

Fear versus Trust: The Impact of Fear on Birth Experience and Maternal Outcomes

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Abstract: This study explored women's trust-based and fear-based beliefs about birth. It asked: Do women trust their bodies' innate intelligence to give birth, or does fear override trust? The study sought to understand whether beliefs, fears, and trust associate with birth experiences and birth outcomes. Data were collected by way of a qualitative, cross-sectional survey distributed to Georgian Court University faculty, staff, students, and alumni, as well as to women undergoing HypnoBirthing, home birthing, and water birthing. The study posed 43 questions—each inquiring about beliefs and fears associated with birth—and then mapped them to birth experience and outcome. The results of this study indicate that fear states are associated with higher incidences of interventions and C-sections. In addition, the results show that no fear and low fear values are associated with self-reported calm states and more-positive birth experiences. Therefore, this study concluded that the ability to maintain a calm meditative state during labor may be effective in the improvement of birth experiences and birth outcomes because it supports the neurohormonal physiology of birth.

Keywords: birth, fear of childbirth, neurobiology

Some women may experience birth as healing and life changing; for others birth may be traumatic, painful, or frightening (Milan, 2003). Ultimately, all of the parties involved seek the same outcome: a healthy mother and baby.

Historically, societies have viewed birth as a natural, normal event. Women were in tune with their bodies and understood that birth should not be rushed. It was not until the past 200 years, with the advent of the invention of forceps, that the process began to include physicians. With

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that shift also came a belief that birth was inherently a perilous event, during which almost anything could go wrong (Arms, 1994); and thus, hospitals soon became considered the safest places to give birth (Sweet, 1997). Today's modern medical landscape rarely sees a completely natural birth. Even if the pregnant woman opts to have no analgesic or induction drugs, more often than not her experience may still include disruptive procedures such as episiotomy, fetal monitoring, vaginal exams, or an IV drip.

How the field of obstetrics adopted its current methodologies and practices is not within the scope of this project. Obstetrics views childbirth from the perspective of illness and therefore treats it as such by offering the latest technologies and equipment as the standards of modern maternity care for all women, which includes pain management (Sweet, 1997). Because high-technology obstetrics has become the standard of care in childbirth, it is easy for women, as well as health-care professionals, to assume that hospital intervention is the best and safest way to birth a baby (Bennett, Hetherington, and Hewson, 1993). Five percent of cases do present true medical necessities or emergencies, for which technology-based obstetrics is a godsend (Birnbaum, 2009). However, for the remaining 95% of women who experience healthy, normal pregnancies, medical management of the birth process may carry with it the risk of iatrogenic effects. "Clear evidence that most of these obstetric practices are actually more effective than traditional non-interventionist methodology does not exist" (Russell and Schofield, 1986, p. 136). A more recent, 2005, study found that technology linked to women who reported negative birth experiences. Of special interest was the finding that the total number of interventions the women experienced were inversely correlated in part to the belief that her body was "an organic system vs. an imperfect tool that needed assistance" (Kornelsen, 2005, p. 1496).

Apart from those iatrogenic outcomes, which cause side effects or problems because of the very treatments designed to avoid medical complications (Bennett et al., 1993), a more foundational issue is at stake: constant surveillance of the woman during labor via fetal monitors, blood pressure cuffs, or vaginal exams.

It was the hypothesis of this study that surveillance and interruptions lead to an unconscious level of anxiety and tension that cause the body to release adrenaline, which in turn interferes with the hormonal cascade of birth and the automatic expulsion reflex (Davis, 2010, p. 206). Tension and fear are foes of labor because they interrupt the neurohormonal pathways between the brain, the circulatory system, and the uterus, thereby restricting blood flow and oxygen. As a result of such restricted blood flow to the uterus, the cervix tightens and closes, causing pain. With each contraction, the woman then braces for more pain, which creates a

continuous feedback loop resulting in painful childbirth (Buckley, 2004; Buckley, 2015; Hotelling, 2009; Sears & Sears, 1994).

This study sought to identify the most-important determining factors that shape a woman's beliefs or fears about birth by mapping fear of birth (FOB) to birth outcomes and birth experiences. Will a woman's perception that her body is uniquely designed to give birth assist in her ability to enter into a state of calm trust and become the chief architect of her giving birth? Or will a woman's belief that birth is difficult, dangerous, or painful contribute to a state of fear, vigilance, or tension (also known as *tokophobia*)? Especially interesting is the idea that belief may become self-fulfilling because of hormonal physiology (A. H. Verwaal, RN, personal communication, August 15, 2014). Do the women who feel safe, calm, and certain of their capacity to give birth tend to experience an uninterrupted cascade of birth hormones, which are associated with ecstasy, love, and bliss? On one hand, calm begets relaxation, the very response that is needed for easy, spontaneous birth. On the other hand, do women who are fearful, tense, or doubtful about aspects of birthing activate an adrenal response? Fear begets tension, and tension begets pain. Does a woman's apprehension about giving birth create a fear–tension–pain cycle because of long-held beliefs, birth stories heard, or medical doctrine that requires performing according to the timeline of Friedman's curve? (*Note: Friedman himself expressed distress that his mathematical calculation was in use as a primary measurement against which women are measured harshly, when in fact there is a broad range of normal [Cassidy, 2006, p. 156-157]*).

