatments	0 1 2 3 4 N/A	0 1 2
22. whether my condition will return in this pregnancy	0 1 2 3 4 N/A	0 1 2
23. about the adequacy of the follow-up I am having	0 1 2 3 4 N/A	0 1 2
24. about my understanding of the treatments I have received and am receiving	0 1 2 3 4 N/A	0 1 2
25. how to approach health care workers about my care (e.g. nurses, doctors, social workers, dieticians)	0 1 2 3 4 N/A	0 1 2
26. whether my condition risks my baby's life	0 1 2 3 4 N/A	0 1 2
27. whether my condition risks my life	0 1 2 3 4 N/A	0 1 2
28. whether my treatments eliminated my condition	0 1 2 3 4 N/A	0 1 2
29. whether changes in my pregnancy from normal to high-risk affect my relationships within the family	0 1 2 3 4 N/A	0 1 2
30. whether changes in my pregnancy from normal to high-risk affect my relationships outside my family	0 1 2 3 4 N/A	0 1 2
31. whether my condition will affect my life goals	0 1 2 3 4 N/A	0 1 2
32. whether what I am doing about my condition will help me	0 1 2 3 4 N/A	0 1 2
33. whether I can depend on test results as an indicator of my condition .	0 1 2 3 4 N/A	0 1 2
34. whether my condition will affect my sex life	0 1 2 3 4 N/A	0 1 2
35. whether delays in treatment will influence my baby's chances	0 1 2 3 4 N/A	0 1 2
36. about the seriousness of my condition	0 1 2 3 4 N/A	0 1 2
37. about my ability to handle my emotions related to my condition	0 1 2 3 4 N/A	0 1 2
38. about the unpredictability of my symptoms	0 1 2 3 4 N/A	0 1 2
39. whether I will have difficulty coping with my condition	0 1 2 3 4 N/A	0 1 2
40. about the quality of the information I have	0 1 2 3 4 N/A	0 1 2
41. how long my symptoms will last	0 1 2 3 4 N/A	0 1 2
42. whether I am being told the truth about my condition	0 1 2 3 4 N/A	0 1 2
43. whether I would choose to have all the treatments recommended to me	0 1 2 3 4 N/A	0 1 2
44. what unusual symptoms mean in terms of my condition	0 1 2 3 4 N/A	0 1 2

- | | |
|------------------------------------|---------------------------------|
| 0) No uncertainty | 0) No stress or very low stress |
| 1) Low amount of uncertainty | 1) Moderate stress |
| 2) Moderate amount of uncertainty | 2) High to very high stress |
| 3) High amount of uncertainty | |
| 4) Very high amount of uncertainty | |
| N/A Not applicable | |

I am uncertain:

- | | | |
|--|---------------|-------|
| 45. whether they might find something wrong when I go for a check-up
(e.g. ultrasound, amniocentesis) | 0 1 2 3 4 N/A | 0 1 2 |
| 46. whether I will be well cared for by the nurses | 0 1 2 3 4 N/A | 0 1 2 |
| 47. whether I will be well cared for by the health professionals other
than nurses | 0 1 2 3 4 N/A | 0 1 2 |
| 48. about the cause of my symptoms | 0 1 2 3 4 N/A | 0 1 2 |
| 49. whether I can depend on people who are important to me to be
to be there when I need them | 0 1 2 3 4 N/A | 0 1 2 |
| 50. whether I can get insurance | 0 1 2 3 4 N/A | 0 1 2 |
| 51. whether I can manage financially because of my condition | 0 1 2 3 4 N/A | 0 1 2 |
| 52. what symptoms I should be aware of | 0 1 2 3 4 N/A | 0 1 2 |
| 53. about how to choose the treatments I will have | 0 1 2 3 4 N/A | 0 1 2 |
| 54. whether my following the treatment plan recommended to me
will help | 0 1 2 3 4 N/A | 0 1 2 |
| 55. what to look for to check the state of my condition | 0 1 2 3 4 N/A | 0 1 2 |
| 56. whether treatments I will be having will eliminate the condition | 0 1 2 3 4 N/A | 0 1 2 |
| 57. about the length of my hospital stay. | 0 1 2 3 4 N/A | 0 1 2 |
| 58. about what to expect next | 0 1 2 3 4 N/A | 0 1 2 |
| 59. whether I will be able to get ready for my baby | 0 1 2 3 4 N/A | 0 1 2 |
| 60. whether I will be able to get the information about childbirth
that I need | 0 1 2 3 4 N/A | 0 1 2 |
| 61. whether I will be able to get back to work during this pregnancy | 0 1 2 3 4 N/A | 0 1 2 |
| 62. whether my partner can manage at home | 0 1 2 3 4 N/A | 0 1 2 |
| 63. whether my children will be well cared for while I am in hospital | 0 1 2 3 4 N/A | 0 1 2 |
| 64. whether my home, pets, garden will be well cared for while
I am in hospital | 0 1 2 3 4 N/A | 0 1 2 |

