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Using video-mediated communication to support pregnant couples separated during satogaeri bunben in Japan

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USING VIDEO-MEDIATED COMMUNICATION TO SUPPORT PREGNANT COUPLES SEPARATED DURING SATOGAERI BUNBEN IN JAPAN

by

Ryoko Furukawa

An Abstract

Of a thesis submitted in partial fulfillment of
the requirements for the Doctor of Philosophy degree in Nursing in
the Graduate College of
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ABSTRACT

The purpose of this study was to explore the use of video-mediated communication (VMC) to support couples separated during classic *Satogaeri Bunben*. *Satogaeri Bunben* refers to the Japanese tradition when a pregnant woman leaves her own home to return to her parents' home during the prenatal period, while her husband often stays behind in the couple's house. When a couple geographically live apart during *Satogaeri Bunben*, it may decrease father-infant attachment and the negatively impact the marital relationship. VMC was selected as the supportive intervention for couples choosing *Satogaeri Bunben* in this study because: 1) it provides additional visual cues, which are particularly important because Japanese communication is highly contextual and often more nonverbal than verbal, 2) the addition of visual cues allow husbands the opportunity to see their infant, because they cannot talk, and 3) Japan has one of the best broadband systems worldwide. The specific aims were to explore VMC during *Satogaeri Bunben* in relation to father-infant attachment and the marital relationship and to describe VMC experiences of Japanese couples separated during *Satogaeri Bunben*.

A comparative case study design with a mixed methods approach to data collection and analysis was used. The specific mixed methods approach used was a [QUAL + quan] triangulation-convergence model. For the qualitative data, the primary source of data was the *Participant Diary*. The primary sources of quantitative data included three instruments: 1) *Taiji Kanjyo Hyotei Syakudo* (TKHS), 2) *Intimate Bond Measure* (IBM), and 3) *Primary Communication Inventory* (PCI). The PCI was translated into Japanese for this study using a committee approach.

Four couples were participated in this study. Data collection for each couple took approximately two to three month to complete. Qualitative data analysis divided the couples in two groups: 1) the engaged group, who were very attentive each other's feelings and 2) the detached group, who were inattentive. The PCI scores further supported the existence of two groups. However, the TKHS and IBM scores were mixed.

The limitations included a small sample size and lack of variability in sample characteristics, and short time frame. This study was also the first time to use a newly translated PCI in Japanese.

This study successfully explored the use of VMC to support couples choosing *Satogaeri Bunben* focusing on decreasing the impact of the separation of the couple and later the separation of the husband from his new infant. The qualitative and quantitative findings provided a first glimpse into four couples' feelings and VMC experiences during *Satogaeri Bunben*, especially in relation to father-infant attachment and the marital relationship. The use of VMC provided ongoing virtual, rather than physical co-presence, which may help couple's communication and relationship during their separation, as they transitioned to parenthood.

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CERTIFICATE OF APPROVAL

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PH.D. THESIS

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This is to certify that the Ph. D. thesis of

Ryoko Furukawa

has been approved by the Examining Committee
for the thesis requirement for the Doctor of
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Juan Pablo Hourcade

To my family

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CHAPTER I

INTRODUCTION

The arrival of a new infant in a family signals the beginning of parenthood. Parenthood is not only full of many pleasures and rewards but can also come with many stresses and strains on both the new parents as individuals and as a couple. Therefore, the marital relationship is an important variable to consider when exploring the transition to parenthood or parent-infant attachment (Barclay & Lupton, 1999; Cowan & Cowan, 1992; Cox, Paley, Burchinal, & Payne, 1999; Deave & Johnson, 2008; Erel & Burman, 1995; Premberg, Hellstrom, & Berg, 2008). However, when a couple is separated from each other before, during, and/or after the arrival of a new infant, as is the case with deployed military personnel, it may interfere with the transition to parenthood and create additional stresses for the couple. A new parent who is not able to be with her/his new infant may also have difficulty with attachment. This is important because decreased parent-infant attachment can interfere with the infant's growth and development, the parent's self-concept, and the couple's satisfaction with the marital relationship (Cox, Paley, Burchinal, & Payne, 1999; Erel & Burman, 1995; Knoester, Petts, & Eggebeen, 2007; Owen & Cox, 1997).