It is also the supposition of the researcher that the self-hypnosis techniques used in HypnoBirthing assist a woman in a number of important ways: First, by overriding the external environment to enable her to remain in a calm, hypnotic state; second, by building trust in her body's innate ability to give birth; third, by having acquired greater knowledge of and deeper trust in what is happening during labor; and last, by empowering her to insert mother-directed wisdom in support of her needs, comfort, and privacy regardless of circumstance, location, environment, or hospital protocols.

Literature Review

Fear

A birth experience study conducted by Haines, Rubertsson, Pallant, and Hildingsson researched the influences of fear, attitudes, and beliefs about childbirth on modes and experiences of birth. The study found that women in the fearful cluster were more inclined to have negative birth experiences as well as to experience negative emotional health during

their pregnancies. The finding showed that fearful women did not subscribe to the notion that birth is a natural process that should not be interfered with and that they were more prone to choose elective C-section (Haines, Rubertsson, Pallant, & Hildingsson, 2011).

Intervention or Interference?

The field of obstetrics labels stages of labor from a typically reductionist point of view, whereas pregnant women and midwives experience labor as a continuum: a continuous, biological process. From that continuum point of view, an interruption of any kind can become an interference, even if conducted as an intervention (Begley, 2014). Begley found three interventions he considered interference when they were utilized in a low-risk, normal birth: (1) induction using synthetic oxytocin, (2) episiotomy, and (3) active management of the third stage of labor. The use of synthetic oxytocin in the latent phase of labor may cause women to have more-painful contractions than they would without it and thereby may cause fetal distress or maternal need for analgesics. Stronger contractions, pain, and concern about one's ability to endure the pain may create a fear–tension–pain loop. With fear—perceived or actual—comes the release of adrenaline, which interferes with the delicate hormonal balance of labor (A. H. Verwaal, RN, personal communication, August 15, 2014).

Normalcy in Labor

A study conducted by Davis reported that midwives unanimously found that “the contextual environment in which a woman gives birth is the single most influential dynamic affecting the normalcy of childbirth” (Davis, 2010, p. 206). Davis also found “that the woman's experience is highly sensitive to her environment for labor and birth” and that familiarity of surroundings and people present, privacy, freedom, and social support were major factors influencing the woman's capacity to cope (Davis, 2010, p. 209).

Environment

As noted in the introduction, it is possible that the environment in which a woman chooses to give birth is tied to her beliefs about labor and the nature of childbirth. The medical environment traditionally offers a clinical setting, with physician-directed interruptions and timelines to adhere to, whereas a birthing center or a home birth offers a nurturing and private environment and mother-directed choices. Research by

Pascali-Bonaro and Kroeger indicates that a birthing woman's experience is influenced by the woman's expectations and history, but it is the *environment* in which she gives birth that will—directly or indirectly— influence labor and delivery (Pascali-Bonaro and Kroeger, 2004, p. 25).

Surveillance Environments. According to a study by Nilsson, women often described labors that took place in a clinical environment as feeling like biomedical events rather than health events. The women in the study said they felt bound to and beholden to the technology in the room, thereby causing them experiences that the information was outside themselves. They reported feeling that the staff started and finished the birth and that a baby was *delivered* rather than *birthed* (Nilsson, 2014). Words they used to describe their experiences were *exposed*, *feeling inadequate*, *feeling frightened*, and *feeling like an object*. It is clear from Nilsson's research that levels of medical safety in hospital birthing rooms are high, but a woman's levels of autonomy and power to influence her care are extremely low. That corroborates the idea that the feeling of being watched and monitored is palpable in the medicalized birth environment and could contribute to a woman's feeling vulnerable or unprotected—two criteria known to slow or even arrest mammalian labor.

Safety and Trust

No matter where a woman chooses to deliver her baby, it is important that she sense she is in a safe and secure location to give birth. That sense of safety is not something logical but, rather, is based on a very basic mammalian need to feel protected, undiscovered, and undisturbed (Buckley, 2004; Naaktgeboren, 1989). Standard obstetric practice includes the use of a fetal monitor, vaginal exams to determine stage of labor, and constant surveillance of fetal heartbeat and stress. "While the continual monitoring and surveillance may put the caregiver's mind at ease, it may be undermining the progression of labor by setting off a cascade of neuro-hormonal events that compromises both mother and infant" (Stenglin & Foureur, 2013, p. 819). "The theory of the fear cascade reveals the role of the sympathetic nervous system in an unconscious, automatic response to stressful events" (Stenglin & Foureur, 2013, p. 820).

