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THE RELATIONSHIP AMONG MATERNAL INFANT BONDING, SPIRITUALITY,
AND MATERNAL PERCEPTION OF CHILDBIRTH EXPERIENCE

A dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy at Virginia Commonwealth University

by

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Abstract

THE RELATIONSHIP AMONG MATERNAL INFANT BONDING, SPIRITUALITY,
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The beginning of life is an intense experience for both mother and baby and sets the foundation for future interactions. Researchers have theorized that maternal infant bonding begins prenatally and continues on through the postnatal period. Müller (1996) examined that process to determine if prenatal bonding was related to postnatal bonding and discovered that there was only a modest correlation between the two. This led to speculation as to what variables, besides prenatal bonding, could influence postnatal bonding. Klaus & Kennell (1976) noted the detrimental effects of a lack of bonding in terms of abuse and attachment disorders and emphasized the urgency of understanding the process. Thus, an examination of factors that influence the initial attachment after birth is important in order to facilitate the experience for optimal outcomes.

The purpose of this study was threefold: 1. Examine the relationship between a woman's perceived birth experience and maternal infant bonding; 2. Examine the

relationship between spirituality and maternal infant bonding; 3. Examine the relationship between perceived birth experience and maternal infant bonding. Women were recruited for an internet survey through various childbirth websites, nurses' associations, and perinatal listserv communications. A total of 402 women responded to the survey, which consisted of 67 items in three instruments: Perception of Birth Scale; Spirituality; and Maternal Attachment Inventory. Of these respondents approximately 300 finished the survey completely and were used in the analyses. Slightly more than 190 left extensive comments regarding their experiences. Predictive Analytical Software (PASW 18) was used to analyze data and correlations were run on the measurements of the three instruments as well as a regression analysis. Perceived birth experience had the strongest correlation to maternal infant bonding and was found to have a stronger influence on bonding as well.

Chapter One

Background and Significance

Although birth is an anticipated happening, the full impact of the transformation it brings to the structure of a woman's life is not manifest until the process actually occurs. "Few human experiences approach the intensity of emotions, stress, anxiety, pain, and exertion that can occur during labor and birth. The events and interactions that take place during labor may also have far-reaching and powerful psychosocial consequences" (Corbett & Callister, 2000, p. 71).

Pregnancy and childbirth can be considered a rite of passage that involves the process of transitioning from being childless to becoming a mother (Davis-Floyd, 1994). This requires complex cognitive, affective, and behavioral changes that are achieved to some extent through articulation of the labor and delivery experience, which, in turn, creates a self image that takes form in the identity of being a mother. This was described by Rubin (1984) as the taking in and taking hold phase lasting over a period of 10 days. Later research indicated the same process was occurring but at an accelerated rate secondary to earlier discharges. "The new normal" has been described as "appreciating the body...settling in...and becoming a new family" (Martell, 2001, p. 500).

Sharing birth stories is not only part of the taking in and taking hold phase, but it is also a means of connecting women to women through a mutual bond over the centuries (Gaskin, 2002; Kitzinger 2001; Vanasco, 1997). Gaskin (1978) shares birth narratives in her book, *Spiritual Midwifery*, and emphasized the language women used to express the

experience as being spiritual in nature to include words such as holiness and miraculous. She further discussed how the experience of pregnancy, giving birth, and motherhood provided an opportunity for the enhancement of a woman's personal esteem and sense of power, which often translates into a spiritual event. Kitzinger (2000) proposed that birth is an event full of symbolism and ritual behaviors, which has the potential to bring a greater awareness of life's meaning and purpose.

Studies examining the lived experience of childbirth through a collection of birth narratives found that spirituality is expressed as a recurrent theme, running the gamut of evoked spiritual responses of transcendence, manifesting a sense of self-actualization to lingering associations with traditional religions (Johnson, Callister, Freeborn, Beckstrand & Huender, 2007). Further analysis of birth narratives reveals that the true essence of the experience for each woman, despite religious or spiritual affiliations, is to find a deeper meaning in birth beyond the biological act itself (Klassen, 2001).

Lauver (2000) found that both women's spirituality and women's health perspectives assume a fundamental interconnectedness of all living beings and assume that various dimensions of individuals are interconnected as well. Both perspectives incorporate a valuing of relationships—with others and with oneself. A woman who values herself, i.e., has self-esteem, is a woman who will be self-nurturing and caring of body, mind and spirit, which makes it fitting to integrate spirituality into women's healthcare to improve physical, emotional and psychological outcomes.

There is an ongoing debate regarding spirituality and religion, not only in nursing, but in other fields such as, social work and mental health. It has generally been conceded that it is difficult to define these terms because they involve an individual's concepts and beliefs and have different connotations for various religions. Due to wide variations in religious practices, it can be difficult to assess the actual importance of a religious viewpoint versus a spiritual experience. It is, however, necessary to be aware of a woman's spiritual or religious inclinations in order to work with her to achieve the birth she desires.

There have been numerous proposed definitions of spirituality over the years each reflecting an influence of the culture and religion at that point in time ((Vaillot 1970; Colliton, 1981; Amenta, 1986; Stoll, 1989; Reed, 1992; Narayanasamy, 1999; Tanyi, 2002; Tuck, 2004; Burkhardt & Jacobson, 2005; Dossey & Guzzeta, 2005). Many individuals have used the terms religion and spirituality interchangeably but there is a perceived difference between the two. The essence of religion is found in a community of shared beliefs and a common destiny expressed through ritual practices. Religion confers an identity on an individual and on a group which can foster exclusiveness (Schultz, 1999). By definition as a human being we all have a spirit, but we do not all have a religion (Kosmin, Keysar, Cragun & Rivera-Navarro, 2008). .

In contrast, spirituality is perceived as inclusive, and sees the individual as a member of the universal family of humanity. Spirituality is the recognition of a divine expression of love in every human being that transcends culture and time. It is that which

questions the meaning of purpose in life (Schultz, 1999). As a result, spirituality is perceived as a broader concept by virtue of its universal social integration and lack of dogma.

The birth experience is an intense emotional, physical, and spiritual occasion for the majority of women and serves to establish the foundation of future interactions between mother and child (Klaus & Kennell, 1976; Gaskin, 2002; Kitzinger, 2001). A woman's perception of her birth experience can significantly affect this transition to motherhood emotionally, psychologically, and spirituality. This major life event may be perceived as either transformative or disparaging and the woman's perception is the essential component (Mercer, Hackley & Bostrom, 1983; Mercer & Ferketich, 1994).

Statement of the Problem

The origins of attachment theory began with John Bowlby (1958), a psychoanalyst and psychiatrist, when he was working with children suffering physically and psychologically from the loss of a mother. He considered attachment a psychological, emotional, and social relationship between humans, in general, and adhered to the conviction that young children needed to develop a relationship with at least one practitioner for emotional development to occur normally. Subsequent research by Mary Ainsworth unveiled the fundamental concepts of a secure base and attachment patterns that supported Bowlby's theory (Ainsworth, Blehar, Waters & Wall, 1978). Klaus and Kennell (1976) presented ground-breaking research on maternal-infant bonding stating:

This original mother-infant bond is the wellspring for all the infant's subsequent

attachments and is the formative relationship in the course of which the child develops a sense of himself. Throughout his lifetime the strength and character of this attachment will influence the quality of all future bonds to other individuals (p. 1-2).

Maternal infant bonding refers to the development of the core relationship between mother and child, which is reciprocal in its nature and is used interchangeably with maternal infant attachment (Spinner, 1978). It refers to the parents' emotional investment in their child and is considered to be a process that builds and grows over time (Klaus, Kennell, & Klaus, 1995).

Cranley (1981) defined maternal fetal attachment (MFA) theoretically "as the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child" (p. 282). She suggested that MFA is occurring during the nine months of gestation that are crucial to the transformation of a woman into a mother, the development and identity of the fetus, and development of the foundation for a relationship between the two entities, i.e., prenatal attachment. Following consultations with other clinicians, Lamaze teachers, maternal child nurses, and a group of pregnant women, Cranley created a valid (all subscales positively associated with total scale) measure of the construct, the Maternal Fetal Attachment Scale (MFAS), which has 24 questions and 5 subscales. Cranley (1981) and other researchers (Fletcher & Evans, 1983; Gaffney, 1988) promoted the use of prenatal attachment interventions by nurses under the assumption that prenatal attachment positively influenced postnatal attachment.

Müller (1996), however, noting a lack of empirical evidence to support Cranley's (1981) assumption, initiated a prospective, correlational study to verify whether there was a connection between prenatal and postnatal attachment. She recruited two hundred twenty-eight women from childbirth classes to take a prenatal attachment inventory and a maternal attachment inventory after delivery. Although a modest correlation between the two attachment scales was noted, Müller (1996) concluded that "the results of other research suggest that the level of prenatal attachment may not directly influence maternal attachment after birth. Rather, prenatal and postnatal attachment may be influenced by other maternal characteristics..." (p. 164). She recommended further research to clarify the exact relationship between prenatal and postnatal attachment and to determine what other variables may be influencing the development of mother to infant attachment.

An integrative review on maternal fetal attachment (MFA) presented by Cannella (2005) was an attempt to synthesize and evaluate the knowledge developed from a variety of research designs and methods. She reviewed 41 studies that contained 152 findings relevant to the analysis of MFA and of these, 70 were statistically significant, while 82 were not. She concluded that "a strong body of scientific knowledge has not been accrued through correlational and comparative research" (p. 67) and that "new areas of inquiry need to be pursued" (p. 67). Cannella (2005) suggested that more correlational studies are needed to have a better understanding of what factors contribute to MFA as well as more longitudinal studies to demonstrate the effects of MFA on relevant outcomes.

Similarly an MFA literature update by Alhusen (2008) presented a critical review of original research since 2000 designed to measure factors that influence MFA. Twenty two studies that met the criteria of original research were selected and these studies included a broad range of variables as potential risk or protective factors, or both. The principal findings of this systematic review revealed that certain factors threaten MFA and these include depression, substance abuse, and high anxiety levels. Those factors found to be favorable for MFA, however, were well correlated with higher socioeconomic status, which included easy access to prenatal care and the presence of established support systems. She advocated the need for further research on larger samples with greater diversity.

The MFA literature and research has determined many factors that influence attachment both positively and negatively (Cannella, 2005; Alhusen, 2008). In her research, as mentioned previously, Müller (1996) encouraged research on other maternal factors that could influence postnatal attachment and one unexamined factor in the literature is a woman's perception of her childbirth experience. The primary event between prenatal and postnatal circumstances is the birth itself. If the woman has an idealized version of what this experience should be and it does not live up to her expectations, this could have a substantial negative effect on maternal infant bonding.

Purpose of the Study

The purpose of this research was to examine the relationship among spirituality, a woman's perception of her childbirth experience, and maternal infant bonding. The

purpose of the study was threefold. The first aim was to examine the relationship between a woman's perception of her childbirth experience and maternal infant bonding. The second aim was to assess a woman's sense of spirituality as it relates to maternal infant bonding. The third aim was to examine the relationship among the three variables of spirituality, perception of childbirth experience, and maternal infant bonding.

Cannella (2005) and Alhusen (2008) noted that within the 63 research studies they reviewed, the majority of women included were primarily white, married females. It was an objective of this research to include a more diverse group of women, in order to have a better understanding of different racial and ethnic perspectives. An internet based survey was used in hopes of reaching not only a greater number but a larger diversity of women.

Conceptual Theoretical Empirical Framework

The conceptual theoretical empirical framework of this study was based on Martha Rogers' Science of Unitary Human Beings (Rogers, 1990) and modified to be consistent with the theoretical works of Cranley (1981), Rubin (1975, 1984), Müller (1996), Marat & Mercer (1979), Bowlby (1958), Klaus & Kennell, (1976, 1982), Davis-Floyd (1994, 2008) and Tuck (2004). The latter theoretical works cover the topics of maternal infant bonding, a woman's perception of childbirth, and the core assumptions that underpin spiritual interventions. Rogers' theory is based on the concept of the universe being composed of human and environmental energy fields, which are described as infinite, irreducible, multidimensional, and dynamic (Rogers, 1990). Newman extended Rogers' theory of energy field patterning to the expansion of human

consciousness, defined as the ability to interact with the environment (Fawcett, 2000). Both of these concepts are applicable to labor and birth as a means of describing the blending and interactions of field energy patterns among the birth environment, the laboring woman, and support systems (Buenting, 1993).

Physiologically childbirth could be considered similar for all women, but the meaning of it can be drastically different since it is affected by cultural beliefs, traditional practices, and other factors. The experience is consistently described as a powerful, psychological event and a developmental task reflecting a test of womanhood (Jordan, 1993). Other researchers have discussed variables capable of influencing a woman's perception of the childbirth experience, allocating them into three groups: 1. relatively constant variables, 2. variables practitioners can influence, and 3. variables practitioners may or may not influence depending on the situation. The constant variables include cultural beliefs and values; maternal age and education; socioeconomic class; personality characteristics; parity; and spiritual belief system. Variables easily influenced by practitioners include high levels of stress and anxiety; knowledge; level of self-esteem; feelings of personal mastery and control; expectations; and birth environment. Lastly, situational factors, obstetrical risk factors and type of delivery, could influence the circumstances as well (Mercer, Hackley & Bostrom, 1983; Callister, Vehvilainen-Julkunen & Lauri, 1996; Nichols, 1996). The demographics of constant variables together with variables influenced by practitioners were included for consideration within this study.

The practitioner's capacity to manipulate the birth experience can be discerned from the remarks of Klaus et al (1995):

Years after having a child, women remember if they felt in control or out of control when giving birth; if they were treated respectfully and felt validated; if they felt ignored, put down, or inadequate; or if they felt deprived of choices or invaded by many interventions. They remember each negative or positive word spoken to them (p. 23-24).

Rothman (2007) remarked,

In truth, I've never met a woman who doesn't recall her birth, who can't tell you a birth story in great and crushing detail, no matter how long ago it was. Birth *matters*.....What happens to a woman, how she is treated, how she experiences her birth have consequences for how she experiences her body, her sexuality, her child, her family (p. xvi).

Accordingly, a woman's perception of her childbirth experience has the potential to be either negative or positive for many years afterward, not only for herself, but the infant as well.

Spirituality's domains of meaning have undergone profound changes in relation to its context of use. The definition of spirituality for this research was: An essential philosophy of life centered on the awareness of a pervasive universal creative force that provides a sense of interconnectedness and an awareness of purpose and meaning in life as an ongoing process to transcend the physical existence in daily life. This definition

was derived through a concept analysis to coincide with the development of a spirituality instrument (Bennington, 2003), which determined the following attributes as being associated with the term: a sense of connectedness/oneness, transcendence/inner peace, faith/belief, hope, purpose, and self-actualization. Foundational assumptions within this definition include the concept that individuals be viewed holistically to include social, psychological, physical, and spiritual dimensions, which implies consideration of cultural influences and the presence or absence of religion. The essence of spirituality involves finding meaning in life through personal experiences, which may or may not include a specific religious belief. This essence is grasped through an integrated energy of mind, body, and spirit to transcend whatever is encountered. The sharing of these experiences enhances their meaning and makes them more authentic (Tuck, 2004). A conceptual theoretical empirical framework of this study focused on those factors, spirituality, and perception of birth experience, as well as demographic characteristics that influence maternal infant bonding as shown in Figure 1.1.