In Japan there is a long-standing Japanese tradition for pregnant couples called *Satogaeri Bunben.* This tradition is as popular today as it was more than 300 years ago with more than 100,000 women (~15% of perinatal women) choosing to honor it each year (Japanese Ministry of Health, Labour and Welfare [JMHLW], 2011; Kobayashi, 2008; Nagayama, 2000; Ohbayashi, Kajikawa, Yanagawa, Shirai, & Naitoh, 2001). *Satogaeri* means that a pregnant woman returns to her parents' home and *Bunben* means

childbirth (Shinagawa, 1983). *Satogaeri Bunben* refers to the tradition that a married woman leaves her own home to return to her parents' home during the perinatal period to deliver an infant at a hospital which is near her parents' home, while her husband often stays in the couple's house. The purpose of *Satogaeri Bunben* is to support and care for the mother during the perinatal period. Yet, the new father often remains physically separated both from his wife and his new infant. Depending on the distance between the maternal parent's home and/or the father's employment responsibilities, some fathers can join their wives at their in-law's home during *Satogaeri Bunben*. However, when a father is unable to join his wife, the physical separation and lack of ongoing contact with his wife and later with his new infant during this important period of transition may decrease father-infant attachment and the negatively impact the marital relationship. Women who do not choose *Satogaeri Bunben* most likely have their parents' support through frequent visits and/or they have more support from their husbands (Kimura et al, 2003; Matsunaga, 2008). Support can also come from the husbands' parents, who may be living with them.

Japan is a country rich in traditions that honor the family and children. Japanese children are considered the central interest for the family and a strong mother-child relationship is emphasized (Hara & Minagawa, 1996; Ochiai, 1997; Rothbaum, Rosen, Ujiie, & Uchida, 2002). Yet, there is currently deepening social concern associated with increasing reports of domestic violence (DV) and child abuse/neglect within the Japanese families (Japan Gender Equality Bureau Cabinet Office [JGEBCO], 2010; JMHLW, 2010c) and the Japanese government established the Act on the Prevention of Spousal Violence and the Protection of Victims in 2001 and the Law for Prevention of Child Abuse in 2000. Because the occurance of DV and child abuse/neglect is strongly

correlated, these trends call into question not only the need to explore their etiology, but also to develop novel approaches to their prevention (Ricci, Giantris, Merriam, Hodge, & Doyle, 2003; Ross, 1996; Rumm, Cummings, Krauss, Bell, & Rivara, 2000).

The time of birth has often been identified as a magic moment for intervention because new parents are so open to learning and doing what is for their new infants. However, interventions have primarily focused on mothers, with less attention on fathers and the marital relationship (Cowan & Cowan, 2000). The rationale for focusing on both the mother and the father is that the couple will have a better chance to sustain their marital relationship and the father will also have a better chance to develop an early bond with his new infant. Further, increasing father-infant attachment early on appears to decrease the later incidence of child abuse/neglect (Ricci et al., 2003) and maintaining couple communication supports the marital relationship and appears to decreases the incidence of intimate partner violence (Cowan & Cowan, 1992; Deave & Johnson, 2008; Stafford, 2005). The long-term goal in this study is to develop an intervention to support both the mother and the father in Japanese couples who choose to honor the *Satogaeri Bunben* tradition, so they are able to to maintain a sense of closeness to each other and their new infant during this temporary but timely separation.

Significance

Fathers are often not the primary focus when a new infant is born. However, a fathers' involvement, which is influenced by the accessibility to and engagement in their children's lives, is increasingly being recognized as important for the marriage and for the child's social, behavioral, and cognitive development (Goodman, 2005; Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008). A father's presence during childbirth and

during early childrearing is considered one of the most important factors that influence and support the development of a strong father-infant bond or attachment (Bakermans-Kranenburg, Van IJzendoorn, Bokhorst, & Schuengel, 2004). Because the separation of a father from his infant can occur in families honoring *Satogaeri Bunben*, the separation and lack of contact may be a risk factor for a decreased father-infant attachment and later for child abuse/neglect (Brown, Cohen, Johnson, & Salzinger, 1998; Guterman, Lee, Lee, Waldfogel, & Rathouz, 2009).