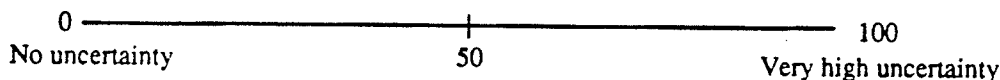
- | | | | |
|-----|---------------------------------|----|------------------------------|
| 0) | No uncertainty | 0) | No stress or very low stress |
| 1) | Low amount of uncertainty | 1) | Moderate stress |
| 2) | Moderate amount of uncertainty | 2) | High to very high stress |
| 3) | High amount of uncertainty | | |
| 4) | Very high amount of uncertainty | | |
| N/A | Not applicable | | |

I am uncertain:

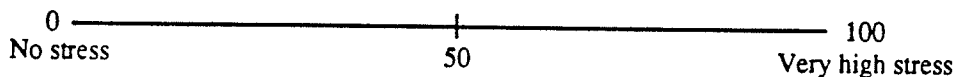
- | | | | |
|-----|--|---------------|-------|
| 65. | whether I will get along with my roommate | 0 1 2 3 4 N/A | 0 1 2 |
| 66. | whether I will be affected by my roommate's condition | 0 1 2 3 4 N/A | 0 1 2 |
| 67. | whether I will have the privacy I need | 0 1 2 3 4 N/A | 0 1 2 |
| 68. | whether I will miss important events in my family | 0 1 2 3 4 N/A | 0 1 2 |
| 69. | whether the meals in hospital provide adequate nutrition for pregnancy | 0 1 2 3 4 N/A | 0 1 2 |
| 70. | whether it is okay to express my feelings to the nurse | 0 1 2 3 4 N/A | 0 1 2 |
| 71. | whether my friends, family and co-workers believe that my hospitalization is necessary | 0 1 2 3 4 N/A | 0 1 2 |

The following five questions relate to levels of a particular feeling or perception. Please make a cross (x) on the line which best indicates your level right now.

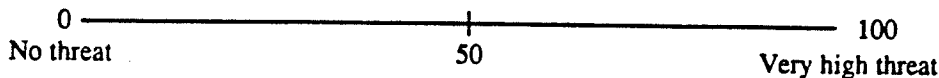
1. Overall, my uncertainty level about my situation is:



2. Overall, the stress I feel from my uncertainty is:



3. Overall, the threat I feel from my uncertainty is:

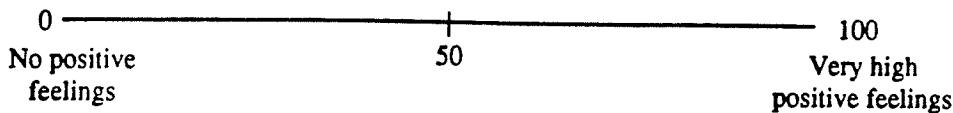


Some people find that uncertainty can have positive feelings (such as hope) associated with it because of the possibility that things will work out well.

4. Do you have any positive feelings because of your uncertainty?

Yes No

5. If yes, the level of my positive feelings is:



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APPENDIX B- Norbeck Social Support Questionnaire (pgs.121-125)

Appendix C
Demographic Data Collection Sheet

Demographic Data Collection Sheet

(Hospital Participants)

Please fill in the blanks

- 1) How many times have you been pregnant?
(including this pregnancy) _____

- 2) How many weeks pregnant are you? _____

- 3) How many of your pregnancies ended in a live birth? _____

- 4) How many days have you been in hospital?
(including today) _____

- 5) If you were on the Antenatal Home Care Program,
how many days were you on that program? _____
Doesn't apply to me _____

- 6) What is your pregnancy problem?