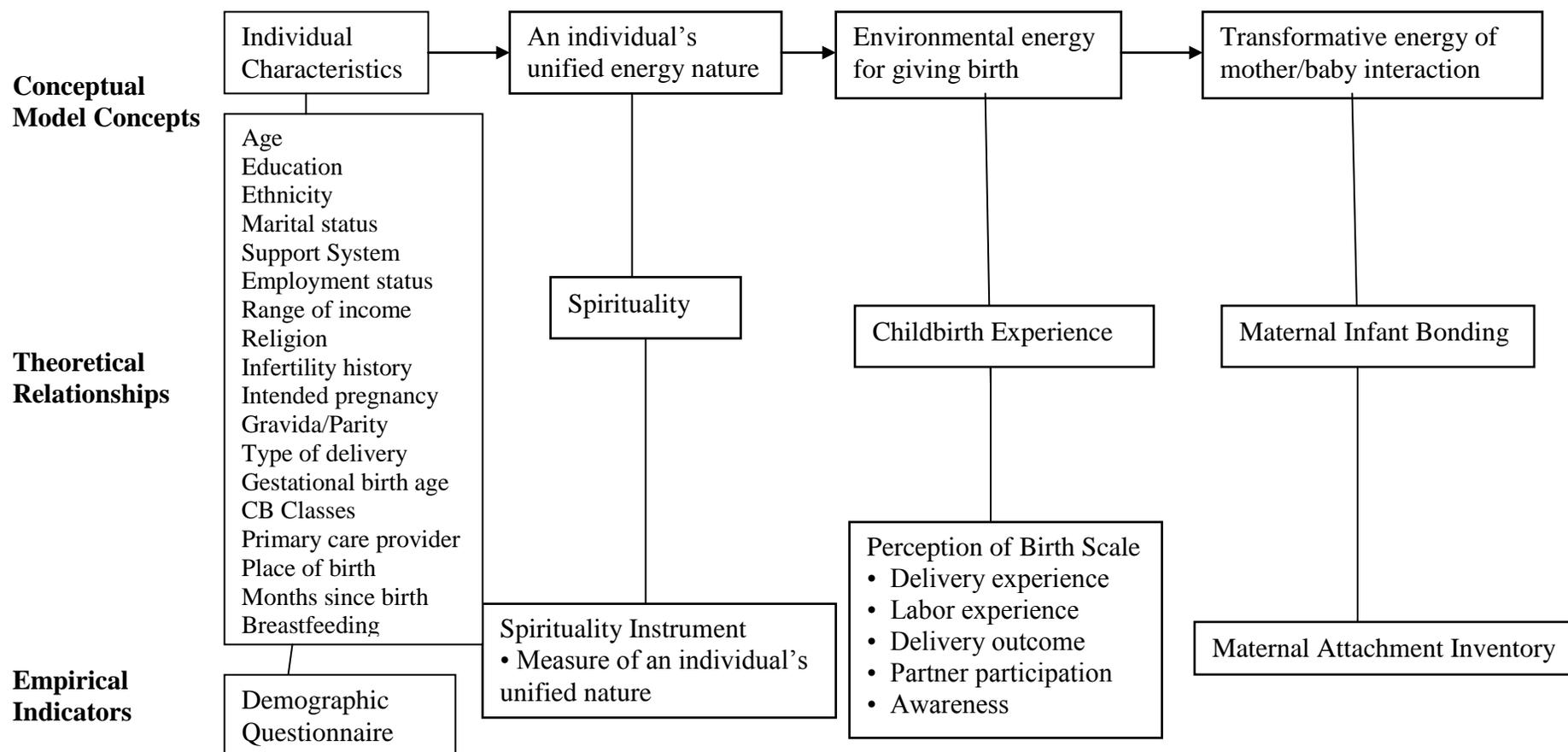


Figure 1. Conceptual Theoretical Empirical Framework

Research Design and Questions

A convenience sample of English speaking women between the ages of 18-42 who have given birth within the past 12 months to a term (≥ 37 weeks), viable, healthy infant whom they are currently mothering and are not presently pregnant were invited to complete an online questionnaire. Nurses who are members of the Association of Women's Health, Obstetric and Neonatal Nursing, members of the Birth Matters organization, My Best Birth website and members of listserv pnatalrn.com were asked to assist with recruitment. These nurses directed participants to the on-line web address where they found the questionnaire. The research instruments included: (a) Spirituality (Bennington, 2003), (b) Perception of Childbirth Experience (Marut & Mercer, 1979), (c) Maternal Attachment Inventory (Müller, 1994), and a demographic profile created from reviewing previous attachment research studies as well as known characteristics that could influence bonding, i.e., infertility, care provider, place of birth, intended pregnancy, and breastfeeding. The list of demographic characteristics included: (a) maternal age; (b) level of education; (c) marital status; (d) support system; (e) ethnicity; (f) socioeconomic status; (g) mother's employment status, and hours worked per week; (h) religious affiliation; (i) infertility; (j) intended pregnancy; (k) gravida and parity; (l) prepared childbirth classes; (m) care provider; (n) place of birth; (o) how long since birth occurred; and (p) breastfeeding.

The research questions for this study were:

Question 1: What is the relationship between a woman's perception of her childbirth experience and maternal infant bonding?

Question 2: What is the relationship between spirituality and maternal infant bonding?

Question 3: What is the relationship among spirituality, a woman's perception of her childbirth experience and maternal infant bonding?

Study Variables

Maternal infant bonding is a significant relationship that develops between a mother and her infant during the prenatal and postnatal period. Although a correlation between prenatal and postnatal attachment has been demonstrated, the association is modest and other factors, as yet unexamined, are believed to play a role (Müller, 1996). In this research, the dependent variable studied was maternal infant bonding. The independent variables investigated were spirituality, perception of childbirth experience, and those demographic variables previously mentioned. Table 1-1 summarizes the variables investigated, their conceptual definitions, and their operational definitions.

Significance of the Study

Research in 1945 by René Spitz, a psychoanalyst, noted that infants in orphanages, who had adequate food, were not developing or growing and frequently died. He attributed this to a lack of loving attention or caretaking. Then Bowlby (1958) made observations that linked a lack of parental attachment to disruptive behavior in children. Aware of this research, Klaus and Kennell (1975) proceeded to investigate if a lack of maternal attachment was the reason the preemies they had saved were consistently returning to the hospital as victims of abuse. Mothers of premature infants were not

Table 1: Study Variables, Conceptual and Operational Definitions

Variable	Conceptual Definition	Operational Definition
Spirituality	An essential philosophy of life centered on the awareness of a pervasive universal creative force that provides a sense of interconnectedness and an awareness of purpose and meaning in life as an ongoing process to transcend the physical existence in daily life (Bennington, 2003).	Measurement of Spirituality
Woman's Perceived Childbirth Experience	A measurement of maternal satisfaction, attitudes and perceptions of the labor and delivery experience (Marut & Mercer, 1979).	Perception of Birth Scale
Maternal Infant Attachment	Attachment is the bond of affection formed between a mother and her infant that originates during pregnancy and is characterized as an intense physical, emotional, and spiritual connection that endures over time (Müller, 1994).	Maternal Attachment Inventory
Individual Characteristics	The statistical data of a population, esp. those showing age, education, ethnicity, etc.. (Dictionary.com, 2010)	Demographic Questionnaire

permitted to have contact with their infants while they were in the Neonatal Intensive Care Unit (NICU) due to concerns of infection. Many of the NICU nurses had remarked to the doctors that mothers frequently made remarks that indicated they did not believe the baby was really “their” baby. After instituting new policies that permitted maternal infant bonding to occur, there was a substantial decrease in the number of abused children. Thus, consummate attachment in early life has been identified as a fundamental element in the future development of a child (Oppenheim, Koren-Karie & Sagi-Schwartz, 2007).

There is ample research to validate prenatal and postnatal attachment as a phenomenon to bond an infant and mother; however, there are issues capable of disrupting or interfering with this bond (Klaus & Kennell, 1976; Klaus, 2009). Early research has noted the decimation that can occur with a lack of parental bonding, ranging from a failure to thrive to physical abuse to death. Postnatal maternal bonding is an essential part of successfully parenting a child and whatever factors necessary to achieve that goal should be implemented (Klaus & Kennell, 1982; Davis-Floyd, 1994, 2008). Although it seems inherently obvious there should be a strong correlation between prenatal and postnatal attachment, research determined only a modest correlation between them (Müller, 1996). The primary event that occurs between these two variables is the birth itself. Understanding what it is about the birth experience that affects postnatal bonding could provide insight in how to promote bonding.

The care provider can empower the birthing woman through honoring and valuing the spiritual aspect of birth (Simonds, Rothman & Norman, 2007). Women who have

successfully faced the challenge of labor and birth gained a sense of mastery, personal strength and competency that carried a revelation of transcendental elation into the postpartum period (Callister, 2004). Furthermore, researchers noted strong evidence that a positive birth experience translated into enhanced maternal attachment and competence as evidenced by postpartal interactions (Mercer, 1986; Mercer & Ferketich, 1994; Klaus, Kennell & Klaus, 1996).

Summary

This study attempted to identify those variables that could positively affect maternal infant bonding, which is the basis for a mother's socialization of her child. Having an understanding of what variables affect bonding and incorporating them into the care of a laboring woman could positively contribute to parenting outcomes.

Chapter Two

Review of the Literature

The beginning of life is an intense experience for both mother and baby and sets the foundation for future interactions. An examination of factors that influence the initial attachment is important in order to facilitate the experience. The theoretical framework used in this study revolves around Rogers' science of unitary human beings and human energy fields, spirituality, maternal infant bonding, and a mother's perception of her childbirth experience.

Rogers' Science of Unitary Human Beings

Martha Rogers believed nursing had a body of knowledge that was specific and unique and related it to understanding the concept of energy fields, which are "the fundamental units of the living and the non-living" (Rogers, 1990, p. 7). Her perception of energy fields was they are infinite, without boundaries, and always changing while in continuous motion. Within this conceptual construct, the environment, the person, and the universe are open to the effects of the interactions of energy fields. Noting that the universe is composed of many forms of waves, i.e., sound waves, thermal waves, she related energy fields to waves that can be differentiated by unique patterns. By extension this concept was especially applicable to groups, i.e., family, community, countries, as it is to individuals since the energy fields are open and integral with the environment. In this model, human beings are not defined by their parts but can only be viewed as a whole for they cannot be divided or reduced. This concept mandates viewing a human being holistically in terms of their body, mind, spirit, and environment. Rogers (1992a)

labeled this concept pandimensionality and defined it as “a non-linear domain without spatial or temporal attributes” postulating that it is characteristic of all reality (p. 7).

From these basic concepts, Rogers proposed three principles of homeodynamics: The first is the principle of resonancy described as “the continuous change from lower to higher frequency wave patterns in human and environmental fields” (Rogers, 1990, p. 8). Second is the principle of helicy defined as “the continuous, innovative, unpredictable increasing diversity of human and environmental field patterns” (Rogers, 1990, p. 8). Third is the principle of integrality which is described as “the continuous mutual human field and environmental field process” (Rogers, 1990, p. 8). Rogers believed that homeodynamics and its three principles provided a means of perceiving human beings and their environment in such a way that changes reflected the mutual interaction of the two.

The concept of human energy fields in the maternal child literature is quite limited in applications utilizing any part of this theory. In fact, the prevailing view in childbirth management is biomechanically focused, which lends itself to the use of technology almost to the exclusion of human interaction. Gaskin (2003) frequently tackled the topic of energy exchange among all individuals present at labor and birth and discussed the midwife’s responsibility to attune to the environmental energy patterns and discern its potential to influence the birth process.

In an article on human energy fields and birth, Bunting (1993) summarized Rogers’ concept as it applied to pregnancy and birth: “Rogers is quite flexible about whether the mother and fetus are a single field or two fields. Depending on one’s

focus... one could perceive a single, irreducible field or a group field composed of mother and fetus” (p. 56). The author implied that an awareness of the energy field pattern manifested during childbirth could serve to positively enhance the experience.

Rogers (1990) asserts that energy field “constitutes the fundamental unit of both the living and the nonliving” and is a “means of perceiving people and their respective environments as irreducible wholes” (p. 7). Defining pattern as the distinguishing characteristic of an energy field, Rogers claims that it is an unobservable abstraction of which the manifestations are apparent in events in the real world. These concepts are applicable to the birth experience as an increasing awareness of expanding energy field pattern manifestations during childbirth may contribute to an expansion of consciousness, which is an attribute of spirituality.

Spirituality

Spirituality is an inclusive phenomenon whereby an individual is seen as a member of the collective family of civilization. It is non-judgmental in that it considers the context and the circumstances of an individual’s life. Spirituality is the recognition of a divine expression of love in every human being that transcends culture and time through an expansion of consciousness. It is that which questions the meaning and purpose in life. These distinctions imply that spirituality is a broad concept by virtue of its universal social integration and lack of dogma. To quote Burkhardt & Jacobson (2005), “Spirituality: the essence of our being. It permeates our living in relationships and infuses our unfolding awareness of who and what we are, our purpose in being, and our inner resources “(p. 137). The spiritual dimension was specifically mentioned within a

World Health Assembly resolution in 1984 as a possible motivating force in the global strategy of Health for All (Orley, 1994).

Many definitions of spirituality have been presented in the nursing literature that possess a number of commonalities, such as, life's essential principle; the essence of personhood or God within; communication with the transcendent; interactions with self, others and nature; propensity to make meaning of a unifying force that permeates all life; and a sense of connectedness or oneness (Vaillot 1970; Colliton, 1981; Amenta, 1986; Stoll, 1989; Reed, 1992; Narayanasamy, 1999; Tanyi, 2002). Feeling a connectedness or oneness with a higher power also gives meaning and purpose to life, which, in turn, promotes self-actualization and encourages hope (Benzoin, Norberg, & Saveman, 1998).

Coyle (2001) developed a conceptual framework that could be used to explore the relationship between spirituality and health by analyzing spirituality in the literature. The analysis acknowledged three approaches that were termed the transcendent, the value guidance, and the structural-behaviorist (religiosity) approaches. Key attributes were identified for each approach with meaning and purpose being the attribute that emerged as common and unifying to all three.

Transcendent spirituality fosters a belief in oneself through connectedness with the divine to provide meaning and purpose. Structural-behaviorist (religiosity) spirituality maintains that church attendance and religious commitment may provide a source of social support and encourage healthy behaviors but meaning and purpose, as expressed through a sense of connectedness with the divine, may not necessarily manifest the same relationship associated with transcendent spirituality. The value guidance approach may

also provide meaning and purpose but it is entirely dependent on the content of an individual's value system (Coyle, 2001).

In an attempt to clarify conceptual confusion, Goddard (1995) proposed a definition of spirituality as integrative energy based on the fact that spirituality is a metaphysical concept and, thus, the concern of philosophy. Essentially spirituality is integrative energy that belongs to a general class of energy and consistent with the ideas of Rogers. Attributes that spirituality shares with other energies include: incorporeal, potential, vital, vigorous, forceful, transforming, and changing; and these attributes are capable of producing internal human harmony or holism, by combining body, mind, and spirit.

In a foreword for Benor's *Spiritual Healing* (2002, p. vii), Larry Dossey suggested that there are serious reasons to question the belief that the mind can be equated with the chemistry and anatomy of the brain. He claims there is compelling evidence that implies an aspect of the mind that is nonlocal, not confined to points in space or time. This means that our picture of consciousness is inconsistent with the prevailing scientific view and raised questions regarding spirituality and its implications of an underlying interconnectedness or transcendence, i.e., the ancient idea of a Universal Mind. This view advocated the need for a process of reevaluating our fundamental ideas of the nature of human consciousness, spirituality, and its role in healing.

Integrating spirituality into care giving would seem to be a fairly simple task; its ethereal nature does not lend itself to a precise understanding of what it is. Burkhardt and Jacobson (2005) discussed this phenomenon acknowledging that by virtue of being

human all people are bio-psycho-social-spiritual beings whose expressions of spirituality may vary with age and actions. Although there are a number of studies in the current literature that show an association of spirituality and health, they have used a wide variety of measures both quantitatively and qualitatively to demonstrate this.

Spirituality and its impact on health have been assessed in various populations through the use of the Spiritual Perspective Scale (SPS) (Reed, 1987) and the Spiritual Well-Being Scale (SWBS) (Paloutzian & Ellison, 1982). For example, Tuck, McCain and Elswick (1999) found a positive correlation with quality of life, social support, effective coping strategies, and spirituality as measured by the existential well-being subscale of the SWBS. The SPS was developed initially for hospitalized patients and the terminally ill to assess need for pastoral care and it has a religious component as well as an existential component. It was noted in the study sample that those who reported having a religious background scored higher on the SPS (Reed, 1987). The SWBS also has a religious and existential component and was used initially to assess the relationship between loneliness and spiritual well-being in college populations as well as chronically ill patients (Paloutzian & Ellison, 1982).

An exploratory study examining the role of religion in American life depicted a changing trend toward a greater acceptance of spirituality. A report based on the American Religious Identification Survey identified what they call “American Nones: The Profile of the No Religion Population” (Kosmin, Keysar, Cragun & Rivera-Navarro, 2008). Interesting highlights from this survey include the following: 15% of the American adult population and 22% aged 18-29 years self-identify as Nones; 1 in 6

Americans presently identify with being of No Religion while in terms of Belief and Behavior, the ratio is closer to 1 in 4; the most significant difference between religious and non-religious populations is a gender gap, 60 males for every 40 females; class is not a distinguishing characteristic, and race is a declining factor. Additional statistics regarding spirituality in the United States reveal that 82% would marry someone of a different faith; 59% believe all religions are valid; and 24% consider themselves to be spiritual but not religious. This survey implies the younger population considers spirituality more important than religion, which may have implications for pursuing the relationship of spirituality and health.