Pregnancy and the postpartum period have also been identified as a risk factor for domestic violence (DV) between couples (Condon, Boyce, & Corkindale, 2004). This is important because the presence of intimate partner violence in a family is associated with the co-existence of child abuse in the family (Ricci et al., 2003; Ross, 1996; Rumm et al., 2000). Efforts to support a perinatal couple's marriage not only have the potential to decrease intimate partner violence, but also have the potential to benefit the infant by engaging fathers in their children's lives and decreasing child abuse and neglect (Figure 1).

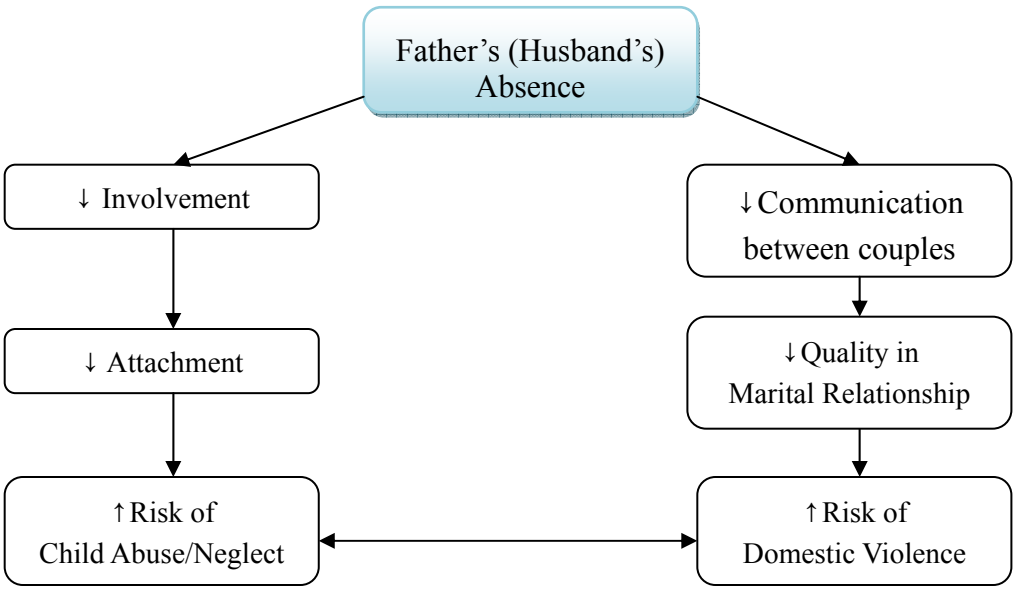


Figure 1. Potential Negative Impact of Father/Husband Absence

While *Satogaeri Bunben* is a uniquely Japanese tradition, other cultures and family situations present with similar physical separation challenges. For example, many U.S. military families are separated during the perinatal period due to deployment overseas (Schachman, 2010). Insights gained from an exploration of perinatal couples separated because of *Satogaeri Bunben* may serve as a guide for other types of similar cultural and/or familiar separations during this important developmental and transitional period for new parents.

Purpose

The purpose of this study was to explore the use of video-mediated communication (VMC) to support Japanese couples separated during *Satogaeri Bunben.* VMC is selected because it provides both visual images and auditory cues that can create a sense of being together, or *virtual co-presence,* in a way that auditory cues alone cannot. This virtual co-presence is created because you can see the individual(s) you are

communicating with in context. The addition of visual images is especially important for this study because many aspects of Japanese communication rely on nonverbal, rather than verbal cues.