Birth as a Part of the Continuum of Sexuality

"Our society places enormous importance on rational thinking and planning, which suppresses or undermines our natural instinctual intelligence. Sex and birth are two such instances where instinctual behavior is clearly present" (Odent, 2014, p. 111). Odent and others maintain that childbirth is part of the continuum of our sexuality and as

such is governed by many of the same principles. For instance, intimacy, safety, privacy, and trust are major ingredients in the achievement of orgasm. Odent says it is possible those same factors may play roles in how easy—or difficult—the childbirth experience is for a woman. Odent says the same hormone-driven reflexes present in sperm ejection and milk ejection are parts of an almost-never-experienced fetus ejection reflex. Odent maintains that the primitive brain governs those reflexes and that safety, privacy, and trust are vital to their engagement. If giving birth and experiencing sex share the same hormones, it is logical that oxytocin promotes labor contractions and is also the hormone responsible for orgasm. Prolactin and endorphins are responsible for sexual pleasure—and pleasurable feelings during birth. It is striking that the release of such mood-enhancing hormones becomes inhibited by certain emotional and physical settings (Sears & Sears, 1994, p. 149). Many physicians and midwives have noticed the similarities between orgasm and the physiology of birth (Jones, 1996).

Sympathetic and Parasympathetic Responses

When feeling stress, the amygdalae initiate the fight, flight, or freeze response through a surge of catecholamine. Adrenaline—a catecholamine—is especially effective in halting the progress of labor by disrupting the flow of oxytocin. Many women in labor experience that effect upon arrival at the hospital, when even *full-on* labor slows or even halts. Adrenaline is a vasoconstrictor that diverts blood away from the abdomen and toward the extremities in order to mobilize a fight-or-flight response (Stable and Rankin, 2005). The result is that less blood available for placental perfusion and fetal oxygenation creates greater likelihood of fetal distress. Notably, failure to progress labor and fetal distress are the two most common reasons for interventions in childbirth.

Dick-Reed (1944/1985) noted a sympathetic-parasympathetic component to birth, finding that the parasympathetic nervous system was responsible for the uterine contractions of labor and that the sympathetic nervous system was responsible for the inhibition of labor. Dick-Reed researched the innervation of the uterine muscles, finding that the muscles are paired—same as they are in other parts of the body. Circular uterine muscles are innervated by the sympathetic nervous system and inhibit expulsion. Longitudinal uterine muscles are innervated by the parasympathetic nervous system and are responsible for expulsion. Those observations were major insights into the value of hypnosis during labor and delivery. HypnoBirthing employs deep breathing patterns that accentuate the exhale, which serves to relax the individual but also

activate the parasympathetic response, which, according to Dick-Reed influences normal, healthy uterine contractions and labor (Jones, 1996, p. 23).

Hypnosis

It was hypothesized that women who use Marie Mongan's HypnoBirthing method during labor and delivery may acquire both greater trust in their bodies' ability to give birth and the know-how to remain in a calm and centered state so as to override external stimuli. Jenkins and Pritchard conducted a study in 1993 that found that primigravid women in the hypnosis experimental group experienced significantly shorter stage 1 and stage 2 labors than did those in the control group. The authors' study also showed that for primigravid and parous women, analgesic use was significantly lower (Jenkins & Pritchard, 1993). A more recent study, in 2007, found that women using self-hypnosis received significantly fewer doses of analgesics and sedatives, underwent fewer epidurals, and had newborns who achieved significantly better 1-minute Apgar scores (VandeVusse, Ireland, Berner, Fuller, & Adams, 2007).

Methodology

This study was designed to gain a deeper understanding of women's beliefs by exploring trust-based versus fear-based beliefs about birth. Data were collected by means of a qualitative, cross-sectional survey of women's beliefs, fears, birth experiences, and birth outcomes.

Participants

The survey was open to all nulliparous, primiparous, and multiparous women older than 18 years of age regardless of childbearing status; females younger than 18 years of age were not eligible to participate. A subset of primiparous, or multiparous women who had participated in home birth, water birth, or HypnoBirth experiences were contacted to participate in the study. The participants were students, alumni, staff, and faculty from the Georgian Court University community, as well as women from the HypnoBirthing, home-birthing, and water-birthing communities.

Instrument

Because of a lack of preexisting reliable and valid survey tools for use in addressing the research issue, the researcher created an online survey

containing 43 questions, all of them related to the areas of women’s beliefs about giving birth, fear of birth, birth experience, and birth outcome.

Results

The researcher’s birth wisdom survey was sent to the staff, faculty, students, and alumni of Georgian Court University and was posted on two Facebook communities—HypnoBirthing and water-birthing/home-birthing pages—from March 4 to March 25, 2016. Table 1.1 shows the categories of the total of 375 women who participated in the survey. The survey consisted of two possible pathways of responses; one for nulliparous women and one for primiparous and multiparous women. Nulliparous women numbered 131. Primiparous and multiparous women numbered 244.