There has been minimal research examining spirituality and pregnancy. A recent study by Jesse & Alligood (2001) speculated that little is known about a woman's pregnancy and how her spirituality may affect birth outcomes. They postulated that disharmony/harmony in pregnancy, as determined from biophysical, psychosocial, spiritual, and perceptual components, could serve as a predictor of infant health outcomes. Thus, they developed the Hope Theory: Holistic Obstetrical Problem Evaluation as a model to test the presence of spirituality. This model examined possible factors that influence risk behaviors and infant outcomes during pregnancy. Some of their findings were that low levels of self-esteem were directly associated with preterm birth; a negative perception of pregnancy was also associated with a greater incidence of preterm birth; and women without any partner support in pregnancy delivered infants weighing less than women with any level of partner support.

Jesse (2003) tested the hypothesis that spirituality, a term inclusive of spirituality and religiosity, was associated with psychosocial well-being and positive or negative health practices in a group of pregnant women from Appalachia. Her study found that spirituality and psychosocial well-being during pregnancy will decrease negative health practices (smoking, use of drugs, or alcohol) among pregnant women from Appalachia when biophysical and socio-demographic factors are controlled.

A qualitative descriptive study on the effect of faith or spirituality in pregnancy among 130 urban low-income women revealed that 47% felt a positive effect, 45% felt no effect and 5.4% were unsure (Jesse, Schoneboom & Blanchard, 2007). The authors concluded that these findings point to the importance of spirituality as a resource in pregnancy for those who value it and felt there was a need to further explore the meaning of spirituality in pregnancy among other women.

Studies examining the lived experience of childbirth through a collection of birth narratives found that spirituality is expressed as a recurrent theme, running the gamut of evoked spiritual responses of transcendence, manifesting a sense of self-actualization to lingering associations with traditional religions (Johnson, Callister, Freeborn, Beckstrand & Huender, 2007). Further analysis of birth narratives revealed that the true essence of the experience for each woman, despite religious or spiritual affiliations, was to find a deeper meaning in birth beyond the biological act itself (Klassen, 2001).

In the birth narratives presented in her book, *Spiritual Midwifery*, Gaskin (1978) emphasized the language women used to express the birth experience as being spiritual in nature to include words such as holiness and miraculous. She further discussed how the

experience of pregnancy, giving birth, and motherhood provided an opportunity for the enhancement of a woman's personal esteem and sense of empowerment, which often translates into a spiritual event. Kitzinger (2000) proposed that birth is an event full of symbolism and ritual behaviors, which has the potential to bring a greater awareness of life's meaning and purpose.

Lauver (2000) noted that both women's spirituality and women's health perspectives assume a fundamental interconnectedness of all living beings and assume that various dimensions of individuals are interconnected as well. Both perspectives incorporate a valuing of relationships—with others and with oneself. Thus, it would seem appropriate to integrate spirituality and healthcare for women in order to improve outcomes. A woman who values herself, i.e., has self-esteem, is a woman who will be self-nurturing and caring of body, mind, and spirit especially during such a life changing event as pregnancy and childbirth. Spirituality, however, was not evaluated as a factor affecting pregnancy and maternal fetal attachment in the previously mentioned research studies and yet it plays a large role in many birth narratives (Klassen, 2001; Johnson, Callister, Freeborn, Beckstrand & Huender, 2007).

In conclusion, although limited in number and scope, there is evidence in both quantitative and qualitative studies that spirituality is a factor to be considered in pregnancy. Thus, the attributes associated with spirituality, transcendence, expanding consciousness, and interconnectedness, could come together to play a role in maternal infant well-being and need to be examined.

Perception of Birth

In 1979, Marut and Mercer discussed the implications of modern obstetrics as it related to interventions and a resultant rise in cesarean births reaching a national rate of 10 percent. A recent Center for Disease Control Prevention Report released in March, 2009 revealed a cesarean delivery rate that rose to 31.8 percent in 2007, marking the 11th consecutive year of increase and another record high for the United States. In a span of 28 years, the cesarean birth rate has tripled.

Marut and Mercer (1979) were concerned about perceived differences in the birth experience because of the psychological and emotional stresses associated with surgical birth, loss of control over bodily function, fear, guilt, anxiety, and disappointment with a loss of goals and expectations (Marut, 1978; Mercer, 1977). The authors studied women's perceptions of the childbirth experience by obtaining qualitative data in open-ended interviews followed by a 29-item questionnaire adapted from a 15-item attitude questionnaire by Samko & Schoenfeld (1975). The qualitative data revealed the primary difference between women with vaginal deliveries and those with cesarean sections centered on comments about their infants. The remarks of those with vaginal deliveries reflected concern about their infants, while the remarks of those with cesarean sections reflected hostility toward their infants. The correlation coefficient for reliability (Cronbach alpha) of the adapted questionnaire was 0.83 for internal consistency. Although the convenience sample was small, approximately 50 mothers total, the results were sufficient to stimulate additional research in this area.

Further attempts to evaluate outcomes related to labor and delivery involved the development of a Labor and Delivery Satisfaction Index (LADSI), which was constructed

to assess caring aspects of childbirth care or an evaluation of a soft outcome measure (Lomas, Dore, Enkin, & Mitchell, 1987). The 38-item instrument completed initially by 59 women at two days postpartum and again by only 35 of these women at four to six weeks postpartum resulted in a Cronbach alpha of 0.35 reflecting little internal consistency. In a commentary on the LADSI, Shearer (1987) noted that the measurement, “as worded and administered here, is capable of obtaining only mostly positive responses” (p.130).

In a subsequent article, which discussed methodological issues involved in measuring satisfaction with childbirth, it was noted that satisfaction is just not an emotional response but an evaluation of an emotion and, therefore, not a cognitive construct (Bramadat & Driedger, 1993). Theorizing that if fulfillment of satisfaction was the primary goal in childbirth, then postpartum women would identify the arrival of a healthy baby as the factor contributing to their satisfaction; however, in the authors’ studies none did that. Their attempts at correlating satisfaction with variables of expectations, perception of the experience, discrepancy between perception and expectations and type of labor were very weak. Multiple stepwise regression of the authors’ unpublished data demonstrated that perception of childbirth accounted for 48 percent of the variance in satisfaction scores and the aspect of perception that contributed more to satisfaction was control. A woman’s perception of control during childbirth accounted for 59 percent of the variance and was, therefore, the best single predictor of childbirth satisfaction.

In a review of the literature, Nichols (1996) discussed variables that influence a woman's perception of her childbirth experience and allocated them into three groups: 1. relatively constant variables, 2. variables practitioners can influence and 3. variables practitioners may or may not influence depending on the situation. Those relatively constant variables included a woman's cultural beliefs and values; maternal age and education; socioeconomic class; personality characteristics; parity; and spiritual belief system. Secondly, the variables practitioners can influence included high levels of stress and anxiety; knowledge; level of self-esteem; feelings of personal mastery and control; expectations; and birth environment. Depending on the circumstances, variables that may or may not influence a woman's perception are obstetrical risk factors and type of delivery. Since the childbirth experience has the potential to not only affect a woman's self-esteem but early interactions with her infant, this review is important for the nursing implications of being knowledgeable about those factors that influence a woman's perception of birth in order to provide more sensitive care.

Using a sample of 320 women who had vaginal or unplanned cesarean deliveries, Fawcett and Knauth (1996) investigated the factor structure of the Perception of Birth Scale (POBS) to determine the underlying subscale structure through factor analysis. An inspection of the 29-item POBS by a principal components method with a forced five-factor solution accounted for 54.5 percent of the variance with 25 of the original 29 items. The authors stated that the five factor-based subscales represent discernible dimensions of the woman's perception of her childbirth experience. "Factor 1 was labeled Delivery Experience; Factor 2, Labor Experience; Factor 3, Delivery Outcome;

Factor 4, Partner Participation; and Factor 5, Awareness” (p. 84). The authors concluded the 25-item POBS is useful in assessing a woman’s perception of her birth experience but needed more research with larger samples.

As part of a larger quantitative study looking at the development of maternal identity, Fowles (1998) asked a single, open-ended item: “Is there anything about your labor and delivery that is still bothering you?” (p. 236). In an attempt to identify major areas of concern regarding a new identity as mother, data were collected by written responses. Two major categories of concern were positive experiences and frustrations. In this group of 157 women, twelve reported positive experiences. Approximately 60 related frustrations in the form of pain, lack of control, lack of knowledge and negative perceptions of health care providers. Those that did have a positive experience related that to emotional support, giving praise and encouragement and being treated with respect and dignity. Dissatisfied respondents were primarily unhappy with the professional staff in the maternity department and with the childbirth experience in general. Simkin (1992) found that women remember the childbirth experience together with the feelings that surrounded it for many years and especially the frustrations with feeling a lack of control and of unmet expectations.

Correspondingly, Fenwick, Gamble & Mawson (2003) surveyed 59 women in Australia concerning their perceptions of having a cesarean section. Six major factors were identified that impacted perceptions: 1. being supported; 2. violated expectations; 3. loss of control; 4. health professionals’ language, attitudes, and care practices; 5. the labor experience and the cascade of interventions; and 6. surgical birth and the separation

from baby. As the authors reiterated, “Research clearly demonstrates the morbidity associated with Caesarean section for both mother and baby. Specifically, a growing body of research has established the potential for emotional harm” (p. 10).

Based on the findings of Fenwick et al (2003), the importance of reflecting upon the birth experience is essential to diminish potential emotional harm. One way women have found that serves to make meaning of their experience is in the sharing of birth narratives. Callister (2004) noted the benefits of sharing birth stories as:

- (a) the opportunity for integration of a pivotal event into the framework of the new mother’s life;
- (b) the opportunity to share a significant life experience with another interested woman;
- (c) the opportunity to discuss fears, concerns, “missing pieces,” or feelings of inadequacy or disappointment with the birth experience;
- (d) the opportunity for the woman to gain an understanding of her own personal strengths and competency;
- and (e) a sense of connectedness with women across generations. (p. 509)

Having an opportunity to assimilate the feelings surrounding a birth experience and to articulate fears puts a traumatic experience into perspective. This is especially important to women with negative childbearing experiences as research has determined that these women are at risk for postpartum mood disorders (Bernazzani & Bifulco, 2003; Soet, Brack, & Dilorio, 2003).

In another study that demonstrated the influence of the perception of birth experience, Nelson (2003), in a meta-analysis on transitioning to motherhood, noted that although there are many components that new mothers share they are not experienced the

same way by all mothers. Understanding this concept reveals the need for a comprehensive postpartum intervention program that does not end upon discharge from the hospital. Ideally, nurses could provide follow up in order to identify areas of particular difficulty for each mother and, thereby, promote the healthy transition of all mothers.

Recognizing the fact that merely entering a hospital is not only intimidating and stressful, but coupling that with being told what to do and when, places an individual in a position that leaves little room for dignity. Matthews and Callister (2004) investigated what actions of nursing care promoted dignity in order to encourage those behaviors. Valuing and respecting patients serves to uphold their self-worth and promotes a sense of control. Moreover, acknowledging the special character of the birth experience and its value to the mother promoted a woman's dignity.

Bryanton, Gagnon, Johnston & Hatem (2008) reported on a study to determine the factors that predict a woman's perceptions of the childbirth experience and examined whether they might vary with the type of birth a woman experiences. A sample of 652 women and their newborns were recruited for the study. The procedure involved completing the 29-item questionnaire developed by Marut and Mercer (1979) and returning it prior to discharge. A similar questionnaire was provided to those giving birth by planned cesarean section with the exception of replacing the labor items to the perioperative experience. The strongest predictor across all the models, vaginal delivery, planned cesarean section and unplanned cesarean section, was the degree of awareness of events during labor and birth. Awareness was, however, the second strongest predictor

for vaginal births with being together with the infant ranking first. Additional predictors included partner support, relaxation, control, and fear (for planned cesarean). Unlike other studies, nursing care/support was not rated more strongly except for the planned cesarean section. As for nursing implications, most of the predictors identified were subject to interventions by nurses, which could serve to prevent a negative experience or assist in altering the perception following delivery.

Goldbert (2009) used descriptive phenomenology to describe the essence of women's unexpected birthing experiences, which included either a forceps or vacuum delivery, a third or fourth degree tear, an emergency cesarean section and women who perceived their delivery was incongruent with their expectations. The findings uncovered the absence of three critical elements, caring, connection and control according to the women. Similarly to previous research data, the nursing implications are to influence a caring environment and establish a connection with the laboring woman.

Since a woman's perception of her birth experience has the potential to not only affect her emotional well-being but the infant's as well, it is an important factor in this research. Throughout the research and literature reviews previously presented, the primary theme of a woman's perception of her birth experience was lack of control, lack of caring and dignity, and lack of connection. Being in labor makes one vulnerable and, in order to make it a positive experience for the patient, previous research suggests that nurses are to recognize and respect the true spiritual nature of the birth experience and honor the woman's experience.

Maternal Fetal Attachment

In his early theoretical papers John Bowlby (1940), a psychoanalyst and psychiatrist, revealed his interest in the intergenerational transmission of attachment relations and the possibility of helping children by helping parents. The origins of attachment theory began when he was working with children suffering physically and psychologically from the loss of a mother (Bowlby (1958). In a later volume of work, Bowlby (1969) emphasized the emotional aspect of attachment relationships and described how the strong feelings and emotions experienced in the mother-infant relationship were related to facial expressions, tone of voice, physiological changes and posture. He also speculated that attachment experiences are stored in the brain's emotion-processing limbic system. Subsequent research by Mary Ainsworth unveiled the fundamental concepts of a secure base and attachment patterns that supported Bowlby's theory (Ainsworth, Blehar, Waters & Wall, 1978).

Influenced by research studies on maternal and infant behavior in animals, Klaus & Kennell (1976) had begun to notice that the premature infants they had taken care of were frequently returning to the hospital as victims of abuse and speculated as to what they were missing in the fundamentals of maternal/infant behavior to cause this. From their observations and studies, they noted that bonding is a developmental process that progresses on a continuum of experience beginning with a parent's own upbringing to the events around pregnancy, birth, the postpartum period and the first few months of the infant's life. Thus, they surmised that the parents' bond to their child is not only the strongest but the most important of human attachment. By general consensus, they defined the term bonding as referring to "the tie from parent to infant, whereas the word

attachment refers to the tie from infant to parent” (p. xviii). Furthermore, they realized that although there were recurring characteristics in bonding, it was not a fixed process. The “setting, circumstances, the family’s history and individual differences affect its course” (p. viii). They summarized their ground-breaking research on maternal-infant bonding stating:

This original mother-infant bond is the wellspring for all the infant’s subsequent attachments and is the formative relationship in the course of which the child develops a sense of himself. Throughout his lifetime the strength and character of this attachment will influence the quality of all future bonds to other individuals (p. 1-2).

Bowlby (1982) explained this period of bonding as a time during which an individual develops mental images of the self, which he termed internal representations.

Subsequent studies on the importance of early attachment and bonding began to focus on the mother’s perspective of the relationship. Klaus and Kennell (1982) theorized that physical conditions after birth together with significant hormonal changes created an amenable period during which mothers were especially receptive to their infant. They also conjectured that the pregnancy experience itself played a role in how a new mother responded to her infant.

Early in the nursing research on this topic, Rubin (1975) delineated four tasks of pregnancy as: “Seeking safe passage for herself and her child through pregnancy, labor and delivery; insuring acceptance of the child she bears by significant persons in her family; binding in to her unborn child; and learning to give of herself” (p. 144). She felt

these tasks needed to be achieved during the three trimesters of pregnancy to achieve the role of mothering. In an attempt to systematically study this concept, Cranley (1981) developed a tool to measure maternal fetal attachment and defined it as “the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child” (p. 282). She identified six aspects of the relationship between mother and fetus as: “(1) differentiation of self from the fetus; (2) interaction with the fetus; (3) attributing characteristics and intentions to the fetus; (4) giving of self; (5) role-taking; and (6) nesting” (p. 282).

Maternal infant bonding is reciprocal in its nature as it refers to the development of the core relationship between mother and child and, despite the distinction described by Klaus and Kennell (1976), is frequently used interchangeably with maternal infant attachment (Spinner, 1978). It exemplifies the parents’ emotional investment in their child and is a process that builds and grows over time from the prenatal period through the postnatal period (Klaus, Kennell, & Klaus, 1995).

Cranley (1981) surmised that maternal fetal attachment (MFA) is occurring during the 9 months of gestation that are crucial to the transformation of a woman into a mother, the development and identity of the fetus and development of the foundation for a relationship between the two entities, i.e., prenatal attachment. She defined MFA theoretically “as the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child” (p. 282). Following consultations with other clinicians, Lamaze teachers, maternal child nurses and a group of pregnant women, Cranley created a valid (all subscales positively associated with total scale) measure of

the construct, the Maternal Fetal Attachment Scale (MFAS), which has 24 questions and 5 subscales. Cranley (1981) and other researchers (Fletcher & Evans, 1983; Gaffney, 1988) promoted the use of prenatal attachment interventions by nurses under the assumption that prenatal attachment positively influenced postnatal attachment.