Specific Aims

The specific aims of this study are:

1. To explore video-mediated communication (VMC) during *Satogaeri Bunben* in relation to:

   a) Father-infant attachment

   b) The marital relationship

2. To describe the VMC experiences of Japanese couples separated during *Satogaeri Bunben.*

CHAPTER II

LITERATURE REVIEW

Introduction

This chapter presents a selected review of the literature that begins with an overview of the Japanese tradition of *Satogaeri Bunben.* Within the discussion about *Satogaeri Bunben*, Japanese views on parenthood and family will be explored as well as the potential impact of *Satogaeri Bunben* on the development of father-infant attachment and the marital relationship. The chapter continues with a discussion of family communication styles, including communication with distanct family members and the family communication style in Japan. The chapter concludes with an overview of video-mediated communication (VMC) and how this particular technology presents an opportunity for maintaining communication and connection during a physical separation. This section also includes a brief overview of the PI's preliminary study using VMC.

The Japanese Tradition of *Satogaeri Bunben*

There is no formal definition of *Satogaeri Bunben.* However, the definition widely used by researchers and health care providers includes three components: 1) a pregnant woman leaves her house and goes to her parents' house for both prenatal and postpartum support from her parents, 2) a woman changes hospitals depending on the place of *Satogaeri Bunben*, and 3) a woman and her husband live separately during *Satogaeri Bunben* (Shinagawa & Nomura, 1980). Ohga, Sato, and Suwa (2005) identify 'classic' *Satogaeri Bunben* to be when: 1) a pregnant women lives in a different place from the couple's house during pregnancy, 2) the delivery hospital is close to a woman's parents' house, 3) a woman is not discharged to the couple's house, 4) a man

(husband/father) lives apart from a wife/fetus and later the new infant during prenatal and postpartum terms, 5) a woman and her infant stay in her parents' house for at least three weeks, and 6) a father and his infant meet together less than twice or three times a week during *Satogaeri Bunben*. For the purposes of this study, I will use this classic definition because this study will emphasize and focus on the impact of the husband's absence from his wife and infant before and after childbirth.

In ancient Japanese society, marriage was more matrilocal, meaning when woman was married, she remained with her family and her husband remained with his family even though they were married. The wife stayed and waited for her husband visits (Negishi, 1991). Childbirth in those days, although precious, was considered to be a white taboo, meaning it was dangerous and caused the death for many women. Also blood was considered unholy, especially blood in delivery was to be hidden from from men's eyes (Ohbayashi, 1999; Nakae, 2007).

Satogaeri Bunben is regarded to have been established in or before the *Edo* era (1603-1867) although the origin of the tradition of *Satogaeri Bunben* is not clear. During the *Edo* era, feudalism and the patriarchal society became quite rigid. In this era, to have and raise a child was one of the most important duties of a wife. In spite of the Japanese wife's responsibility of childbearing and childrearing, as well as many of the household chores and family work, the wife's status in society was quite low (Ohmura, 1990). After World War II, the emphasis on patriarchy diminished and the nuclear family emerged as the main family style in Japan (Ohmura, 1990). Moreover, families have changed from patriarchalism and authoritarianism to more egalitarianism and the idea of couple-centered marriage (Hisakaze, 1987). Although the family style has changed, the

tradition of *Satogaeri Bunben* is still nationally honored, especially for the first childbirth (Aoki, 1998; Hasegawa, 1973; Shinagawa, 1981). The continued existence of this tradition may be because of issues in contemporary society, including: 1) an increase rate of new mothers of advanced maternal age, 2) an increase of the nuclear family and dual-earner household, 3) a lack of fathers' childrearing financial support and/or a low rate of the paternal leave acquisition, 4) small housing environment preventing couples from hiring someone to help during childbearing and childrearing, 5) a lack of childrearing experience and supporters because of rise of the nuclear family and the low birthrate, 6) weak relations with neighbors especially for a primiparous woman in an urban area, and perhaps most important, and 7) the particularly strong relationship in Japanese culture between a mother and a daughter (Hisakaze, 1987; Kobayashi & Chen, 2008; Nomura, Hiraoka, Yoshida, & Kimura, 1991; Ohbayashi et al., 2001; Ohga, 2005; Suzuki et al., 1996; Tanaka, 2001). The increased emphasis on the nuclear family and the rapid expansion of the transportation network, has also made it possible for couples to move away from their home towns and parents to develop new lives.