Have you ever given birth?	Number of Participants	Percent of Participants
No	131	35%
Yes, in the last 1-48 months	65	17%
Yes, in the last 5-9 years	77	20%
Yes, more than 10 years ago	102	27%
Total number participants	375	100%

Results Summary

The survey proved helpful in learning more about women’s trust-based and fear-based beliefs about birth, women’s preferences in standards of care, and the common experiences women share regarding labor and delivery. Six indicators were explored: origins of beliefs about birth, beliefs about birth, preferences in standards of care, fear of birth (process, obstetric procedures, death, or injury), birth outcome, and birth experience. The researcher noted that significant numbers of women held opposing views about birth and that the presence of fear may be an important variable in birth experiences.

Discussion

Gaskin calls birth the Mount Everest of bodily functions because no other bodily function demands so much of the body (Gaskin, 2003).

Therefore, it is logical that women may think about an impending birth event with some degrees of awe, concern, or fear.

This study asked, does fear associate with birth experience or birth outcome?" If the natural hormonal cascade of childbirth is intricately tied to cervical dilation, uterine contractions, the fetus ejection reflex, reduced stress, analgesic pain relief, and altered states of consciousness—and adrenaline is inhibitory to oxytocin—then biologically, adrenaline would interrupt the hormones of birth when stress, anxiety or fear is present (Buckley, 2015).

Beliefs about Birth



(Kornelsen 2005; Davis, 2010; Begley, 2014; Buckley, 2015)

Identifying Beliefs about Childbirth

Nine of the first 12 questions of the study would determine general beliefs women hold about birth. Of those nine questions, which looked directly at fear versus trust, six skewed strongly toward fear-based beliefs, and three skewed strongly toward trust-based beliefs. The discovery that more responses skewed toward fear is interesting, but it is more intriguing that some beliefs are directly in conflict with others. One of the most striking of the conflicting statements was that 87% (*n* = 326) of participants said birth is normal, natural, and designed to work, yet 63% (*n* = 235) said a woman’s body is designed to birth painfully, and 63% (*n* = 237) said a skilled medical provider is best at determining progress. Finally 47% (*n* = 178) said a hospital is the best venue for birth to take

place. The study also found that 66% had heard negative birth stories that included details about pain and medical procedures while pregnant, thereby adding to the repository of social proof that birth is painful, risky, or difficult.

It is the researcher's supposition that a combination of fear and social proof is at the root of the disparity. The National Birth Center Study II found that 98% of births are hospital based, serving as social proof in support of the hospital as the best place to give birth (Dekker, 2013). Society apparently trusts technology over intuition. For instance, we can buy a bed that tells us whether we've had a good night's sleep rather than deduce the conclusion for ourselves. The feature indicts disassociation from our bodies and our intuitive intelligence. And because, according to the medical model, birth is inherently risky unless proven otherwise (Arms, 1994), wouldn't women protectively want what is best for themselves and their unborn children when hospital birth is presumed the safest choice? What may not be generally known in our modern-childbirth dialogue is the statistic that out of the world's developed countries, the United States ranks 34th in maternal outcomes (World Health Organization, 2010), which sounds a clarion call for improved outcomes and increased awareness regarding the routine procedures of hospital birthing rooms.

Ample evidence shows that pregnant women have better birth outcomes and more-satisfying experiences within a context of trust (Hotelling, 2009; Kirkham, 2011). The most important aspect of trust must be the woman's trust in herself and her body's ability to give birth. That level of trust may be extremely difficult to attain in a society in which images and messages about birth are predominantly about suffering pregnant women who get rushed to medical facilities. "It is fundamental that women need to feel safe from external threat. Women differ greatly in this regard, as do contexts. Some women feel reassured by some level of monitoring in labor, which others find offensively intrusive. For some women monitoring can create a degree of performance anxiety" (Kirkham, 2011, p. 3). Therefore, the contextual environment is indeed relevant to support of a woman's ability to relax and trust the birth process. Although in theory any contextual environment is as good as the woman's trust in it, this research attempted to document the potential adverse effects that anxiety-producing events may have on birth experiences and birth outcome.

Belief that the Body is Naturally Designed to Work. Three questions overwhelmingly generated a high percentage of positive trust-based responses. Eighty-six percent of women participating in the study said birth is normal, natural, and designed to work; 71% said birth should not

be interfered with unless the woman or the fetus was at risk; and 66% said they disagreed that labor pain should be avoided if possible, thereby indicating fundamental, trust-based beliefs about birth and the body's capacity to give birth naturally.

Trust in the Body's Ability to give Birth. If a woman has fear of pain, might she also lack trust in what her body is designed to do? Despite the response showing only 13% of women believe birth is a medical event with inherent risks, a contradictory 65% put their trust in the skills of a physician, the skills of a midwife, or the precision of technology, leaving only 35% stating their belief that the birthing woman's innate knowing is the most accurate gauge of the progression of labor. Those findings directly contradict responses from women who regard birth as natural—and best if not interfered with.

Beliefs about Pain. The scope of this research does not adequately provide answers to what women may be thinking or feeling with regard to pain, but based on the fear-of-birth section of the study, the research does show clearly that with its high average fear-of-birth value of 4.51, fear of pain is prevalent.