Noting a lack of empirical evidence to support Cranley's (1981) assumption, Müller (1996) initiated a prospective, correlational study to verify whether there was a connection between prenatal and postnatal attachment. She recruited two hundred twenty-eight women from childbirth classes to take a prenatal attachment inventory and a maternal attachment inventory after delivery. Although a modest correlation between the two attachment scales was noted, Müller (1996) concluded that "the results of other research suggest that the level of prenatal attachment may not directly influence maternal attachment after birth. Rather, prenatal and postnatal attachment may be influenced by other maternal characteristics..." (p. 164). She recommended further research to clarify the exact relationship between prenatal and postnatal attachment and to determine what other variables may be influencing the development of mother to infant attachment.

Cannella (2005), in an integrative review on maternal fetal attachment (MFA), attempted to synthesize and evaluate the knowledge developed from a variety of research designs and methods. She reviewed 41 studies that contained 152 findings relevant to the analysis of MFA and of these, 70 were statistically significant, while 82 were not. She concluded that "a strong body of scientific knowledge has not been accrued through correlational and comparative research" (p. 67) and that "new areas of inquiry need to be pursued" (p. 67). Cannella (2005) suggested that more correlational studies are needed to

have a better understanding of what factors contribute to MFA as well as more longitudinal studies to demonstrate the effects of MFA on relevant outcomes.

In an MFA literature update that presented a critical review of original research since the year 2000, Alhusen (2008) looked at how the factors that influence MFA were measured. Twenty two studies that met the criteria of original research were selected and these studies included a broad range of variables as potential risk or protective factors, or both. Family support, greater psychological well-being and having an ultrasound performed were all associated with higher MFA scores. Depression, substance abuse and higher anxiety levels were associated with lower scores. Alhusen (2008) emphasized, however, that the majority of studies reviewed were limited by small, homogenous samples deemed insufficient to detect significant differences. She advocated the need for further research to be conducted on larger sample sizes with greater racial and ethnic diversity.

Although the progression from the prenatal period through the postnatal period appears to be physiologically similar for all women, the valid meaning of it can be drastically different since it is affected by cultural beliefs, traditional practices and other factors. It is, however, consistently described as a powerful, psychological event, a developmental task reflecting a test of womanhood (Jordan, 1993). In an analysis of women's birth narratives, many significant controllable incidents have been identified with the intent of promoting better birth outcomes. Variables that influence the meaning of childbirth include relatively constant variables (culture, maternal age, parity, personal history, religious/spiritual beliefs); variables practitioners can influence (anesthesia,

birthing environment, confidence, expectations, feelings of control/mastery, knowledge, on the situation (risk factors and type of delivery) (Mercer, Hackley & Bostrom, 1983; Callister, Vehvilainen-Julkunen & Lauri, 1996; Nichols, 1996).

Summary

Rogers' Science of Unitary Human Beings is applicable to labor and birth as a means of describing the blending and interactions of field energy patterns among the birth environment, the laboring woman and support systems. Research firmly suggests that how well an infant bonds with his/her mother can establish the basis for all future relationships. There are factors present in both the prenatal and postnatal period that influence the strength of this bond, i.e., spirituality and a woman's perception of her birth experience. If circumstances are idyllic, infants bond with their parents early in their lives and experience love as well as a sense of belonging. Without appropriate bonding, the connections to Self, and the rest of the world could become insubstantial. Current research has revealed that the lack of bonding/attachment (skin contact, sensory stimulation, breastfeeding, etc.) could lead the emotional (right) hemisphere of the brain to shut down, leaving people to live in the thinking (left) hemisphere (Rand, 1996; Schore, 2002).

An understanding of the potential interrelationship between spirituality, pregnancy, and birth could serve to establish the foundation for infant development and growth. The organization and functioning of specific parts of the human brain permit us to experience the world through our physical senses as well as experience the capacity and desire to form emotional relationships. Those systems that form and maintain

emotional relationships develop during infancy and the first years of life. Thus, this early period of life is critical to shaping the capacity to form intimate and emotionally healthy relationships through the establishment of attachment capabilities (Perry, 2009). Rand (1996) suggested that people who do not become bonded in early infancy spend the rest of their lives looking for it, in one way or another, i.e., in their intellect or in material things.

Chapter Three

Methodology

This chapter describes the research design, sampling and data collection procedures, instrumentation for measurement of the variables, and the analytical methods used. The purpose of this research was to examine the relationship among maternal infant bonding and spirituality and a woman's perception of her childbirth experience. The current proposal sought to understand what factors influence maternal infant bonding and considered the following questions:

Question 1: What is the relationship between a woman's perception of her childbirth experience and maternal infant bonding?

Question 2: What is the relationship between spirituality and maternal infant bonding?

Question 3: What is the relationship among spirituality, a woman's perception of her childbirth experience and maternal infant bonding?

Participants

The target population for this study consisted of a purposive sample of at least 107 English speaking women across the United States between the ages of 18-42, who had given birth to a term (≥ 37 wks.), viable, healthy infant in the past 12 months and whom they were currently mothering and were not presently pregnant. The inclusion criterion of having delivered in the past 12 months was to have a greater sense of consistency and homogeneity in present birthing practices across the United States as

well as the fact that a baby is considered an infant for the first 12 months of life in mortality statistics.

The rationale for the number of participants (107) was determined by power calculations using G*Power, which is a flexible statistical power analysis program for the social, behavioral, and biomedical sciences (Faul, Erdfelder; Lang & Buchner, 2009). An *a priori* power analyses for the F test family using linear regression as the statistical test was used to compute the required sample size given α of 0.05, power 0.95 and population effect size with a probability of 0.95. At the end of 30 days, the survey was evaluated for the number and diversity of responses. A follow-up recruitment notice was sent to the Black Nurses' Association, Chi Eta Phi Sorority, Inc., and the Hispanics Nurses' Association to facilitate a greater diversity of the sample and the survey remained available for an additional five days.

Members of The Association of Women's Health, Obstetric, and Neonatal Nursing (AWHONN), *Birth Matters*, listserv.pnatalrn.com, *My Best Birth*, *Birth Connections*, Black Nurses' Association, Hispanic Nurses' Association and various postpartum units across the continental United States were contacted via email and on Facebook to help with recruitment. Nurses and other health care professionals who practice in postpartum and labor and delivery units throughout the country from these organizations invited clients to the web site to complete the survey. Recruitment notices and links to the survey were also posted on internet websites, such as *Mindful Mama* and electronic mailing lists for women who share their birth experiences via the internet.

Design and Procedure

The research design of this investigation was retrospective, cross-sectional, correlational and descriptive of the relationships among variables that existed in a concurrently occurring situation: The relationship of spirituality and perception of childbirth experience on maternal-infant bonding. While this design can provide insight into understanding relationships among phenomena it does not establish causality, rather it aids in assessing specific dimensions of a group of women by summarizing the commonalities found in discrete observations.

Previous studies by Müller (1996) were performed in an attempt to determine if there was a correlation between prenatal and postnatal experiences and maternal infant bonding outcomes; however, it was noted that only a small amount of postnatal attachment was explained by prenatal attachment (17 percent). Thus, Müller surmised there must be other significant variables that influence the development of maternal infant bonding and recommended further research to discern these variables. Descriptive correlational design studies offer the advantages of flexibility when investigating complex relationships, i.e., maternal infant bonding; an efficient method of obtaining a large amount of data; potential for evidence-based application in clinical settings; and a framework to explore relationships between variables that cannot be inherently manipulated (LoBiondo-Wood and Haber, 2010). Thus information obtained from this study could be used in future research in the clinical setting, especially with regard to nursing interventions during labor and delivery.

Measures

Collection of data began following receipt of the IRB letter of approval for exempt status (Appendix A) and was performed through an internet survey service, Survey Monkey® that participants could access on personal or public computers. An electronic survey yields many potential benefits such as broader distribution, higher response rates, improved accuracy of data entry, speed, convenience, and a reduction in costs (Scriven & Smith-Ferrier, 2003). The use of an internet survey service also permits the researcher to reach a sufficient number of participants that may be difficult to accomplish otherwise (Ahern, 2005).

The survey instruments used in this study together with a demographic questionnaire were loaded onto the internet survey service. The survey began with an introduction page that explained who the researcher was and the criteria for participation in the survey. The second page included the purpose of: (a) the research topic, (b) the approximate time it would take to complete the survey, and (c) the researcher's contact information including name, address, and phone number as well as the informed consent information to include: (a) information that all of the participant's responses would be anonymous and confidential, (b) a statement that there would be no identifying data collected on the participant, (c) an explanation of informed consent, and (d) per IRB stipulation, the participants were informed that if they so desired a letter of participation would be provided to them upon request (Appendix B and C).

Because the participants could access the survey by using the internet on any computer, no record of web or email addresses were collected, and all answers were anonymous and confidential. Every reasonable effort, including secure socket layer

technology (SSL) to encrypt information, was taken to insure confidentiality during a participant's actual time on the internet although the participant was informed that it is impossible to guarantee absolute confidentiality due to the nature of the internet. The addition of SSL was per recommendation of Survey Monkey website as an enhancement to assure participants that all precautions had been taken to ensure their confidentiality. At the end of this second page was a statement that the individual was 18 years or older or that they were not 18 years or older and they had to click on the appropriate answer. The second statement was concerned with the issue of indicating they met the inclusion criteria previously listed, understood the research statement, and freely consented to participate in this survey.

The survey design was set such that if a participant did not understand the research statement, did not agree to consent, or did not meet the sample criteria, she would not be able to continue with the survey. Participants were able to click on "I accept" or "I do not accept" to indicate the study, its risks and benefits were understandably presented. Additionally, by completing the survey participants were also indicating consent. A disclaimer that they did not have to answer any statement within the survey was posted at the top of each page and each page contained an exit survey link if the participant desired to leave the survey at any time. The survey questions were posted verbatim from the original research instruments and each instrument comprised one page of statements. Once that survey was completed, the participant could click on the "Next" button to proceed to the next survey instrument. Because the instruments have

copyright restrictions, there was a clause at the beginning of the survey for each of the instruments used similar to the following:

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A 19-item demographic questionnaire (Appendix D) was presented at the beginning of the survey. The rationale for this was to review the demographic information of the women who were interested in participating even if they did not complete the survey, which some did not and also to describe the study sample. The last page contained an area for the participant to post any comments regarding their birth experience on which they might like to elaborate.

Participants were informed that by completing the survey they would contribute to a body of knowledge that could serve to positively change the childbirth experience. Prior to initiation of the research, an application for exemption was submitted to the Virginia Commonwealth University Committee on the Conduct of Human Research and subsequently approved.

The data were converted from an Excel file in SurveyMonkey.com to PASW 18 (Predictive Analytical Software). Prior to analysis seven items from the perceived birth experience scale were reverse coded. Statistical analysis included both multivariate and correlation analysis using Pearson's r or Spearman's rho and multiple regression analysis. The Person's r gives information relating to positive and negative correlations between

variables; however, this correlation is very sensitive to outliers and may understate the strength of a relationship between variables. As an alternative, Spearman's rho, which is a measure of the linear relationship between two variables, was computed for comparison and/or validation if and when outliers were noted. It differs from Pearson's correlation only in that the computations are done after the numbers are converted to ranks. Major outliers were only noted in the Spirituality assessment but were not significant in affect outcomes. An advantage of correlational analysis is that many variables can be analyzed concurrently enabling the researcher to explain the magnitude of a relationship. Regression analysis tests the relationships between two or more independent variables and one dependent variable and can predict a dependent variable from two or more independent variables (Burnes & Grove, 2005).

This study examined the relationship of two variables, spirituality and perceived birth experience, with maternal infant bonding. Demographic information was analyzed with descriptive statistics. The variables investigated in this research were:

- (a) Spirituality—-independent variable
- (b) Women's Perceived Birth Experience—-independent variable
- (c) Maternal Infant Bonding—dependent variable.

Each of the variables is operationally defined below together with a description of each instrument and a discussion of the appropriate psychometric properties. Written consent for the use of each instrument was obtained from the respective authors.

Instruments

Maternal Attachment Inventory.

Attachment is the bond of affection formed between a mother and her infant that originates during pregnancy and is characterized as an intense physical, emotional, and spiritual connection that endures over time (Müller, 1994). The instrument used to measure postnatal maternal infant bonding was the Maternal Attachment Inventory (MAI) developed by Müller (1994). She stated that this “questionnaire was designed to measure postnatal affectionate attachment, the unique, personal relationship that develops between a mother and her infant” (p. 163). She felt an attitude questionnaire revealed a direct measurement of maternal feelings rather than an interpretation of behaviors through observation. Furthermore, she assumed that maternal affectionate attachment was a single concept. Previous research on maternal-infant attachment had been noted from observed maternal behaviors; however, fewer studies focused on maternal perceptions of or feelings about her infant. Müller (1994, 1996) felt that measuring maternal attitudes and feelings would provide more information about those factors and provide nurses with a tool to encourage maternal-infant affection. Items for the MAI were derived from a literature review of attachment and maternal adaptation. Content validity was assessed by 12 experts and resulted in a 31-item, 4-point Likert scale that ranges from a (almost always) to d (almost never). Items with a mean score less than 3.5 were excluded.

The instrument was tested in two phases. Because maternal-infant attachment is presumed to be a single concept, the MAI has no subscales or sections. An advantage of using the attitude scale was “the direct measurement of maternal feelings, avoiding the validity concerns of interpreting behaviors” (Müller, 1996, p. 163).

The MAI was first tested in Phase 1 with 207 pregnant women who completed the Prenatal Attachment Inventory (PAI) by Müller (1993) and the prenatal version of the Maternal Attitudes and Maternal Adjustment Scale (MAMA) by Kumar, Robson, and Smith (1984). Women from the same group (n=196) participated a second time when their infants were approximately four weeks old. The “time 2” packet contained the MAI, the How I Feel About My Baby Now Questionnaire (HIFBN) by Leifer (1977), the Maternal Separation Anxiety Scale (MSAS) by Hock, McBride, and Gnezda (1989), and the Postpartum version of the Maternal Attitudes and Maternal Adjustment Scale (PPMAMA). The mean MAI score was 116.4 with a range of 93 to 124. Cronbach’s alpha was .85. The MAI scores correlated with the HIFBN score ($r=.45$, $p<.001$) and MSAS score ($r=.46$, $p<.001$) as the author predicted. PPMAMA scores correlated with MAI scores ($r=.30$, $p<.01$) which was greater than predicted (Müller, 1993).

In Phase 2, the MAI was distributed to two groups of women (total n=148); Group A (n=62) completed questionnaires when their babies were four months old and Group B (n=86) completed the questionnaires when their babies were eight months old. Müller (1994) found no significant differences between both groups of women for any of the demographic variables. The MAI mean score for Group A was 117.2 which was statistically insignificant compared to the Phase 1 score and Group B mean score was 117.4. The MAI coefficient alpha for Group A was .76 and Group B was .85.

The correlation between Phase 1 and Phase 2 MAI scores at four months (Group A) was .65, $p<.01$. The correlation dropped slightly to .61, $p<.01$ at eight months (Group B). The correlations of the MAI at four months (Group A) with the HIFBN was .42,

$p < .01$ and with the MSAS was .38, $p < .01$. The MAI correlation with the PPMAMA was not significant. The correlations of the MAI at eight months (Group B) with the HIFBN was .43, $p < .01$, with the MSAS was .31, $p < .05$, and with the PPMAMA was .23, $p < .05$.

The correlations between the MAI and the other instruments used to measure maternal feelings and separation anxiety support the MAI as a measure of postpartum maternal affectionate attachment/bonding. Item-total correlations for five of the items in the MAI were consistently below .30. These items were eliminated and minor word changes were made on three of the items on the revised version of the MAI.

The current MAI consists of 26-items on a four-point Likert scale ranging from almost always (1) to almost never (4) with a possible range of scores from 26 to 104, “indicating again the frequency with which the mother engages in the activities or has the feelings mentioned in the item” (Müller, 1996, p. 163). The higher the score, the higher the maternal attachment is to the infant. The scale was designed to be self-administered with a vocabulary of a fourth-grade reading level. This instrument, as posted on the internet, is provided in Appendix E.

Perception of Birth Scale.

This questionnaire measures maternal attitudes and perceptions of the labor and delivery experience (Marut & Mercer, 1979). The Perception of Birth Scale (POBS) was adapted from a 15-item questionnaire developed by Samko and Schoenfeld (1975). The adaptation was made to improve content validity. This scale consists of 29 items rated on a scale ranging from 1 (not at all) to 5 (extremely). Eleven of the items refer to labor, 12 to delivery, 2 to both labor and delivery, and 3 to the first contact with the newborn after

delivery. The POBS measures a woman's feelings of confidence, control, and satisfaction with her labor and delivery and initial contact with the newborn. Marut and Mercer (1979) reported an alpha reliability coefficient of .83 with 50 subjects for the total POBS; .80 for 20 subjects (Wollaber, 1979); and .87 for 222 subjects (Mercer, Hackley & Bostrom, 1983). Content validity of POBS was established by review of the literature.