According to a recent literature review by Ohga (2009), there are 45 original articles with the words "*Satogaeri Bunben*" or "*Satogaeri Syussan*" in the title. "*Satogaeri Bunben*" and "*Satogaeri Syussan*" are interchangeable terms. Of those articles, 30% just gave commentary, including personal experience about *Satogaeri Bunben*, but were not research studies. There have been very few national investigations of *Satogaeri Bunben* (Nihon Bosei Hogoi Kyoukai, 1983; Tamada, Abe, Motoyama, Sato, & Aoki, 1988). In the most recent study about the rate of *Satogari Bunben*, Ohga et al. (2005) reported that the rate of the classic *Satogaeri Bunben* was 17.2 % and matched the rate of

former national investigations, 15 ± 5 %. Therefore, *Satogaeri Bunben* was estimated to be chosen by over 100,000 women from the 1,071,000 births in Japan during 2010 (JMHLW, 2011). Moreover, Nomura, Hanada, Saito, and Ito (1998) stated that as the use of *Satogaeri Bunben* by Japanese people working or studying abroad increased. In addition, the recent increase in the number of international marriages may also impact the rate of *Satogaeri Bunben*, although it is not known.

According to previous studies, the advantages of *Satogaeri Bunben* are: 1) a woman can physically and mentally get enough rest in her parents' house, 2) a woman can receive adequate psychological support and resolve anxiety and fear related to pregnancy, childbearing, and childrearing, 3) a woman can easily get support from her family except her husband, 4) if a woman has already had a child, it is easier to take care of the older child as she needs to take care of a new infant, and 5) a husband can be carefree and less responsible. On the other hand, the disadvantages of *Satogaeri Bunben* are: 1) the potential negative influence on the marital relationship, 2) the potential negative influence on father-infant attachment, 3) both the wife and husband may have difficulty transitioning to their new roles as mother and father, 4) a woman may suffer from a living gap after returning to couple's house, 5) a woman may not keep her privacy and a woman's mother may be over-possessive of childrearing, and 6) medical risks including a lack of information sharing between the former and later hospitals, the difference in medical level between urban and rural hospitals, and difficulty of obtaining a husband's agreement for emergency situations (Higuchi, 2001; Kimura et al., 2003; Kobayashi, 2008; Nomura et al., 1991).

What is interesting to many scholars is that the rate of individuals choosing *Satogaeri Bunben* has not changed since 1970. Scholars have indicated that it may be that a woman does not feel she can refuse *Satogaeri Bunben* (Nomura et al., 1998; Nomura et al.,1991; Ohga et al., 2005) because of a low rate of paternal leave acquisition (1.72% in 2009), and/ or increasingly long waiting lists at day nurseries (46,058 in October 2009) (JMHLW, 2010d; 2010f). The main reasons to choose *Satogaeri Bunben*, may also be that it is a Japanese tradition and a matter of course, because *Satogaeri Bunben* is firmly established as a tradition of childbearing and childrearing in Japanese society (Kobayashi, 2008; Nagayama, 2000; Ohbayashi et al., 2001). In contrast, because of the economy, there has recently been an increase in the number of grandparents working after retirement (JMHLW, 2009b). This new trend may influence the rate of *Satogaeri Bunben* in the future because, while working grandparents may be able to physically support their daughters in their homes for *Satogaeri Bunben*, they would not be able to move to their daughters' house to support early childrearing.

Related Social Issues of Satogaeri Bunben

Almost all of the literature written by health care providers and associated with *Satogaeri Bunben* raises questions about the potential negative impact of *Satogaeri Bunben* on father-infant attachment (Kobayashi & Chen, 2008). However, there is no article about *Satogaeri Bunben* that focused on the separation of the father and infant or described the father's contact with his infant (Ohga, 2009). Instead, the marital relationship, one of the most influencing moderators of father-infant attachment, has been a focus of concern during *Satogaeri Bunben* because of the separation. Separation during this important transition period can cause role strains and impact marital satisfaction.