Six questions generated a high percentage of fear-based responses. Sixty-five percent of women said they believe a woman's body is designed to give birth painfully; 47% said contractions represent a necessary but painful part of labor. That data skews toward fear-based beliefs about birth regarding expectations about pain during childbirth. Fifty-two percent of women said drugs, if needed, would enhance the birth experience, thereby indicating a level of trust in drugs rather than in the body's capacity to download natural pain relief hormonally. Other research, such as the Listening to Mothers Study I (2002), has shown that women were more likely to use drug-free techniques if they attended birthing classes in their current pregnancies (Lothian, 2014, p. 4). If women trust the health-care system to provide the highest standards of maternity care, then the medical model of birth becomes the norm—and 98.8% of women use the system.

It is the researcher's supposition that if a woman understands that the pain of labor, coupled with high levels of oxytocin, initiates the release of beta-endorphins—thereby inducing an altered state as well as pain relief—then the need for medical interventions is greatly diminished for most healthy women (Goer, 1995).

Birth Education Classes

Birth education classes at a minimum provide some idea of what to expect. Forty-three percent of women said they did not take a birthing

class, took a hospital tour, or did “other.” Thirty-seven percent of women surveyed took Lamaze classes; 21% took either HypnoBirthing or Bradley Method birth education classes; and 1% took an ecstatic, or orgasmic, birth education class.

The importance of an understanding of the hormonal birth cascade prenatally seems relevant. Trust, through awareness of birth physiology, may make it possible for birthing women to remain calm. Trust coupled with self-hypnosis techniques may provide an added maternal barrier against invasive procedures, interruptions, and the constant surveillance that alerts the sympathetic nervous system to stay in fight or flight mode. Mammalian birth proceeds best if undisturbed and unobserved (Buckley, 2004; Buckley, 2015; Hotelling, 2009). While in the altered state of so-called labor land, conversations and interventions can interfere with the oxytocin response. Therefore, birth classes may serve a dual function: by providing information about what to expect, what is normal, and what the birthing woman’s choices are and by providing techniques that lead to relaxation and a meditative state of awareness that are prerequisites for oxytocin, endorphins, and prolactin letdown.

It is apparent from the data collected for this study that birth education seems to correlate with more women’s feelings of calm. Seventy-four percent of HypnoBirthing respondents and 61.2% of water birth respondents said they experienced calm states. Those figures are in stark contrast to the reported calm states of 26.5% of women who took no class or took a hospital tour and of 21.1% of women who took Lamaze classes. Women who said they had practiced Lamaze had an incidence rate of 55.6% of feelings of alertness, and 23.3% had feelings of confusion, which was nearly identical to the results among women who said they had had no birth preparation classes. It is the researcher’s supposition that first, Lamaze classes focus on natural birthing techniques specifically with regard to pain management, whereas HypnoBirthing prepares women to birth naturally—via self-hypnosis—and emphasizes the birth process as natural, normal, and designed to work. Second, Lamaze is usually taught in a medical setting by educators who associate with medical interventionist views. Last, Lamaze breathing is counted in rounds of five breaths—done in unison with the birth partner, which maintains a *constant, external* focus. The HypnoBirthing technique maintains an *hypnotic, internal* focus intended to block outside stimuli from the woman’s awareness. It may be that the difference between internal and external focus is in part the reason that birth outcomes for Lamaze women scored as poorly as outcomes among women who had had no exposure to birthing classes.

This study’s findings correlate with those of other surveys, such as the Listening to Mothers I, II, and III studies, which showed that women in

labor were more likely to use drug-free techniques if they attended a birthing class in their current pregnancy (Lothian, 2014, p. 4).

Focus

It is the researcher's supposition that focus may be a birthing woman's locus of control. Survey question 37 inquired about focus. The question asked participants their most-prominent source of information with regard to what they should do during labor. The results showed that 45% of women focused primarily on what their bodies were telling them to do—a testimony to the presence of bodily wisdom. Eleven percent of women said they were not aware of their focus, which indicates a sense of losing track of time and space. Nurses reported that 29% of the women were listening to what the medical professional or the clock was telling them to do. The remaining 12% of women were listening to what the midwife or doula or birth partner was telling them to do.

Survey question 38 looked to further document the experience of childbirth by asking participants what was happening around them and to them in the birthing room. The total of meditative or noninvasive factors reported in the birth room equaled 618 experiences. The total number of medical or invasive procedures reported in the birth room totaled 605. Eight women reported "other." The most-frequently-selected birthing room factors were (in descending order) breath work ($n = 127$); intimate, quiet setting ($n = 95$); spontaneous rupture of membranes ($n = 84$); dimmed lighting ($n = 80$); music or meditation CD ($n = 65$); body massage ($n = 44$); shower ($n = 37$); water birth immersion ($n = 37$); self-hypnosis ($n = 35$); and singing or mantras ($n = 14$). The most-frequently-selected medical or invasive procedures were (in descending order) fetal monitor ($n = 132$), IV drip ($n = 116$), epidural ($n = 74$), active setting with lots of activity ($n = 67$), manual rupture of membranes ($n = 63$), augmentation with Pitocin ($n = 61$), episiotomy ($n = 54$), cervical ripening ($n = 19$), and forceps or vacuum extraction ($n = 19$).