Cranley, Hedahl, and Pegg (1983) modified the 29-item POBS for use with women who experienced planned cesarean deliveries. They substituted items focusing on preoperative procedures for the original items focused on labor. This new subscale on preoperative procedures took the place of the labor subscale. This modified POBS contained 28 items. Cranley and colleagues used the original POBS and their modified POBS in a study comparing the perceptions of giving birth as reported by three groups of women: 40 women who had vaginal deliveries; 39 who had unplanned cesarean births; and 43 who had planned cesarean births. The reported Cronbach's alpha reliability coefficient for the original POBS was .76 and for the modified POBS .91.

Fawcett, Pollio, and Tully (1992) used both the original and modified versions of the POBS in their study comparing women's perceptions of cesarean and vaginal deliveries. The original POBS was completed by 106 mothers who had unplanned cesarean births and 254 who had vaginal deliveries. The modified POBS was completed by 113 women who had planned cesarean deliveries. Reported Cronbach alpha reliabilities for the original and modified POBS in this study were .86 and .84, respectively.

Fawcett, Tulman & Spedden (1994) examined expectations about cesarean birth in a sample of 291 women who attended childbirth preparation classes. Three fourths of the sample went on to deliver vaginally, whereas the remaining 25% had unplanned cesarean deliveries. All mothers completed the POBS within the first 3 days after birth. The alpha reliability coefficient of the POBS in this study was .86.

Fawcett and Knauth (1996) conducted an exploratory factor analysis to determine the underlying subscale structure of the 29-item POBS. A sample of 320 women who had vaginal or unplanned cesarean deliveries completed the POBS within the first 2 days after delivery. The factor analysis resulted in a 25-item instrument consisting of five factors or subscales: delivery experience, labor experience, delivery outcome, partner participation, and awareness. Four items were deleted to make the best factor solution. The reported Cronbach's alpha coefficient was .85, indicating adequate internal consistency reliability. The POBS's reliability has been indicated through many studies, both with the original and modified for cesarean section scale, and is accepted as a reliable instrument to measure a woman's perception of her birth. The higher the score obtained with the POBS, the more positive the birth experience. This instrument, as posted on the internet, is provided in Appendix F.

Spirituality.

There are a number of spiritual instruments found in the current literature. A survey of those most frequently used include: The Spiritual Perspective Scale and The Spiritual Well-Being Scale. The Spiritual Perspective Scale by Reed (1987) is a 10- item self-administered or structured interview formatted scale which measures an individual's

perspectives on the extent to which spirituality permeates their lives and if they engage in spiritually-related interactions. Responses to each item are selected using a Likert scale of 1 to 6. Cronbach's alpha coefficient for the SPS ranged from 0.93 in the hospitalized, but not terminal, patients to 0.95 in the hospitalized terminal patients and healthy patients. Test-retest reliability ranged from 0.57 to 0.68. One of the short-comings to this spirituality scale is the frequent reference to God in the items, which could cause confusion as to whether spirituality or religion is being measured.

On the other hand, The Spiritual Well Being Scale by Paloutzian and Ellison (1982) is a 20-item self-administered scale designed to measure spiritual well-being in both its religious (RWB) and existential (EWB) concepts. It contains two subscales: a) RWB, 10 religious items containing references to God; b) EWB, 10 items with no references to God. The SWB Scale yields three scores: a) a total SWB score; b) a summed score for religious well-being item; c) a summed score for existential well-being items. Cronbach's alpha coefficients for the SWBS reflected internal consistency of 0.89 (SWB), 0.87(RWB) and 0.78 (EWB). The test-retest reliability coefficients were 0.93 (SWB), 0.96 (RWB) and 0.86 (EWB), which are consistent with high reliability and internal consistency. The scale appears to have sufficient validity for use as a quality of life indicator. People who scored high on SWB tended to be less lonely, more socially skilled, high in self-esteem and more intrinsic in their religious commitment. It has been used to assess spiritual well- being in chronically-ill adults.

The existing scales in the literature that measure spirituality all include religion as part of the construct and as noted previously, the nursing and health care literature make

it clear that spirituality and religion are not synonymous. Spirituality is the manifestation of one's inner connectedness with the universe as the essence of their being, whereas religion is a choice and not essential to existence (Burkhardt and Jacobson, 2005). The purpose of developing my own spirituality instrument was to measure an individual's unified nature (spirituality) as separate from a set of organized beliefs (religion). Since it was the intention of this research to measure spirituality, I used my own Spirituality instrument.

The process of developing an instrument requires the establishment of empirical referents, which are external measures of a concept grounded in the real world and are used for instrument development in research. Clinically they assist in clearly discerning the presence of a concept (Walker & Avant, 1995). A measurement of spirituality should include statements that reflect an individual's belief system, a connectedness with others, a higher power and the universe, a feeling of self-worth, hope and purpose. The following concepts were used as guides to develop a 30-item Likert scale (strongly agreed to strongly disagreed): (1) a sense of connectedness or oneness; (2) transcendence; (3) a non-local presence (otherworldly); (4) inner peace; (5) actualization; (6) forgiveness; (7) trust; (8) unconditional giving; and (9) acceptance of the unchangeable. A pilot test of the spirituality measure resulted in a reduction to 15 items, which were edited for clarity and circulated to a convenience sample of 188 individuals. Participants had a mixed range of educational and socioeconomic backgrounds, and included both males and females.

Using factor analysis to extract the underlying communality of one factor among the items in the instrument, a scree plot of eigenvalues was obtained. Absolute values less than 0.30 were suppressed, which resulted in three items being removed to strengthen the measure of one factor. The Cronbach's Alpha reliability coefficient for 12 items was 0.88, a good indication of construct reliability. The 12-item Spirituality scale with the subsequent component matrix is in Table 3.1. The items range from (5) strongly agrees to (1) strongly disagree with a score range from 12 to 60; the higher the score the higher the importance of spirituality in an individual's life.

Spirituality, the construct of interest for this scale, is an essential philosophy of life centered on the awareness of a pervasive universal creative force that provides a sense of interconnectedness and an awareness of purpose and meaning in life as an ongoing process to transcend the physical existence in daily life (Bennington, 2003). This instrument consistently measures the factors that theoretically reflect the concept of spirituality without the concept of religion or religiosity. A high score is associated with a greater sense of spirituality in everyday life. This instrument, as posted on the internet, is provided in Appendix G.

Demographics

As noted previously, Nichols (1996) mentioned variables capable of influencing a woman's perception of her childbirth experience, allocating them into three groups: 1. relatively constant variables, 2. variables practitioners can influence, and 3. variables practitioners may or may not influence depending on the situation. The constant variables include cultural beliefs and values; maternal age and education; socioeconomic

class; personality characteristics; parity; and spiritual belief system. Variables easily influenced by practitioners include high levels of stress and anxiety; knowledge; level of self-esteem; feelings of personal mastery and control; expectations; and birth environment. Lastly, situational factors, obstetrical risk factors and type of delivery, may influence the circumstances as well.

Spinner's (1978) attachment study included a sample of 30 women from what she considered a broad spectrum of socioeconomic classes—women who resided in small communities, on farms, and in the metropolitan area; their modal education was a high school diploma although the mean number of years of schooling was 13.9. The mean age was 27 but in terms of ethnicity, 29 were Caucasian and 1 African American. This study confirmed the need for more diversity in sample populations. Other studies that considered demographics covered a diverse collection of statistics; but the consistent variables were maternal age, education, marital status, support system, socioeconomic status, ethnicity, prepared childbirth classes, parity, type of delivery, mother's employment status, and hours worked per week (Sawyer, 1999; Raval et al, 2001; Groer, 2005). Additional variables to be considered in this study would include a history of infertility, primary care provider, place of birth and whether or not the mother is breastfeeding.

A history of infertility has not been previously considered when examining maternal infant attachment and it could provide information that would be pertinent to these women. Moreover, recognizing the differences in primary care providers, based on the material provided in Gaskin's books (1978; 2003), a woman's perceptions could be

influenced by the care provider's involvement and that would include the place of birth. Since breastfeeding women have a higher concentration of oxytocin circulating in their system and this hormone is known to influence maternal infant bonding (Klaus & Kennell, 1996), this was considered an essential characteristic to assess. Subsequently demographic characteristics included in this study are: (a) maternal age; (b) level of education; (c) marital status; (d) support system; (e) ethnicity; (f) socioeconomic status; (g) respondent's employment status and hours worked per week; (h) religious affiliation; (i) infertility; (j) intended pregnancy; (k) gravida and parity; (l) prepared childbirth classes; (m) care provider; (n) place of birth; (o) how long since birth occurred; and (p) breastfeeding. A copy of the demographic survey as posted on the internet is in Appendix D.

Summary

The research design and procedures for this study have been presented in this chapter. Methods to obtain a purposive, convenience sample, using the internet to survey the participants and type of data collection along with statistical analyses used were described. Information obtained from each of the instruments used in the study corresponds with the conceptual model concepts of an individual's unified energy nature as measured by Spirituality; environmental energy for giving birth as measured by the Perception of Birth Scale; and the transformative energy of mother/baby interactions as measured by the Maternal Attachment Inventory, which represents the Energy Field framework of Rogers' Science of Unitary Human Beings. Thus, these instruments provided a means of examining the human field energy pattern interacting in a

transformational process with environmental energy patterns. Written permission was obtained from Dr. Ramona Mercer for the Perception of Birth Scale and from Dr. M.E. Müller via email for the Maternal Attachment Inventory.

**Table 2: Spiritual Scale and Component Matrix
Measure of Spirituality**

Directions: For each of the following statements, check the choice that best indicates the extent of your agreement or disagreement as it describes your personal experience.

**5 = Strongly Agree 4 = Agree 3 = Neither Agree or Disagree
2 = Disagree 1 = Strongly Disagree**

1. I feel a sense of connection to something larger than myself.	1	2	3	4	5
2. I believe that all people are spiritual beings.	1	2	3	4	5
3. I believe everything in life has meaning.	1	2	3	4	5
4. I believe my life has a purpose.	1	2	3	4	5
5. My faith provides me with inner peace.	1	2	3	4	5
6. I forgive others who have hurt me.	1	2	3	4	5
7. I trust in the wisdom of the universe.	1	2	3	4	5
8. There is meaning and purpose in all life.	1	2	3	4	5
9. I feel valuable as a person.	1	2	3	4	5
10. I have faith in a higher creative force.	1	2	3	4	5
11. I believe that all things are possible.	1	2	3	4	5
12. I am capable of unconditional love.	1	2	3	4	5
13. It is possible to develop a moral code without religion.	1	2	3	4	5
14. Nature is a spiritual force in itself.	1	2	3	4	5
15. Spirituality is a part of my daily life.	1	2	3	4	5

Component Matrix

Extraction Method: Principle component analysis with one factor extracted.

Item	1 Factor
1. sense of connection	0.733
2. all people spiritual	0.521
3. everything has meaning	0.691
4. my life has purpose	0.769
5. faith gives inner peace	0.778
6. forgiveness of others	0.599
8. all life has purpose	0.708
9. I am valuable person	0.548
10. faith in higher source	0.718
11. all things are possible	0.576
12. unconditional love	0.522
15. spirituality part of daily life	0.767

Chapter Four

Results

The results of the study are reported in this chapter. The first part consists of a description of the characteristics of the research participants and their demographic information. Secondly, correlations between variables and maternal infant bonding are presented. Thirdly, a description of the results of regression analysis on each of the instruments including Spirituality by Bennington (2003), the Perception of Birth Scale by Marut & Mercer (1979) and Maternal Attachment Inventory by Müller (1994) are presented to include those variables that demonstrated the most significant relationships with maternal infant bonding as well as other potential predictors of maternal infant bonding.

Data Collection

Data were obtained with an electronic survey on the Internet survey service SurveyMonkey.com. The survey was available online for 35 days. Electronic messages were sent to the Association of Women's Health, Obstetrics and Neonatal Nursing, *Birth Matters*, listserv.pnatalrn.com, and to postpartum nurse managers at various hospitals to recruit participants consistent with the protection of human subject approval.

Recruitment notices and links to the survey were also posted on internet websites, *My Best Birth*, Facebook, *Mindful Mama*, Black Nurses' Association, Hispanic Nurses' Association, and electronic mailing lists for women who share their birth experiences via the internet. This resulted in a "snowballing" effect by word of mouth from one participant to another; from practicing midwives to their clients and *Mindful Mama*

requested permission to ‘twitter’ the survey link for one week to all of their members. The survey remained active for 30 days, as proposed, and was then evaluated for the number and diversity of responses. At that time, approximately 390 responses had been obtained with a majority of them being predominantly non-Hispanic, European American. After follow-up solicitations among ethnic/racial nurses’ organizations to enhance diversity, the survey was closed on the 35th day of activity. A total of 402 women began the online survey; approximately 300 completed the entire survey; and over 190 women left extensive comments. All variables were assessed for accuracy of data entry in MonkeySurvey® and for missing values. Some respondents were dropped for multiple missing items with the instruments; however, many women commented that they skipped the labor items under the perception of birth scale due to scheduled cesarean sections.

Sample Demographics

Demographic information was collected on each participant. Women were asked their: (a) age; (b) level of education; (c) marital status; (d) support system; (e) ethnicity; (f) socioeconomic status; (g) employment status and hours worked per week; (h) religious affiliation; (i) infertility; (j) intended pregnancy; (k) gravida and parity; (l) prepared childbirth classes; (m) care provider; (n) place of birth; (o) how long since birth occurred; and (p) breastfeeding history. A summary of the demographics information obtained in this study is presented in Table 3.

Table 3: Demographic Information on Participants (N= # respondents)

Variable	N	Skipped	Mean	Percentage
Age Ranges	346	48	30.6	88.0
19-24	32			9.0
25-29	110			31.8
30-34	143			41.3
35-39	49			14.2
40-42	12			3.5
Level of Education	364	30		92.0
<High School	5			1.4
HS Graduate	17			4.2
Some College	94			25.8
College Graduate	130			35.7
Graduate School	118			32.4
Ethnicity/Race	374	28		93.0
Hispanic or Latino	14			3.7
White	322			86.1
Black/African American	7			1.9
Native Hawaiian or other Pacific Islander	0			0
Asian	10			2.7
American Indian or Alaska Native	3			0.8
Two or more races	16			4.3
Other (Specified)	2			0.5
Marital Status	370	32		92.1
Single	7			1.9
Married	343			92.7
Divorced	4			1.1
Widowed	0			0
Committed Relationship	16			4.3
Support of friends/family	370	32		92.1
Yes	302			81.6
No	68			18.4

Employed	371	31	92.2
Yes	188		50.7
No	183		49.3
Family's Range of Income	370	32	92.0
<\$30,000	34		9.2
\$30,001 - \$50,000	70		18.9
\$50,001 - \$70,000	88		23.8
\$70,001 - \$100,000	90		24.3
>\$100,000	72		19.5
Prefer not to answer	16		4.3
Member Org. Religion	370	32	92.0
Yes	194		52.4
No	178		47.6
History of Infertility	367	35	91.2
Yes	46		12.5
No	321		87.5
Intended Pregnancy	367	35	91.2
Yes	286		77.9
No	81		22.1
Number of Pregnancies	376	26	93.5
1	133		35.3
2	115		30.5
3	67		17.8
>4	61		14.4
Number of Deliveries	376	26	93.5
1	189		50.4
2	108		28.8
3	52		13.9
>4	25		6.8
Type Delivery w/this baby	371	31	92.2
Spont. Vaginal Del	269		72.5
Vacuum/forceps asst del	19		5.1
Primary Cesarean Section	49		13.2
Repeat Cesarean Section	34		9.2

Number of Wks at Delivery	337	64	83.8
37-38	18		5.4
38-39	55		16.4
39-40	86		25.6
40-41	98		29.2
>41	79		23.5
Attended Childbirth Classes	371	31	92.2
Yes	210		56.6
No	161		43.4
Primary Care Provider	378	45	88.8
Obstetrician	172		45.5
Midwife	177		46.8
Family Physician	8		2.2
Other	21		5.6
Place of Birth	382	20	89.6
Hospital	273		71.5
Freestanding Birth Center	23		6.0
Home	64		16.8
Other	22		5.8
Months since birth	Ranged from 1 week to 56 weeks or 0.25 months to 13 months		
Breastfeeding	371	31	92.2
Yes	360		97.0
No	11		3.0

The age range of participants was 19 to 42 years with a mean of 30.7 years, mode of 31 years and median of 31 years. Nine percent of the participants were between the ages of 19-24 (n=32); 31.8% between 25-29 (n=110); 41.3% between 30-34 (n=143); 14.2% between 35-39 (n=49); and 3.5% between 40-42 (n=12). Five participants had some college (25.8%); 130 were college graduates (35.7%); and 118 had attended graduate school (32.4%).