Please circle the item that best describes your situation

- 7) Were you on the Antenatal Home Care Program before
coming into the hospital? Yes
No

- 8) Have you been on partial bedrest during this pregnancy?
(allowed out of bed to use the bathroom or allowed up
for short periods) Yes
No

- 9) Have you been on complete bedrest during this pregnancy?
(not allowed out of bed) Yes
No

- 10) Have you had an ultrasound (fetal assessment) since being admitted to
hospital? Yes
No

- 11) Have you met the doctor from the intensive care nursery? Yes
No

- 12) Have you had a tour of the intensive care nursery? Yes
No

- 13) Have you had problems in previous pregnancies? Yes
No
Doesn't apply to me

- 14) Have you been in hospital with a previous pregnancy? Yes
No
Doesn't apply to me

- 15) Have you been on the Antenatal Home Care Program during a previous pregnancy? Yes
No
Doesn't apply to me

- 16) Has anyone close to you had problems during pregnancy? Yes
No

To allow us to compare the results of this study with people from different backgrounds and situations, we would like some additional information about your background. Please complete the following items.

17) What is your age? _____

18) What is your marital status? Single _____
Married/Common law _____
Separated/Divorced _____
Widowed _____

19) Please circle the last year of education you completed.

Grade School through High School

1 2 3 4 5 6 7 8 9 10 11 12

College/University

Graduate School

13 14 15 16

17 18 19 20 21 22

20) What ethnic group do you consider yourself to be a member of?

- Asian _____
- Afro-Canadian _____
- Caucasian _____
- Hispanic _____
- Aboriginal/Metis _____
- Other (please specify) _____

21) What is your religious preference?

- Catholic _____
- Jewish _____
- Protestant (please specify type) _____
- Other (please specify type) _____
- none _____

21) How often do you participate in religious activities?

- inactive _____
- infrequent participation (1-2 times/year) _____
- occasional participation (about monthly) _____
- regular participation (weekly) _____

Thank you for your cooperation in answering these questions

Demographic Data Collection Sheet

(Antenatal Home Care Program Participants)

Please fill in the blanks

1) How many times have you been pregnant?
(including this pregnancy) _____

2) How many weeks pregnant are you? _____

3) How many of your pregnancies ended in a live birth? _____

4) How many days have you been on the Antenatal Home Care Program?
(including today) _____

5) If you were in hospital before being on the Antenatal Home Care Program, how many days were you there? _____
Doesn't apply to me _____

6) What is your pregnancy problem?

Please circle the item that best describes your situation

7) Were you in hospital before being on the Antenatal Home Care Program? Yes
No

8) Have you been on partial bedrest during this pregnancy?
(allowed out of bed to use the bathroom or allowed up for short periods) Yes
No

9) Have you been on complete bedrest during this pregnancy?
(not allowed out of bed) Yes
No

- 10) Have you had an ultrasound (fetal assessment) since being on the Home Care Program? Antenatal
Yes
No
- 11) Have you met the doctor from the intensive care nursery? Yes
No
- 12) Have you had a tour of the intensive care nursery? Yes
No
- 13) Have you had problems in previous pregnancies? Yes
No
Doesn't apply to me
- 14) Have you been in hospital with a previous pregnancy? Yes
No
Doesn't apply to me
- 15) Have you been on the Antenatal Home Care Program during a previous pregnancy? Yes
No
Doesn't apply to me
- 16) Has anyone close to you had problems during pregnancy? Yes
No

To allow us to compare the results of this study with people from different backgrounds and situations, we would like some additional information about your background. Please complete the following items.

- 17) What is your age? _____
- 18) What is your marital status? Single _____
Married/Common law _____
Separated/Divorced _____
Widowed _____

19) Please circle the last year of education you completed.

Grade School through High School

1 2 3 4 5 6 7 8 9 10 11 12

College/University

Graduate School

13 14 15 16

17 18 19 20 21 22

20) What ethnic group do you consider yourself to be a member of?

- Asian _____
- Afro-Canadian _____
- Caucasian _____
- Hispanic _____
- Aboriginal/Metis _____
- Other (please specify) _____

21) What is your religious preference?

- Catholic _____
- Jewish _____
- Protestant (please specify type) _____
- Other (please specify type) _____
- none _____

22) How often do you participate in religious activities?

- inactive _____
- infrequent participation (1-2 times/year) _____
- occasional participation (about monthly) _____
- regular participation (weekly) _____

Thank you for your cooperation in answering these questions

Appendix D
Visual Analogue Scale Form

Visual Analogue Scale Form

You will be asked to mark a line vertically through each of several lines to indicate your answer. For example, suppose you had not eaten for 12 hours. Where would you put a mark on the line below to indicate how hungry you would be?