Survey question 39 was of primary importance to the study's core hypothesis in that it mapped states of awareness to hormonal signatures. It hypothesized states of relaxation mapped to oxytocin versus states of readiness mapped to adrenaline. Forty-nine percent of women in the birth wisdom study said they felt mostly alert during birth, 35% said they felt mostly calm, and 16% said they felt mostly confused.

Polyvagal theory proposes that oxytocin may be part of an intricate response related to the environment and feelings of safety and that it promotes resistance to stress. According to polyvagal theory those responses are phylogenetic, or part of the evolutionary development of the mammalian nervous system (Porges, 2001). Calm, meditative states indicate the presence of oxytocin and are essential to spontaneous birth,

whereas alert states indicate the presence of adrenaline, which is antagonistic to spontaneous birth. The study presumes that states of confusion result from a nervous system override known as freeze mode (Levine, 1997).

Surveillance and Contextual Environment

Technological advances in medicine continuously monitor a laboring woman, but despite such highly technological procedures, birth outcomes have not improved (WHO, 2010). Contextual environments that include surveillance, medical interventions, and high-tech procedures have the potential to incite anxiety, worry, concern, fear, and uncertainty among childbearing women. The work of Porges, Levine, and Gaskin shows that as little as becoming startled or alarmed is sufficient to activate a primitive survival response. The data from that study shows that women who experienced a calm state were more likely to have vaginal, natural births. Women who felt alert had more interventions and a higher chance of having a cesarean section. Women who felt confused had the highest self-reported incidence of emergency cesarean section, elective cesarean section, and interventions. The results of the study also suggest that the ability to maintain a calm, meditative state during labor may be effective in improvement of birth experiences and outcomes.

Preferences in Standards of Care

The study results rendered a lower-than-expected response rate for hospital births (47%) and higher-than-expected response rates for home birth (28%) and for birth centers that were not parts of hospitals (24%). The American Association of Birth Centers has documented that as many as 98% of births occur in hospitals, and of those births, 86% were attended by physicians. Notably, 85% of those births were considered low risk, which raises the question of medical need versus standard practice (American Association of Birth Centers, 2013). The variance in hospital birth rates reported in this study may be because of the intentional recruitment of home birth, HypnoBirth, and birth center populations. It may also be due in part to the likelihood of participants' representing an educated audience of university-affiliated women.

Fear of Birth and Maternal Outcomes

At full-term, a pregnant woman has 300 times more oxytocin receptors than usual, indicating that oxytocin is part of the biological signature of birth (Hotelling, 2009). When enough oxytocin gets released, beta-

endorphins—the body’s natural analgesic—begin to be released (Lothian, 2009). Therefore, oxytocin, beta-endorphins, and prolactin would seem to be biologically predetermined factors of the natural birth process that are designed to support procreation, whereas adrenaline, which exerts an inhibitory effect on oxytocin, supports the survival mechanism of fight or flight (Buckley, 2015).

This study uses the term *fear* as a single metric, but there are many lesser emotions that can also elicit an adrenal response. It has been speculated that birth is one of the few bodily processes that requires such a high degree of relaxation for a natural progression (Gaskin, 2003). Therefore, it is important that it may take as little as feeling startled, embarrassed, vulnerable, or guarded to interrupt the oxytocin cascade. Research and historical accounts have shown that the simple presence of one person in the birthing room who is mal-attuned to the pregnant woman’s feelings is enough to cause a lack of ease and to then result in a slowing down or even an arrest of labor (Gaskin, 2003). That result indicates that fear is a major variable.

Because an adrenal response can slow or arrest labor and can be triggered by something as simple as the woman’s excitement upon arrival at the maternity unit, the researcher determined that a value of 2 or greater would be considered enough to trigger the sympathetic nervous system response. The fear matrix values were grouped as follows: a value of 1 indicated no fear; a value of 2, 3, or 4 indicated low fear; a value of 5, 6, or 7 indicated high fear; and a value of 8, 9, or 10 indicated extreme fear.

There were 14 fear-of-birth matrix questions, each of them covering a different aspect of maternity care that could potentially cause concern/worry/anxiety or alertness/fear/fright, all of which are part of the fight-or-flight adrenal response. Because birth is on the continuum of human sexuality, the same state of alertness or guardedness that would inhibit an orgasm during lovemaking could potentially inhibit the progression of birth, including cervical dilation and the fetus ejection reflex (Buckley, 2015; Odent, 2014). It is the supposition of the study that constant surveillance, medical procedures, interruptions, bright lights, or vaginal exams have the potential to interfere with the hormonal birth cascade. Therefore, FOB responses serve as means of calibrating the effect of fear on labor and delivery outcomes.