The majority of respondents were non-Hispanic, European American (86%) despite extensive efforts to recruit minority groups. Approximately 93% of the participants were married and 82% responded positively with a support system. The ratio of employed to unemployed was almost 50/50 and the range of income was fairly evenly distributed over the range of less than \$30,000 to \$100,000. Fifty two percent claimed membership in an organized religion while 48% were not members of any religious organization. Specific denominations cited are noted in Table 4. The majority of participants were Protestant and Catholic. Almost 13% reported having a history of infertility, which produced some interesting comments in the final section related to birth expectations.

Approximately 78% of the participants checked the pregnancy as being intended with the mean number of pregnancies among respondents at 2.36 and a standard deviation of ± 1.66 ; the mean number of deliveries was 1.83 with a standard deviation of ± 1.18 . For one hundred thirty-three (133) women this was their first pregnancy (35.3%); one hundred fifteen reported this as a second pregnancy (30.5%); sixty-seven stated it was a third pregnancy (17.8%); and for sixty-one women it was a fourth or more

Table 4: Religious Denominations Alphabetically Listed**(N= # of Respondents)**

Denomination	N
Buddhism	1
Catholic	54
Eastern Orthodox	1
Ethical Humanist	1
Greek Orthodox	2
Hinduism	1
Islam	1
Judaism	10
Latter Day Saints/LDS/Mormon	4
Mennonite	1
Protestant Christian	97
Spiritualist	1
Unitarian Universalist	3
Wicca	1
TOTAL	178

pregnancy (14.4%). It was the first delivery for one hundred eighty-nine women (50.4%); a second delivery for one hundred eight (28.8%); a third delivery for fifty-two (13.9%); and a fourth or more for twenty-five women (6.8%). The discrepancy between number of first time pregnancies and first time deliveries is due to miscarriages in the first trimester. Seventy-seven percent (77%) of the respondents experienced vaginal deliveries with almost 22% having either a primary c-section or a repeat c-section. Gestational ages reported at delivery were all full-term and included 5.4% between 37-38 weeks (n=18); 16.4% between 38-39 weeks (n=55); 25.6% between 39-40 weeks (n=86); 29.2% between 40-41 weeks (n=98); and 23.5% greater than 41 weeks (n=79).

Fifty seven percent attended childbirth classes while 43% did not and 76% delivered in a hospital with 18% delivering at home and 6% delivering in a birthing center. Of those deliveries 45.5% had an obstetrician as their primary care provider; 47% were cared for by midwives; 2% by a family practice physician and almost 6% did not have a provider. Although the survey requested the answer in 'months' since delivery, the answers were given in a range of weeks and months and not always labelled specifically. Thus, the time period since delivery for the respondents in weeks was from less than one week to slightly more than fifty-six weeks or approximately 0.25 to 13 months. Respondents with time of delivery greater than 12 months were removed from the analysis. Ninety-seven percent of the participants were breastfeeding or had breastfed their infants. The variation in responses regarding length of time for breastfeeding made it virtually impossible to discern a range or mean.

Measurement of the Variables

The independent variables measured were spirituality and perception of birth experience (POBS) and the dependent variable was maternal infant bonding (MFA). The data were converted from an Excel file in SurveyMonkey.com to Predictive Analytic Software (PASW, Version 18.0). Prior to analysis seven reverse coding responses were corrected in the perceived birth scale, computed variables were created for each instrument to use in correlation and regression analyses, while demographic information was re-coded into variables indicating “Yes” = 1 and “No” = 2 for the determination of frequencies.

Descriptive Statistics for Instruments

Descriptive statistics for the three instruments used in this survey are presented in Table 5. The mean score for MFA was 100.28, SD of 5.59 (possible range of 26-104) suggesting a high degree of maternal infant bonding for the respondents of this survey. The mean score for the POBS was 107.07, SD of 18.92 (possible range of 29-145) which suggests a positive birth experience overall but the large standard deviation could represent the considerable differences expressed among the respondents. The mean score for spirituality was 49.61, SD of 7.85 (possible range of 12-60) suggesting an overall sense of spirituality as previously defined for the respondents. To ensure the instruments had validity in this population, a Cronbach’s alpha was calculated for each and they were: 1. MFA = 0.92; 2. POBS = 0.78; and 3. Spirituality = 0.90.

As noted in the table, there were differences in the number of respondents for each survey: N=322 for MFA, 300 for POBS, and 363 for Spirituality with the limiting N being the 300. In order to determine if this N is representative of the population, each

Table 5: Descriptive Statistics for MFA, POBS and Spirituality Instruments

Instrument	Mean	Std. Deviation	N (# respondents)
MFA	100.2764	5.59439	322
POBS	107.0733	18.91562	300
Spirituality	49.6143	7.84660	363

dataset was analyzed individually and compared to the limiting group. The mean and correlations among the limiting group for each instrument remained essentially the same with variations noted only in the hundredth place.

Classical assumptions for statistical analysis to be valid include a randomly and independently selected sample with normally distributed data. The central limit theorem essentially states that the sum of the size of a number of independent observations tends toward a normal distribution and will steadily improve with increased observations. The number of respondents (300) obtained in this survey meets this requirement. Histograms of the instruments, demonstrating a normal distribution of the data, are in Figures 2, 3 and 4. An additional method to assure the assumptions of a regression model are met is an analysis of residuals. The error term in the model is assumed to have a normal distribution and this is demonstrated in Figure 5. The final assumption involves making a scatterplot of each variable's residuals to check for patterns. As can be seen in Figures 6 and 7, no pattern exists within these plots (Downing & Clark, 1997). The meeting of these properties establishes a basis for confidence in the interpretation of results.

Results of Regression Model

Correlations.

The Pearson correlational significance criterion was determined prior to running any analyses in PASW and was set at $\alpha=0.01$, which means that there is a 1% chance of determining the correlation is different from zero when in fact it is not. The correlation analysis, presented in Table 6, shows a correlation of 0.23 between MFA and

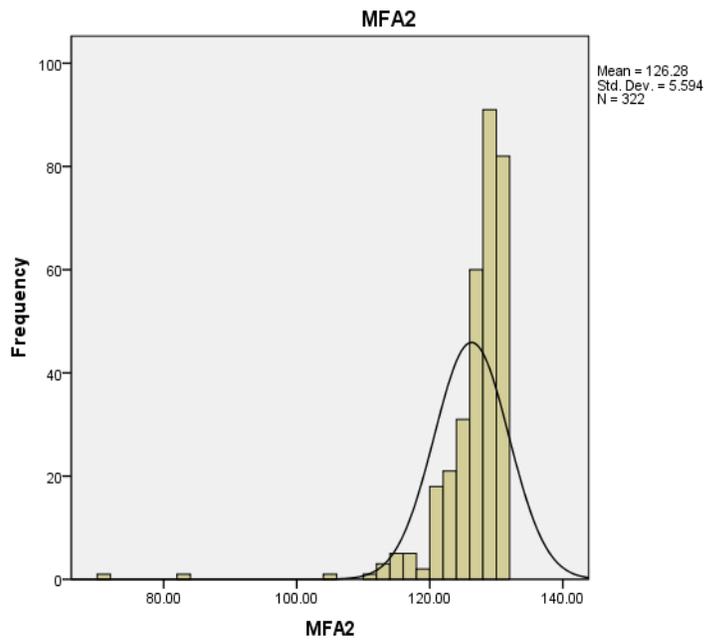


Figure 2: Histogram of Maternal Attachment Inventory (MFA)

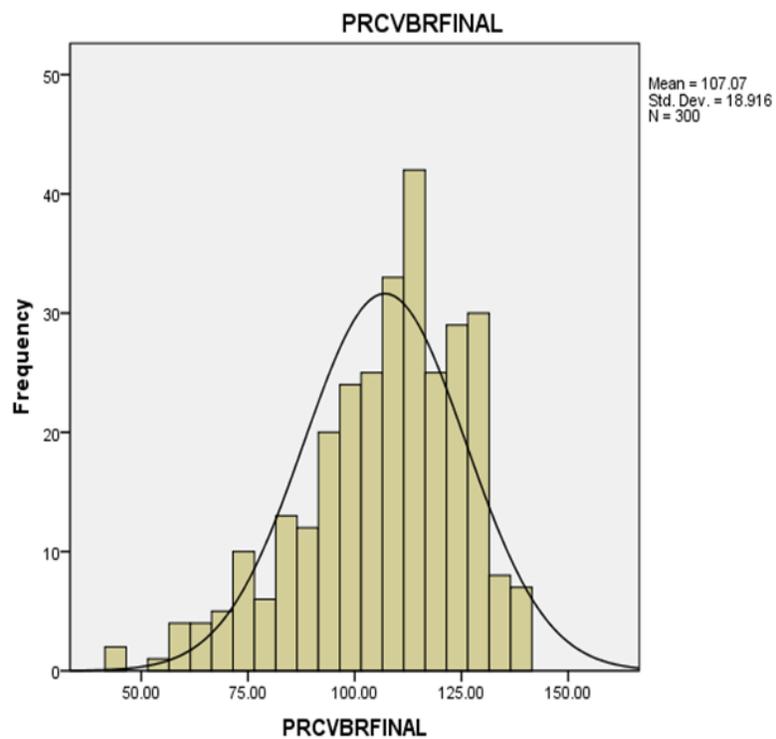


Figure 3: Histogram of Perceived Birth Experience

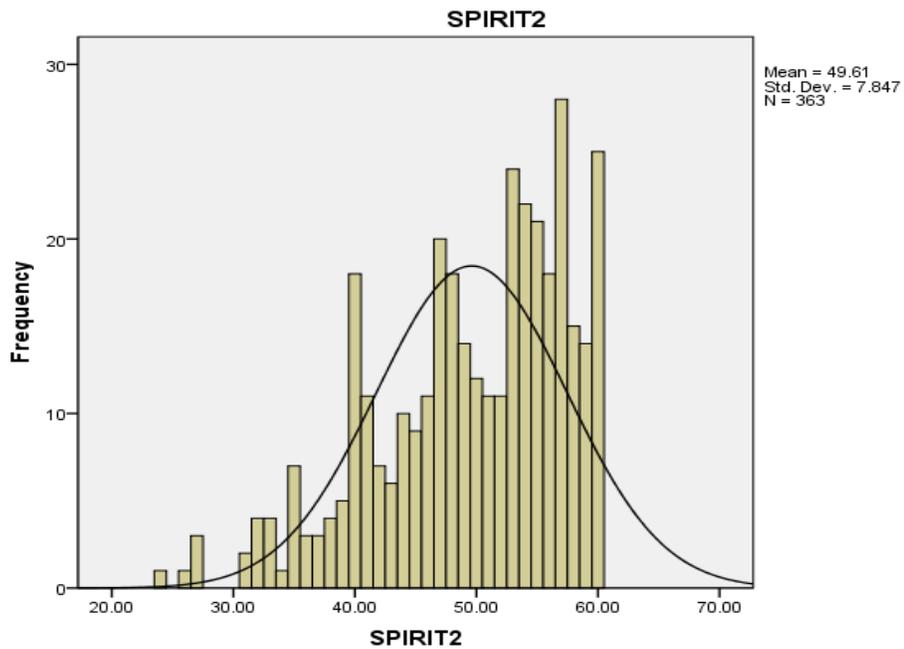


Figure 4: Histogram of Spirituality

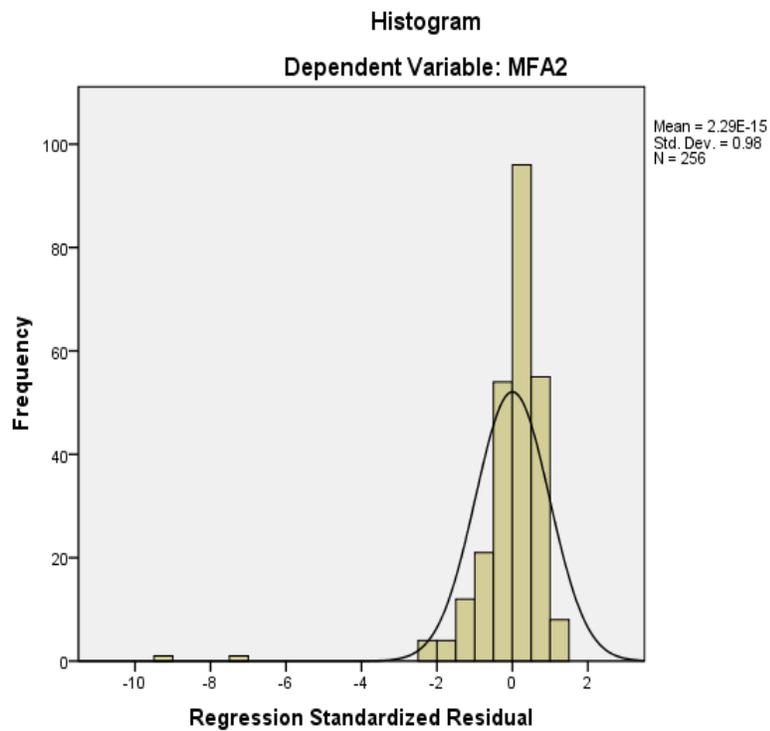


Figure 5: Analysis of Residuals for Dependent Variable MFA

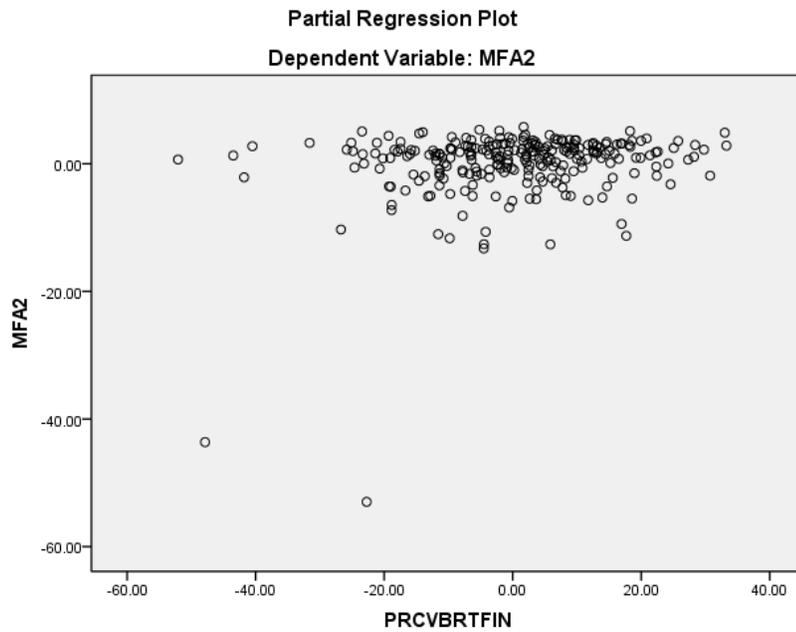


Figure 6: Scatterplot of MFA and Perceived Birth Experience

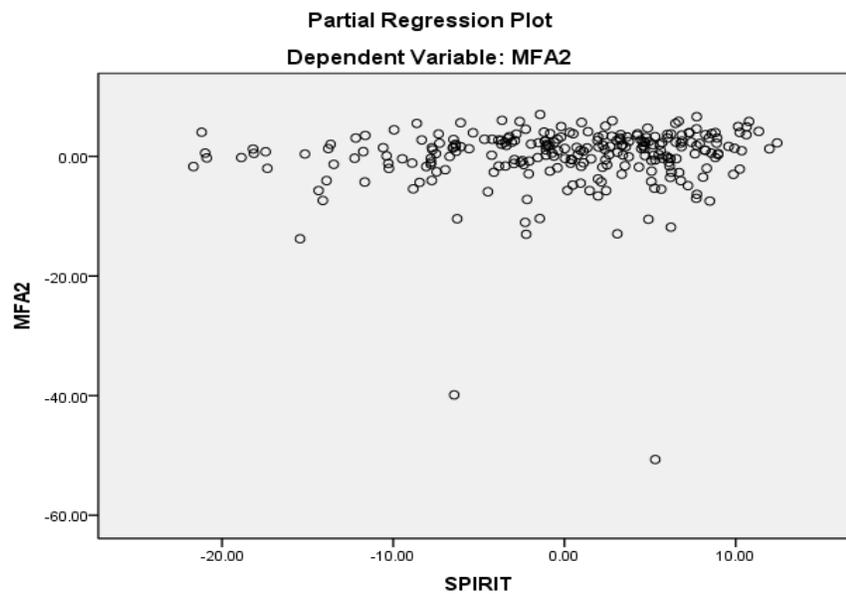


Figure 7: Scatterplot of MFA and Spirituality

Table 6: Correlation Relationship among Variables

Instrument Variable		MFA	POBS	Spirit
MFA	Pearson Correlation (r)	1	0.23**	0.16**
	Sig. (2-tailed)		0.001	0.004
	N	322	273	314
POBS	Pearson Correlation (r)	0.23**	1	0.20
	Sig. (2-tailed)	0.001		0.001
	N	273	300	295
Spirit	Pearson Correlation (r)	0.16**	0.20**	1
	Sig. (2-tailed)	0.004	0.001	
	N	314	295	363

**Correlation is significant at the $\alpha=0.01$ level (2-tailed).

POBS, $p < 0.001$ and a correlation of 0.16 between MFA and Spirituality, $p < 0.001$. The correlation between POBS and Spirituality was 0.20, $p < 0.001$. Additional correlational analyses with demographic data demonstrated no significant results with the independent variable, MFA; however, primary provider and place of birth demonstrated a stronger correlation to POBS, i.e., primary care provider and POBS correlation of 0.29, $p < 0.001$ and place of birth and POBS correlation of 0.39, $p < 0.001$.