Example:

How hungry are you?

not at
all hungry

extremely
hungry

Please place a mark through each of the lines below to indicate your answer.

1) Are your symptoms the same all the time?

always
the same

always
different

2) How much is your present situation what you expected your pregnancy to be like?

exactly what
I expected

not at all
what I expected

3) How much confidence do you have in your nurses?

no
confidence

extreme
confidence

4) How much confidence do you have in your doctors?

no
confidence

extreme
confidence

5) How serious do you feel your pregnancy complication is to your health?

not at
all serious

extremely
serious

6) How serious do you feel your pregnancy complication is to your baby's health?

not at
all serious

extremely
serious

7) How useful is the information you have received about your pregnancy complication?

not at
all useful

extremely
useful

Thank you for your cooperation in answering these questions.

Appendix E

In-Person Contact with Potential Participants in Hospital

In-Person Contact with Potential Participants in Hospital

Hello, my name is Terri Ashcroft. I am a graduate student in the Faculty of Nursing at the University of Manitoba. I am doing a study about women who have complicated pregnancies. Would you be willing to read this written explanation about the study? (If the potential subject agrees, she will be given a copy of the "Invitation to Participate" and given time to read it).

Do you have any questions? Would you like to participate in the study? If the answer is no, the woman will be thanked and contact ended. If the answer is yes, the informed consent will be obtained.

Appendix F

Telephone Contact with Potential Participant

Telephone Contact with a Potential Participant

"Hello, my name is Terri Ashcroft. I am a graduate student in the Faculty of Nursing at the University of Manitoba. I received your telephone number from the Antenatal Home Care Program Nurse. I am doing a study involving women who have complicated pregnancies. Would you like to know more about the study?" (If the answer is "no" the contact is terminated. If the answer is "yes" the study will be explained using the Invitation to Participate).

"Do you have any questions? Are you interested in participating?" (If the answer is "yes" an appointment will be made at the convenience of the respondent for data collection). Thank you very much.

Appendix G
Invitation to Participate

Invitation to Participate

You are invited to participate in a research project about women's experience of uncertainty during complicated pregnancy. While there are no immediate benefits to participating in the study, the information you provide will help us to better understand the experience of complicated pregnancy and may help us to find ways to better meet the needs of pregnant women in the future. The study is being conducted by Terri Ashcroft, RN, BN, a graduate student in the Faculty of Nursing at the University of Manitoba.

If you agree to participate in the study, it will involve filling out four questionnaires. This will take about 40 minutes to complete. There are no right or wrong answers on these questionnaires. I am simply interested in seeking your opinions and feelings.

You may decide not to participate, and if you decide not to, it is perfectly acceptable for you to refuse. You may withdraw from the study at any time without influencing the care you receive. Your name will not appear on any of the questionnaires. All participants in the study will remain anonymous. The questionnaires will be stored in a locked filing cabinet. Only the investigator, her thesis committee, and the statistician will have access to the questionnaires.

The results will be based on group data, not individual responses. In this way no one will ever know how you as an individual answered the questions. The results may be published in the form of a journal article. A summary of the study results will be provided to those requesting it.

Thank you for your consideration.

Terri Ashcroft RN, BN
Graduate Student
Faculty of Nursing
University of Manitoba

Appendix H

Consent to Participate

Consent to Participate in a Research Study

In signing this document, I am giving my consent to take part in a research study about womens' experience of uncertainty during pregnancy complications. I understand that I will complete four questionnaires, which will take approximately 40 minutes. The results of this study will be used to gain a better understanding of the experience of complicated pregnancy and the needs of women with complicated pregnancy.

I have received a written explanation of the study and had any questions that I might have had answered to my satisfaction. I understand my decision to participate is voluntary and that I have the option to withdraw at any point. I understand that such a decision will not affect my care in any way. I have been assured that my identity will not be revealed while the study is conducted or in the written report.

If I have any questions about the study or about my participation, I can contact the investigator (Terri Ashcroft) by calling her at 254-1689. I understand her committee members are Annette Gupton RN, PhD, Maureen Heaman RN, MN, and Philip Hall MD. I understand that this study has been approved by the Faculty of Nursing Ethical Review Committee, St. Boniface General Hospital and Manitoba Health, Winnipeg Region (Antenatal Home Care Program).

My signature below indicates that I am informed and that I agree to participate as a volunteer respondent.

Date _____

Participant's Signature

Date _____

Terri Ashcroft RN, BN

If you would like to have a summary of the results of this study, please give your name and address below.