The fear-of-birth questions fell into four main categories: fear of the act of giving birth (lack of progress or birth process itself), fear of obstetric practices (induction/augmentation, episiotomy, epidural, or narcotics), and fear of feeling vulnerable or embarrassed; feeling a loss of control; and fear of birth outcomes (death, injury, or something that could go wrong).

Fear of Birth Progress and Process. Five of the 14 fear-of-birth questions measured fears surrounding the process of giving birth. The fear of birth progress, question 21, had the highest fear value of the study: 4.85. Fear of pain had a FOB value of 4.51. Fear of the birth process *prior to* giving birth had an average FOB value of 4.63, contrasted with fear of birth *while* giving birth had an average FOB value of 4.36. These questions rendered the highest fear values in this study.

Fear of Obstetric Practices. Questions pertaining to obstetric practices included fear of needing a cesarean section, fear of being induced with Pitocin or an augmentation drug, and fear of needing an epidural.

The average FOB value for the question, *Prior to giving birth, how fearful were you of needing a Cesarean section*, was 3.96, with 36% of women selecting a fear rating of 5 or greater. The average FOB value for the question *Prior to giving birth, how fearful were you of needing Pitocin or needing to be induced*, was 3.34, with 32% of women selecting a fear rating of 5 or greater. The last question asked, *Prior to giving birth, how fearful were you of having an epidural or spinal*, and had a value of 3.79, with 36% of women selecting a fear rating of 5 or greater. All three questions pertaining to fear of obstetric practices were notably lower, indicating that women tend to trust the obstetric model of birth.

Fear of Vulnerability or of Loss of Control. A subgrouping of FOB questions inquired about fears surrounding vulnerability. Survey question 29 asked, *How fearful were you of being vulnerable* and had a value of 3.86, with 36% of women selecting a fear rating of 5 or greater and 25% of women selecting a rating of 7 or greater, which seems to indicate that feeling vulnerable is a state worthy of attention on the part of any caregiver involved with birth.

Question 30 asked, *How fearful were you of feeling embarrassed*. The average FOB value for that question was 3.22, with 23% of women selecting a fear rating of 5 or greater. Seven percent of respondents selected a value of 10, indicating extreme fear of feeling embarrassed, which could indicate that some women may not feel comfortable with their body or their sexuality, which could inhibit the cascade of birth hormones.

Question 31 asked, *How fearful were you of bodily processes outside your control*. The average FOB value for question 31 was 3.47, with 29% of women selecting a fear rating of 5 or greater.

These data suggest that women may make decisions based on a desire to control the birth process, which indicates a lack of trust.

Fear of Birth Outcome. Fears surrounding childbirth have historically included fear of death, injury, or complications. FOB question 33 asked,

How fearful were you of injury or death to yourself or the baby. The average FOB value was 4.48, with 43% of women selecting a value of 5 or greater. Survey question 26, *How fearful were you of complications,* received an average FOB value of 4.31, with 42% of women choosing a fear rating of 5 or greater. Survey question 32 asked, *Prior to giving birth, how fearful were you of birth changing your body.* The average FOB value for that question was 3.14—the lowest value of all of the fear-of-birth questions. It is interesting that fears of death, injury, or complications do not seem to be offset by the promises and technologies of the obstetric model.

Conclusions about Fear. The answers to questions regarding nuances between types of fear present solid evidence for this research study to suspect that fear is often present—and palpable—among women giving birth. It is naturally characteristic of the human psyche to fear the unknown (Bak, 2004). If fear of birth is a common emotional factor that women experience, then birth education classes and medical practices should adequately address it long before women arrive at birthing rooms. So too, birth wisdom *conversations*—as opposed to *war stories*—told by women to one another could serve to reduce fear of birth both prenatally and during birth.

Regardless of the source of a woman's fear, fear is counterproductive to a spontaneous birth. Women must feel safe, capable, not judged, and able to let go in order to directly oppose fear–tension–pain physiology. Interestingly, those same characteristics are conducive to orgasm, which supports the notion that birth is a continuation of the sexual continuum and requires the same core hormonal physiology for optimal outcomes (Odent, 2014).

The World Health Organization ranks the United States behind 33 other developed countries on maternal and infant outcomes, and other research shows that 1.7 to 6% of women report symptoms of posttraumatic stress disorder from four to six weeks postpartum (Soet, Brack, & Dilorio, 2004; White, Matthey, Boyd, & Barnett, 2006). Those studies found that the subjective experiences of unexpected medical procedures, pain beyond the woman's ability to cope, fear of injury or death, and uncaring providers have lasting physical and emotional effects after birth (Beck, 2004; Sawyer & Ayers, 2009).

This study provides additional insights into factors that could be affecting women's experiences during birth. It is this researcher's hope that this study raises awareness that fear during childbirth may associate with negative birth outcomes and experiences.