Regression Analysis.

A regression analysis was performed to examine the relationship between maternal infant bonding (MFA), the dependent variable, and spirituality, an independent variable, followed by MFA and another independent variable, perceived birth experience (POBS) and finally MFA and both of the independent variables. The fit of this model is given in Table 7, Analysis of Variance results, and Table 8 is the Model Summary. The Coefficients for the Model are given in Table 9.

Whether or not the model explains deviations in the dependent variable is illustrated in the significance of the model as shown in the ANOVA, the lower the significance number, the better the fit (Tabachnick & Fidell, 2007). Spirituality has some influence on MFA at a significance value of 0.05 ($p < 0.05$). Perceived birth experience (POBS) demonstrates a stronger influence on MFA with a significance value of 0.001 and the two predictors together also have a significance value of 0.001.

An examination of the model summary reveals the R-square for Spirituality to be 0.014; for POBS it is 0.055; and together it is 0.068. R-square measures the proportion of

Table 7: ANOVA for Regression Model of POBS and Spirituality

Model Predictor	Sum of Squares	Df	Mean Square	F	Sig.
<u>Spirituality</u>					
Regression	117.202	1	117.202	3.735	0.05
Residual	8253.462	262	31.382		
Total	8370.664	263			
<u>POBS</u>					
Regression	465.128	1	465.128	15.731	0.001
Residual	8012.637	271	29.567		
Total	8477.766	272			
<u>Spirituality&POBS</u>					
Regression	566.101	2	283.051	9.052	0.001
Residual	7804.563	262	29.788		
Total	8370.664	264			

Table 8: Model Summary for Regression of POBS and Spirituality

Model	R	R Square	Adj. R ²	R ² Change	F Change	df1	df2	Sig. F
Spirit	0.12	0.014	0.010	0.014	3.735	1	263	0.05
POBS	0.23	0.055	0.051	0.055	15.731	1	272	0.001
S+POBS	0.26	0.068	0.061	0.054	15.070	1	262	0.001

Table 9: Coefficients of Regression Model for POBS and Spirituality

Model	Dep.Var: MFA	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	93.259	1.866		49.991	0.001
	POBS	0.068	0.017	0.234	3.966	0.001
2	(Constant)	96.210	2.282		42.172	0.001
	Spirituality	0.087	0.045	0.118	1.933	0.05
3	(Constant)	90.476	2.670		33.885	0.001
	Spirituality	0.055	0.045	0.074	1.223	0.223
	POBS	0.069	0.018	0.236	3.882	0.001

the variation in the dependent variable, maternal infant bonding, explained by variations in the independent variables, whereas adjusted R-square measures the proportion of the variance in the dependent variable explained by the independent variables (Tabachnick & Fidell, 2007). Thus, 5.5% of the variation in maternal infant bonding is explained by the perceived birth experience; 1.4% is explained by spirituality; and 6.8% is explained by a combination of the two. Similarly, 5.1% of the variance in maternal infant bonding is explained by perceived birth experience; 1.0% is explained by spirituality; and 6.1% is explained by a combination of the two. The F statistic is significant at 0.001 for POBS and for POBS combined with Spirituality as well while it is 0.05 for Spirituality alone. The F statistic is a measure of whether or not the model is significant by testing whether R-square is significantly different than zero (Tabachnick & Fidell, 2007).

The reliability of individual coefficients as provided in the Coefficients table provides information on the confidence with which each estimate can be supported (Tabachnick & Fidell, 2007). A consideration of this table presents Spirituality as being of equivocal significant at a level of 0.05 when examined individually as a predictor of MFA and when used in conjunction with POBS demonstrates a significance level of 0.233, while the significance level for POBS remains consistent at 0.001. The significance value of 0.233 indicates the coefficient estimate is unreliable (Tabachnick & Fidell, 2007). An examination of demographic variables by entering them individually and together into the regression analysis did not reveal any statistically significant results.

Summary

Of the 402 respondents for this internet survey, approximately 300 completed it. There was considerable diversity among the participants demographically with the exception of race and ethnicity; however, none of the demographic variables were found to have any significant influence on the dependent variable in the regression analyses. Over 190 respondents provided extensive comments at the end of the survey, which may serve to offer insight to the results obtained in the regression. A qualitative review of these comments was beyond the scope of this study. Correlations were noted between MFA and POBS of 0.23 significant at 0.001; between MFA and Spirituality of 0.162 significant at 0.004; and between POBS and Spirituality of 0.204 significant at 0.001. There was a strong correlation noted among primary provider and place of birth to POBS of 0.292 significant at 0.001 and 0.390 significant at 0.001, respectively.

The regression analysis demonstrated that a woman's perceived birth experience has more influence on maternal infant bonding than spirituality, explaining approximately 5.5% of the total 6.8% variation noted. This finding suggests there are other factors to be examined as contributing to maternal infant bonding. Chapter 5 presents a discussion of findings, limitations, and implications for nursing practice and research.

Chapter Five

Discussion

A discussion of the research findings is presented in this chapter. The primary purpose of this study was to examine the relationship among spirituality and a woman's perception of her childbirth experience and maternal infant bonding. The purpose was threefold. The first aim was to examine if a woman's perception of her childbirth experience influenced maternal infant bonding. The second aim was to assess a woman's sense of spirituality as it related to maternal infant bonding. The third aim was to examine the relationship among spirituality, perception of childbirth experience, and maternal infant bonding. A discussion of the representativeness of the sample, the research questions, limitations of the study, implications for nursing practice and education, and recommendations for future research are all presented.

Representativeness of the Sample

An internet design was used for this study in hopes of obtaining a large number of respondents who were diverse by ethnicity/race, age, marital status, educational level, income levels, and other demographic variables. This design was successful in terms of obtaining a large number of respondents through recruitment of professional nurses' associations and websites dedicated to child birth information. Postings on websites resulted in a "snowballing" effect from midwives to patients and "word of mouth" from patient to patient. In all, 402 women started the survey with approximately 300 completing it and being included in the analyses. The majority of respondents were non-

Hispanic, European American (86%), which prevented achievement of the goal to reach a larger racial/ethnically diverse population. Thus, the goal of a diverse racial/ethnic sample was not realized.

The representativeness of the sample was uneven on other variables. There was a normal distribution in age, ranging from 19 to 42 years with a mean of 30.7 years and median and mode of 31. The educational level indicated a spread of less than high school to graduate school attendance, but it was skewed toward higher education with 68% having a college degree and graduate education. Ninety-three percent of the population was married and 82% reported having a strong support system.

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Although half of the respondents were employed, half of those only worked part-time or worked out of their homes. The annual income of the respondents was normally distributed over the range of less than \$30,000 to \$100,000. Slightly more than half (52%) professed religious affiliation among 20 different denominations whereas 48% claimed no membership or affiliation. There was no effort made to ascertain whether the women had a spiritual view of themselves. Of the 22% who reported having cesarean section, 13% were primary sections and 9% were repeat sections. The study included

deliveries at >37-42 weeks, but the majority of women, 239, delivered between 38 to 41 weeks gestation.

There were a few serendipitous descriptors of the sample that were unexpected. First of all, this study presents data regarding infertility that has not been collected or reported previously. The findings indicate that 13% of the sample reported having a history of infertility or in vitro fertilization (IVF). Other noteworthy findings related to pregnancy and delivery experiences of this sample indicated that approximately 78% claimed an intended pregnancy with the mean number of pregnancies among respondents at 2.36 ± 1.66 and the mean number of deliveries at 1.83 ± 1.18 . Davidson, London and Ladewig (2008) stated that in the general population approximately half of all pregnancies are planned or intended.

One of the criteria given for taking the survey was to have delivered within the past 12 months; however, in answer to the “how long since your birth” question, the answers were given in a range of weeks and months and not always labeled specifically. Making an estimation based on what was provided, the time period since delivery for the respondents in weeks was from less than one week to slightly more than fifty-six weeks or approximately 0.25 to 13 months. Those delivering after 12 months were not included in the analysis. Perhaps the most striking statistic was the fact that 97% of the participants were breastfeeding or had breastfed their infants. In the general population, only sixty-three percent of women are still breastfeeding at 7 days post-delivery (Centers for Disease Control, 2007). In summary the sample of this study was not representative of the general population. This sample was skewed for a homogeneous population of white,

highly educated, married women who were breastfeeding. The majority had some religious affiliation.

Question 1: Perceived Birth Experience and Maternal Infant Bonding

As reported previously, the strongest influence on maternal infant bonding (MFA) in the regression analysis was a woman's perception of her birth experience (POBS) as revealed by an R-squared of 0.055, $p < 0.01$, which represents 5.5% of the proportion of variation in maternal infant bonding. Furthermore, the correlation analysis between POBS and MFA demonstrated a correlation of 0.234, $p < 0.01$. In addition, a notable finding was the POBS mean of 107.07 and SD of 18.92, which is a moderately low score compared to the possible score of 145. This large standard deviation might indicate a wide range of deliveries that required interventions, which future qualitative analysis might be of benefit in explaining this finding. A possible consequence of this low score could be related to the interventions many women experienced during labor and delivery; therefore, type of delivery may have been a greater contributor than anticipated.

Another important finding was the mean for the MFA survey at 100.28 and SD of 5.59. This smaller standard deviation reveals greater uniformity in bonding as experienced by the women over a period of time. This high mean may indicate that these women sustained a high degree of bonding, which is likely associated with breastfeeding.

Question 2: Spirituality and Maternal Infant Bonding

The results of this study indicated that spirituality had an R-squared of 0.014, $p < 0.05$ which means 1.4% of the proportion of variation in maternal infant bonding is explained by this variable. The correlation between MFA and Spirituality was 0.162, $p <$

0.01. The moderately high mean of the spirituality survey for the respondents was 49.61 and SD of 7.85. Although spirituality was noted to be of significance it was a weaker predictor of maternal infant bonding than POBS. There may be various reasons to explain this finding and that could include the quality of the Spirituality instrument and what it measured. Previous research reported in the literature review noted that spirituality was an important factor in birth narratives; therefore, despite the fact the quantitative findings did not explain a large proportion of the variance in MFA, a qualitative analysis of the comments might indicate otherwise. Although over half (52%) of the participants reported belonging to a religion, it was not noted to be a significant predictor either. There was not a similar question inquiring if the participants were spiritual. Unanswered questions related to this issue could be related to the measurement of this concept and a lack of qualitative analysis of the comments in this study.

Question 3: POBS, Spirituality and Maternal Infant Bonding

In an exploration of the three variables together, there was a correlation between POBS and spirituality of 0.204, $p < 0.01$, but the correlation was minimal when the two independent variables were combined in the regression analysis with MFA. A regression analysis involving both independent variables, POBS and Spirituality, demonstrated that 6.8% of the variation in MFA could be explained by a combination of the two variables, with 1.4% explained by spirituality and 5.5% explained by POBS. The reliability of individual coefficients, however, demonstrated spirituality having a significance at a level of $p < 0.05$ when examined individually as a predictor of MFA but this significance level changed to $p < 0.233$ when used in conjunction with POBS, which indicates an unreliable

coefficient estimate ((Tabachnick & Fidell, 2007). Since there was a correlation noted between POBS and Spirituality initially, their combined influence on MFA is possibly related to dispersion in the combined variables. An introduction of demographic variables into the regression analysis did not reveal any additional possible predictors. The remaining 93.2% of the variance in influence on MFA could be explained by other factors that may include infant temperament; maternal well-being, both physiologically and psychologically; the timing of delivery; a history of domestic violence; a history of sexual abuse; or even gravida, and parity which needs to be examined.

Additional correlational analyses performed with demographic data, however, demonstrated a strong correlation of primary provider and place of birth to POBS. Primary care provider and POBS showed a correlation of 0.292, $p < 0.001$ while place of birth and POBS showed a correlation of 0.390, $p < 0.001$.

Conceptual Theoretical Empirical Framework and Results Analysis

The conceptual theoretical empirical framework of this study was based on Martha Rogers' Science of Unitary Human Beings, which is based on the concept of the universe being composed of human and environmental energy fields described as infinite, irreducible, multidimensional, and dynamic (Rogers, 1990). Buenting (1993) discussed how these concepts are applicable to labor and birth as a means of describing the blending and interactions of field energy patterns among the birth environment, the laboring woman, and support systems. The outcomes of this study uphold these concepts statistically in that a woman's perception of her birth experience and spirituality can have an influence on maternal infant bonding.

The framework as purposed does cover the concepts present within the birth experience but the empirical factors may not be sufficiently accurate enough to measure the nuances that can occur over time. This would include a woman's sense of spirituality during pregnancy as well as after delivery; the full impact of the perceived birth experience because the scale is better at detecting a positive experience; and the benefit of time from birth on for maternal infant bonding.

Limitations of the Study

The greatest limitation of this study was the use of a convenience sample, which was not representative of the general population in the United States. The sociodemographic data of the participants indicated they were predominantly non-Hispanic, European-American, college educated women who had internet access, which limits generalizability. The use of electronic mail and websites did not appear to have been successful in reaching mothers of diverse ethnic backgrounds. Approaches that might have been more successful could have included more personal contact with individuals in the professional nursing organizations at the local level and establishing a relationship to overcome potential recruitment barriers. Thus, it is questionable whether the use of internet services could overcome the "internet divide" that still may limit internet access with people from diverse backgrounds.

The findings of this study included an inordinately high percentage of breastfeeding mothers which is not supported by the literature. This finding, together with the data of intended pregnancy being greater than the norm, indicates the survey attracted a population who were not only well-educated, but had strong beliefs about

childbirth and child development. The choice of websites used for recruitment probably resulted in an oversampling of the breastfeeding population.

This study found that POBS was a major factor in explaining maternal infant bonding. In a related study that explored perception of the birth experience, a strong positive relationship was demonstrated between a positive perception of the childbirth experience and the support received from the nursing staff (Srisuthisak, 2009). This study had an over representation of African Americans in an age range of 20-29 years with a high school education. Although the two studies had different samples, the importance of the perceived birth experience was prominent in both. Staff support may, therefore, be a factor that needs to be examined in maternal infant bonding. The fact a similar association was found in two different studies with two different populations seems to indicate a greater generalization to the overall populations.

Implications for Nursing Practice/Education

The findings of this study indicate that a woman's perception of birth has an influence on maternal infant bonding. It is important for labor and delivery nurses to become cognizant of the need to provide a positive birthing experience for the laboring woman. This can be emphasized through offering emotional and physical support while simultaneously completing other nursing responsibilities. Being aware and maintaining open communication with the laboring woman could provide a greater sense of personal caring to enhance the environmental energy field. The POBS scale measured a woman's sense of control during labor, perception of staff, and preconceived notions of the labor

and delivery experience. Nurses need to be mindful of these factors in order to foster a sense of control and participation as a team member in the birth experience.

Moreover, there does appear to be a need for educating the public as to their patient rights and options within the hospital environment. This is a task nurses could fulfill to enhance the sense of patient input. In addition, education for nurses as to the impact of the birth experience on a woman's life, in particular, communication with regards to her spiritual needs and beliefs, might serve to bring positive change for both the nurses and the laboring woman and counter the perception of only attending to the technology used in procedures.

Future Research

There are many opportunities for future research in the form of replication of the study with a more diverse population by recruiting in other settings, such as, hospitals, birth centers, or Women's Infant Children (WIC) clinics. Surveys could be administered face-to-face as opposed to using the internet or on the internet if computers are available for participants. As mentioned previously, more personal contact with sources that are likely to recruit ethnically diverse women is recommended.