Name: _____

Address: .

Appendix B

Norbeck Social Support Questionnaire

For each person you listed, please answer the following questions by writing in the number that applies.

- 1 = not at all
- 2 = a little
- 3 = moderately
- 4 = quite a bit
- 5 = a great deal

Question 1:

How much does this person make you feel liked or loved?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

Question 2:

How much does this person make you feel respected or admired?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

SOCIAL SUPPORT QUESTIONNAIRE

PLEASE READ ALL DIRECTIONS ON THIS PAGE BEFORE STARTING.

Please list each significant person in your life on the right. Consider all the persons who provide personal support for you or who are important to you.

Use only first names or initials, and then indicate the relationship, as in the following example:

Example:

First Name or Initials	Relationship
1. <u>MARY T.</u>	<u>FRIEND</u>
2. <u>BOB</u>	<u>BROTHER</u>
3. <u>M.T.</u>	<u>MOTHER</u>
4. <u>SAM</u>	<u>FRIEND</u>
5. <u>MRS. R.</u>	<u>NEIGHBOR</u>

etc.

Use the following list to help you think of the people important to you, and list as many people as apply in your case.

- spouse or partner
- family members or relatives
- friends
- work or school associates
- neighbors
- health care providers
- counselor or therapist
- minister/priest/rabbi
- other

You do not have to use all 24 spaces. Use as many spaces as you have important persons in your life.

WHEN YOU HAVE FINISHED YOUR LIST, PLEASE TURN TO PAGE 2.

- 1 = not at all
- 2 = a little
- 3 = moderately
- 4 = quite a bit
- 5 = a great deal

Question 5:

If you needed to borrow \$10, a ride to the doctor, or some other immediate help, how much could this person usually help?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

Question 6:

If you were confined to bed for several weeks, how much could this person help you?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

GO ON TO NEXT PAGE

- 1 = not at all
- 2 = a little
- 3 = moderately
- 4 = quite a bit
- 5 = a great deal

Question 3:

How much can you confide in this person?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

(13-15)

Question 4:

How much does this person agree with or support your actions or thoughts?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

GO ON TO NEXT PAGE

Question 7:

How long have you known this person?

- 1 = less than 6 months
- 2 = 6 to 12 months
- 3 = 1 to 2 years
- 4 = 2 to 5 years
- 5 = more than 5 years

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

Question 8:

How frequently do you usually have contact with this person? (Phone calls, visits, or letters)

- 5 = daily
- 4 = weekly
- 3 = monthly
- 2 = a few times a year
- 1 = once a year or less

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

PERSONAL NETWORK

First Name or Initials	Relationship	
1. _____	_____	[32]
2. _____	_____	[33]
3. _____	_____	[34]
4. _____	_____	[35]
5. _____	_____	[36]
6. _____	_____	[37]
7. _____	_____	[38]
8. _____	_____	[39]
9. _____	_____	[40]
10. _____	_____	[41]
11. _____	_____	[42]
12. _____	_____	[43]
13. _____	_____	[44]
14. _____	_____	[45]
15. _____	_____	[46]
16. _____	_____	[47]
17. _____	_____	[48]
18. _____	_____	[49]
19. _____	_____	[50]
20. _____	_____	[51]
21. _____	_____	[52]
22. _____	_____	[53]
23. _____	_____	[54]
24. _____	_____	[55]

PLEASE BE SURE YOU HAVE RATED EACH PERSON ON EVERY QUESTION. GO ON TO THE LAST PAGE.

9. During the past year, have you lost any important relationships due to moving, a job change, divorce or separation, death, or some other reason?

[57]

- _____ 0. No
_____ 1. Yes

IF YES:

9a. Please indicate the number of persons from each category who are *no longer available* to you.

- | | |
|-----------------------------------|--------------|
| _____ spouse or partner | [58] |
| _____ family members or relatives | [59-60] |
| _____ friends | [61-62] |
| _____ work or school associates | [63-64] |
| _____ neighbors | [65-66] |
| _____ health care providers | [67] |
| _____ counselor or therapist | [68] |
| _____ minister/priest/rabbi | [69] |
| _____ other (specify) _____ | [70] [71-72] |

9b. Overall, how much of your support was provided by these people who are no longer available to you?

[73]

- _____ 0. none at all
_____ 1. a little
_____ 2. a moderate amount
_____ 3. quite a bit
_____ 4. a great deal