Birth Outcomes

The survey results demonstrate that current national averages for cesarean section births do not need to be the norm. In the birth wisdom study, a higher-than-expected number of women opted for water births, HypnoBirths, or home births, and it would seem—as was originally speculated—that those women had births that were less medicalized and may have been less fear-centric.

The 2014 national average for cesarean sections was 32% (National Center for Health Statistics, 2015). The birth wisdom's cesarean section rate was 24% (inclusive of both emergency cesarean-section, 20%, and elective cesarean section, 4.5%). However, as stated, the birth wisdom participants are doubtfully a true cross-section of US women. That difference could account for a relatively high percentage (42%) who reported a natural vaginal birth with no interventions of any kind. The remainder of the vaginal births included interventions and accounted for 33.5% of the study population.

Farm Midwifery Center statistics from 1970 to 2010 clearly show the potential for a lower cesarean section rate. Out of 2,844 births at the center, only 50 births (1.7%) necessitated cesarean section, and only 46 births (1.6%) involved postpartum hemorrhage. An additional Farm Midwifery Center statistic relevant to this discussion is that 1,817 women (63.8%) of the women in the care of the center did not have episiotomies (Gaskin, 2003).

Birth Experience

An overall summary of the data for birth experiences, as reported in survey question 35, skewed toward positive experiences of feeling powerful, supported, calm, and able to cope with the pain—with a total of 771 positive multiple-choice answers, or 72%. Those responses included feeling supported, feeling able to trust their body, feeling able to cope with the pain, feeling able to cope with what was happening, feeling calm and safe, feeling powerful, and not feeling rushed. The total negative multiple-choice selections totaled 306, or 28% of responses, and included responses such as pain being unbearable, feeling tense, feeling nervous, feeling disappointed, and feeling vulnerable. More research would offer valuable insights into how differences in positive or negative experiences associate with birth outcomes.

Survey question 36 asked women to rate their overall birth experience. Forty-eight percent reported having an overall good or great experience. Thirty-eight percent reported having a neutral experience. Only 13% reported having an overall bad or horrific experience, with 2% ($n = 5$) reporting a horrific birth experience. It should be noted that four of the five women who reported having a horrific experience tragically lost

their babies, and therefore, conclusions about fear's influence on the actual birthing experience cannot realistically be drawn for that subset.

Overall, these results skew more positively than expected based on the high-fear matrix values reported in this study. It is the researcher's speculation that that result may be tied to the presence of oxytocin at birth. If our highest highs in life depend on oxytocin levels, it stands to reason that an event predicated on the presence of oxytocin would be reported as being amazing—even if not perfect.

Study Limitations

This study had several study limitations. The study did not differentiate between fear, anxiety, concern, or worry, nor did it define states of calm, alertness, or confusion. In addition, more demographic information such as current age, age at parturition, level of education, income level, or access to prenatal care would provide important contextual information. It was noted that attendance at a birth education class does not imply knowledge or practice of a technique. Last, many psychosocial factors not measured as part of the study could predispose women toward fear of birth. Such factors include anxiety, depression, lack of social support, or having been a victim of sexual abuse or violence.

Implications and Recommendations

Future studies may benefit from collecting more-detailed demographic information, information on length of time in labor, and knowledge of childbirth education techniques applied during labor. A major factor that was not mapped to calm, alert, or confused states was the type of support staff present during labor. Future research and studies might want to explore such questions as, "Did the women who maintained calm states also have a midwife or doula present?" "Did the presence of strangers (staff and personnel) contribute to a heightened sense of calm, alertness, or confusion?" And, "Do women feel birth education is relevant or necessary?" Although such questions are outside the scope of this study, the researcher hopes further inquiry will continue.

Reflexivity

The choices the researcher made in constructing this study—despite vigilance to eliminate bias—are to a certain extent bound by personal and academic biographies. That bias was offset by mentorship from cohorts and the program chair to achieve the highest possible degree of objectivity.

Conclusion

The results of this study yielded evidence for birth methods and practices that support and encourage contextual environments in which pregnant women become able to maintain calm, meditative states through self-hypnosis. Women who self-reported feeling no fear or low fear were more likely to have vaginal births. Women who self-reported high fear or extreme fear were more likely to have emergency or elective cesarean sections. And women who reported low fear and high fear were more likely to self-report multiple interventions during birth. The women in the study who reported feeling mostly calm during labor had an increased likelihood of reporting birth experiences ranging from hard but easier than expected to ecstatic. Those who reported feeling mostly confused during labor had an increased likelihood of reporting birth experiences ranging from hard but harder than expected to horrific. However, more research is needed before generalizing to a larger population.

A major discovery this study made was that few women learn about birth from their mothers and that many learn about birth from an impersonal media source. In addition, the discovery of the role that personal narratives may contribute to beliefs about birth—both prenatally and postpartum—was an important finding. Further research is needed to determine the role and the importance of personal narratives as a multidimensional aspect of birth and as a potential guideline for a more holistic preparation for childbirth. Last, it is suggested that future research into the emotional and neurohormonal welfares of birthing women be viewed as main contributors to optimal maternal outcomes.

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