A longitudinal study to examine changes in maternal infant bonding over time would be beneficial to understanding the immediate impact of a negative experience and its subsequent resolution. Since there were no definitive factors established with regards to maternal infant bonding, a longitudinal study would enable an examination of bonding over a period of time specifically for those who had a negative experience or were hindered by recovery from interventions. A longitudinal study could also capture changes

and patterns of breastfeeding over time and its potential impact on bonding. Another suggestion might be a qualitative study to better understand the nature of spirituality and religion as it is reflected in maternal infant bonding. This study did not definitively answer the question of spirituality/religion as it relates to the birth experience. An analysis of over 190 comments posted in this study could also serve to add support to the quantitative findings of this study.

Since there was a strong correlation between provider type and POBS as well as place of birth and POBS, research using a cross-sectional study design across various sites and multiple providers would add to the knowledge in this field. Inclusion of other factors such as infant temperament, spousal support, mother's psychological and physical well-being, and history of infertility should be incorporated in future studies.

Summary

In summary, this study sought to examine the relationship among a woman's perception of her birth experience, spirituality and maternal infant bonding. The findings of this study, as designed, only provided limited answers. The overall analysis demonstrated that a woman's perception of her childbirth experience did have an influence on subsequent bonding with her infant and spirituality explained minimal variance. Therefore, additional research is necessary to provide a greater understanding of those factors that could influence maternal infant bonding.

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APPENDIX A

IRB Approval Letter

VCU Memo

Virginia Commonwealth University

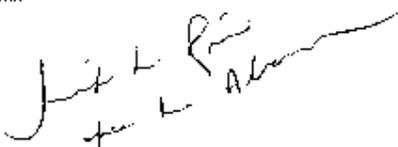
Office of Research Subjects Protection
 BioTechnology Research Park
 BioTech One, 602 F. Leigh Street, #114
 P.O. Box 980568
 Richmond, Virginia 23298-0568
 (804) 828-3592
 (804) 827-1418 (fax)

DATE: April 7, 2010

TO: Inez Tuck, RN, PhD, MBA, MDiv
 Adult Health and Nursing Systems
 Box 980567

FROM: Lisa M. Abrams, PhD
 Chairperson, VCU IRB Panel B
 Box 980568

RE: **VCU IRB #: HM12821**
Title: The Relationship among Maternal Infant Bonding, Spirituality and Maternal Perception of Childbirth Experience



On April 6, 2010, the following research study was approved by expedited review according to 45 CFR 46.110 Category 7. The approval reflects the revisions received in the Office of Research Subjects Protection on April 6, 2010. This approval includes the following items reviewed by this Panel:

RESEARCH APPLICATION/PROPOSAL: None

PROTOCOL (Research Plan): The Relationship among Maternal Infant Bonding, Spirituality and Maternal Perception of Childbirth Experience, received 4/6/10, version 2, dated 4/5/10

- Survey, received 4/6/10, version 3, dated 4/5/10

CONSENT/ASSENT (attached):

- Research Subject Information and Consent Form (to be posted on survey research website), received 4/6/10, version 3, dated 4/5/10, 2 pages
- Waiver of Documentation of Consent: One of the conditions set forth in 45 CFR 46.117(c) (1), (2) for waiver of documentation of consent has been met and the IRB Panel has waived documentation of consent.

ADDITIONAL DOCUMENTS (attached):

- Letter to Health Care Providers, received 4/6/10, version 2, dated 4/4/10

This approval expires on March 31, 2011. Federal Regulations/VCU Policy and Procedures require continuing review prior to continuation of approval past that date. Continuing Review report forms will be mailed to you prior to the scheduled review.

APPENDIX B**Letter to Health Care Providers**

April, 2010

Dear Health Care Provider,

I am recruiting participants for my doctoral dissertation titled, "The Relationship of Maternal Infant Bonding among Spirituality and Maternal Perception of Childbirth Experience." My research study has been approved by the Committee on the Conduct of Human Research at Virginia Commonwealth University.

I would appreciate your assistance in identifying potential participants from your patient population to inform them of the opportunity to participate in my study. I am seeking women, age 18 to 42, who have given birth within the past year to a healthy, viable full term infant.

Women who agree to participate will answer approximately 50 questions in an on-line survey. This process will take approximately 30 to 40 minutes.

Please direct potential participants to the following web site:

<http://www.surveymonkey.com/s/bonding>

If you or anyone interested in participating have any questions please contact me, Linda Bennington at 757-404-3300 or lbenning@odu.edu or my advisor, Dr. Inez Tuck at 804-828-3474 or ituck@vcu.edu.

Thank you for your assistance in this research.

Respectfully,

Linda K. Bennington, BSN, MSN, CNS
Doctoral Student

Inez Tuck, RN, PhD, MBA, Professor
Adult Health and Nursing Systems
Virginia Commonwealth University
BOX 980567
Richmond, VA 23298

APPENDIX C

RESEARCH SUBJECT INFORMATION AND CONSENT FORM

INTRODUCTION:

My name is Linda Bennington and I am recruiting women to participate in a research study for my doctoral dissertation titled, “The Relationship among Maternal Infant Bonding, Spirituality and Maternal Perception of Childbirth Experience.” You are being asked to participate in this study if you meet the following criteria:

- English speaking female,
- Between the ages of 18 to 42,
- Reside in the United States,
- Given birth to a viable, healthy term infant (≥ 37 weeks) within the past 12 months,
- Currently mothering that infant and
- Not presently pregnant.

You must meet all these criteria to be included in the study.

INFORMED CONSENT:

You are invited to participate in this research study to learn how the relationships among spirituality and a woman’s perception of her childbirth experience affect maternal infant bonding. This internet survey will take approximately 30 – 40 minutes to complete. You will be asked questions about your birth experience, feelings of bonding with your baby, your sense of spirituality and a short demographic questionnaire.

There are no known risks to participation in this study although there is the possibility of an emotional response to questions as you recall your birth experience. If this occurs, you may speak with family members or access birth narrative websites for discussions.

There are no direct benefits to you from participation in this study; however, the information you contribute may be used to facilitate improvements in the management of childbirth and infant outcomes. There is no cost to you, the participant, except for the time you commit to completing the online survey

All answers will be anonymous as your name or any other identifying information will not be requested. No record of web or email addresses will be collected and all data collected will be kept confidential. If so desired, you may obtain a statement from the researcher noting documentation of your participation in this survey. We are using a contractor, SurveyMonkey.com to administer this questionnaire. Your IP address will be tracked, in aggregate only, to help identify the sites connecting to the survey. An IP address is like your zip code; it tells your general location. Neither Virginia Commonwealth University (VCU) nor SurveyMonkey.com will use IP addresses for any

purpose other than to administer this survey and will not share them with any outside parties. Personal information will not be shared with any outside parties. I have taken every reasonable effort, including secure socket layer technology (SSL) to encrypt information, but confidentiality during your actual time on the internet cannot be guaranteed.

Data are being collected for research purposes only. Access to all data will be limited to study personnel and be password protected. Data may be reviewed by VCU or VCUHS for research or legal purposes; but since information is collected anonymously, participants cannot be individually identified should this happen.

You do not have to participate in this study. If you choose to participate, you may exit the survey at any time without penalty. You may also choose not to answer particular questions without penalty. In the future, if you have questions, complaints, or concerns about this research and your participation, contact:

Linda K. Bennington, RNC, MSN, CNS
PhD Student/Student Investigator, School of Nursing
Virginia Commonwealth University
Richmond, VA 23298 email: benningtonlk@vcu.edu Phone: (757) 404-3300

Or

Inez Tuck, RN, PhD, MBA, MDiv
Professor
Adult Health and Nursing Systems
Virginia Commonwealth University
BOX 980567
Richmond, VA 23298 email: ituck@vcu.edu Phone: (804) 828-3474

For additional questions about your rights as a participant in this study, you may contact:

Office for Research
Virginia Commonwealth University
800 East Leigh Street, Suite 113
PO Box 980568
Richmond, VA 23298
Telephone: 804-827-2157

You may also contact this number for general questions, concerns or complaints about this research. Please call the above number if you cannot reach the research team or wish to talk to someone else. Additional information about participation in research studies can be found at <http://www.research.vcu.edu/irb/volunteers.htm>.

CONSENT TO PARTICIPATE IN THE STUDY

I have been provided with an opportunity to read this consent form carefully. All of the questions I have concerning this study have been answered and I certify that I am:

1. _____ 18 years or older _____ Not 18 years old.
2. By clicking on "I accept" I am indicating that I meet the inclusion criteria previously listed and freely consent to participate in this study.

_____ I accept _____ I do not accept

APPENDIX D**Demographic Survey**

Please answer the following questions. You may skip any question that you prefer not to answer.

1. What is your age? _____ years

2. What is your level of education?
Less than high school _____
High school graduate _____
Some college _____
College graduate _____
Graduate school _____

3. What is your ethnicity?
_____ Hispanic or Latino
_____ White
_____ Black or African American
_____ Native Hawaiian or other Pacific Islander
_____ Asian
_____ American Indian or Alaska Native
_____ Two or more races
Other _____

4. What is your marital status?
_____ Single
_____ Married
_____ Divorced
_____ Widowed
_____ Committed Relationship

5. Do you have family or close friends locally to help you if needed?
_____ Yes _____ No

6. Are you employed?
_____ Yes _____ No If yes, how many hours/wk? _____

7. Which of the following best fits your family's range of income?
_____ <\$30,000

- \$30,001 - \$50,000
 \$50,001 - \$70,000
 \$70,001 - \$100,000
 >\$100,001
 I prefer not to answer.
8. Are you a member of an organized religion?
 Yes No If yes, list _____
9. Do you have a history of infertility?
 Yes No
10. Was this an intended pregnancy?
 Yes No
11. How many times have you been pregnant?
 Number _____
12. How many deliveries have you had?
 Number _____
13. What type of delivery did you have with this baby?
 Spontaneous vaginal delivery
 Vacuum or forceps assisted delivery
 Primary Cesarean Section
 Repeat Cesarean section
14. How many weeks pregnant were you when you delivered?
 Number of Weeks _____
15. Did you attend any childbirth classes?
 Yes No
16. Who was your primary care provider during your pregnancy?
 Obstetrician
 Midwife
 Family Practice Physician
 Other, please indicate _____
17. Where did you give birth?
 Hospital
 Freestanding Birthing Center

_____ Home
_____ Other

18. How many months ago did you give birth?

Number of months _____

19. Are you or have you breastfed this baby?

_____ Yes

_____ No

If yes, how long? _____

APPENDIX E**Maternal Attachment Inventory by Mary E. Müller**

Please click on the statement that best applies to you. You may skip any question that you prefer not to answer.

Mark: **A. Almost always**
 B. Often
 C. Sometimes
 D. Almost never

1. I feel love for my baby
2. I feel warm and happy with my baby
3. I want to spend special time with my baby
4. I look forward to being with my baby
5. Just seeing my baby makes me feel good
6. I know my baby needs me
7. I think my baby is cute
8. I'm glad this baby is mine
9. I feel special when my baby smiles
10. I like to look into my baby's eyes
11. I enjoy holding my baby
12. I watch my baby sleep
13. I want my baby near me
14. I tell others about my baby
15. It's fun being with my baby
16. I enjoy having my baby cuddle me
17. I'm proud of my baby
18. I like to see my baby do new things
19. My thoughts are full of my baby
20. I know my baby's personality
21. I want my baby to trust me
22. I know I am important to my baby
23. I understand my baby's signals
24. I give my baby special attention
25. I comfort my baby when he/she is crying
26. Loving my baby is easy

APPENDIX F**Perception of Birth Scale by J. S. Marut & R. T. Mercer**

Instructions: Click on the choice that best describes the feeling state referred to in each question. *You may skip any question that you prefer not to answer.*

- Mark:**
- A. Not at all**
 - B. Somewhat**
 - C. Moderately**
 - D. Very**
 - E. Extremely**

1. How successful were you in using the breathing or relaxation methods to help with contractions?
2. How confident were you during labor?
3. How confident were you during delivery?
4. How relaxed were you during labor?
5. How relaxed were you during delivery?
6. How pleasant or satisfying was the feeling state you experienced during delivery?
7. How well in control were you during labor?
8. How well in control were you during delivery?
9. To what extent did your experience of having a baby go along with the expectation you had before it began?
10. To what extent do you consider yourself to have been a useful and co-operative member of the obstetric team?
11. How useful was your partner in helping you through your labor?
12. How useful was your partner in helping you through delivery?
13. To what degree were you aware of events during labor?
14. To what degree were you aware of events during delivery?
15. How unpleasant was the feeling state you experienced during delivery?
16. Do you remember labor as painful?
17. Do you remember delivery as painful?
18. How scared were you during delivery?
19. Did you worry about your baby's condition during labor?
20. Did you worry about your baby's condition during delivery?
21. Did the equipment used during labor bother you?
22. Was the delivery experience realistic as opposed to dream-like?
23. Did you have choices about interventions, i.e., examinations or treatments during labor?
24. Did your partner (or other person) review your labor experience with you?
25. Did you feel better after reviewing the labor and delivery experience?
26. Were you pleased with how your delivery turned out?

27. Were you able to enjoy holding your baby for the first time?

28. How soon after delivery did you touch your baby?

1 2 3 4 5

Within 8 hrs or longer Within 4 hrs. Within 2 hrs. Within 1 hr. Immediately

29. How soon after delivery did you hold your baby?

1 2 3 4 5

Within 8 hrs or longer Within 4 hrs. Within 2 hrs. Within 1 hr. Immediately

APPENDIX G**Spirituality Instrument by Linda K. Bennington**

Instructions: Click on the choice that best indicates the extent of your agreement or disagreement as it describes your personal experience for each of the following statements. You may skip any question that you prefer not to answer.

Mark:

- A. Strongly Agree - If you strongly agree with the statement.**
- B. Agree - If you agree with the statement.**
- C. Unsure- If you are unsure about how you feel.**
- D. Disagree - If you disagree with the statement.**
- E. Strongly Disagree - If you strongly disagree with the statement.**

1. I feel a sense of connection to something larger than myself.
2. I believe that all people are spiritual beings.
3. I believe that everything in life has meaning.
4. I believe that my life has a purpose.
5. My faith provides me with inner peace.
6. I forgive others who have hurt me.
7. There is meaning and purpose in all life.
8. I feel valuable as a person.
9. I have faith in a higher creative force.
10. I believe that all things are possible.
11. I am capable of unconditional love.
12. Spirituality is a daily part of my life.

Vitae

Linda Kay Bennington was born July 2, 1945 in Charleston, West Virginia and is an American citizen. She graduated from Clay County High School in Clay, West Virginia in 1963; earned a Bachelor of Science in Chemistry from West Virginia University in Morgantown, West Virginia in 1967 and a Master of Science in Biochemistry and Nutrition from West Virginia University in 1968. Her research for the Master's involved the physiological effects of tryptophan deficiency in force-fed rates. She attended Virginia Polytechnic Institute in Blacksburg, Virginia completing her course work for a PhD in Biochemistry and Nutrition and was inducted into the Chemistry Honorary Society in 1969, which was the first year women were permitted to join. She changed her focus to teaching at that point and taught Chemistry for the Health Sciences, Chemistry and Microbiology at Daytona Beach Community College in Daytona Beach, Florida from 1973-1978. She completed her Bachelor of Science in Nursing at Old Dominion University in Norfolk, Virginia in 1983 and her Master of Science in Nursing at Old Dominion University in 1995. She has been on the faculty at Old Dominion University, School of Nursing since 2001 teaching Family Centered Maternity Care.

Ms. Bennington has been an active member of the Association of Women's Health, Obstetric and Neonatal Nursing (AWHONN) since 1986 serving as co-coordinator of the Tidewater Region from 2000 through 2004 and co-hosting the State

Conference in 2002 which featured Jean Watson as the main speaker. In 1998 she co-authored an AWHONN publication on clinical guidelines and education for antepartum and intrapartum fetal heart rate surveillance. She is a member of Sigma Theta Tau and serves on the Commonwealth of Virginia, Breastfeeding Advisory Committee.

Ms. Bennington participated in an education film on preterm labor with Dr. Bonnie Dattel, a perinatologist at Eastern Virginia Medical School and has had ten poster presentations ranging from daily fetal heart monitoring in prolonged rupture of membranes, to spirituality and pregnancy and lowering postprandial sugars in diabetics. She has publications as a co-author for the Encyclopedia of Cancer, Encyclopedia of Nursing and Allied Health, Gale Encyclopedia of Children's Health and a recent article in Maternal Child Nursing. She is presently a peer reviewer for Maternal Child Nursing and has written eight reviews on healthcare books for Reed's Business Information that were published in Publisher's Weekly.