Therefore, the lack of paternal contact with his new infant, along with the couple's separation during *Satogaeri Bunben,* may directly or indirectly be contributing to some concerning social trends for Japanese families, which include: 1) increasing reports of domestic violence, or intimate partner violence and 2) increasing reports of child abuse and neglect by biological parents.

Father-Infant Attachment. Attachment is defined as "a gradual development of a reciprocal affectionate relationship, between the parent and infant, throughout the first year of life" (Toney, 1982, p.16). Attachment theory states that "intimate emotional bonds to particular individuals are considered as a basic component of human nature, already present in germinal form in the neonate and continuing through adult life into old age" (Bowlby, 1988, p.120-121). Parent-infant attachment is "a cognitive and social process that develops through positive feedback and satisfying experiences between the attaching dyad" (Ferketich & Mercer, 1995, p.31). Comprehension of father-infant attachment is less developed than mother-infant attachment because it has garnered less research focus. A focused literature review using PubMed through February, 2011 showed that there are 1968 articles of combination of "mother" "infant" and "attachment" while there are only 45 articles of combination of "father" "infant" and "attachment." If a word "Japanese" is combined with these numbers above, there are 33 articles regarding attachment between mother and infant, whereas there is none for attachment between father and infant. However, emerging studies are beginning to identify variables which facilitate the understanding of the concepts related to father-infant attachment (Cummings & Cummings, 2002; Goodman, 2005; Habib & Lancaster, 2005; Lamb, 2002; Lundahl,

Tollefson, Risser, & Lovejoy, 2008; Lundy, 2002; Sarkadi et al., 2008; Schachman, 2010).

Father-infant attachment is influenced by the father, mother, infant, and the marital relationship. The proposed study focuses on the father, or more specifically father-infant attachment, during the period between the third trimester of pregnancy, through delivery, and one month postpartum. The literature identifies eight variables that have the potential to influence father-infant attachment: 1) Prenatal attitude, such as prenatal attachment and attendance of an educational class, 2) Childbirth attitude, such as the father's childbirth attendance and early contact with infant, 3) Father's childcare experience, 4) Father's experience with his own father, 5) Father's involvement with infant,6) Shared physical environment, 7) Support system from wife (partner), family, friends/ co-workers, healthcare professionals, and society, and 8) Sociocultural characteristics; age, synchrony, sensitivity, and depression. Synchrony, which is also called interactional synchrony, is defined as the extent to which interaction appeared to be reciprocal and mutually rewarding (Isabella, Belsky, & von Eye, 1989) and is both an interactional variable and an outcome variable in father-infant attachment (Table 1).

Table 1. Summary of Literature Review Related to Father-Infant Attachment

Variables to potentially influence father-infant attachment	Authors
Prenatal attitude such as	
• Prenatal attachment	• Condon & Dunn, 1988; Ferketich & Mercer, 1995
• Attendance of an educational class	• Bryan, 2000; Corwin, 1998; Takechi et al., 2004
Childbirth attitude, such as the father's childbirth attendance and early contact with infant	Nakamura, 2006; Peterson, Mehl, & Leiderman, 1979; Shwalb, Nakazawa, Yamamoto, & Hyun, 2003; Takechi et al., 2004; Urata, Ohmura, Yamada, & Murakami, 2005
Father's childcare experience	Condon et al., 2004; Ferketich & Mercer, 1995; Goodman, 2005; Shwalb et al., 2003; St John, Cameron, & McVeigh, 2005; Taubenheim, 1981
Experience with his own father	Shwalb et al., 2003; St John et al., 2005; Von Klitzing, Simoni, Amsler, & Burgin,, 1999)
Involvement with infant	Goodman, 2005; Sarkadi, et al., 2008
Shared physical environment	Bakermans-Kranenburg et al., 2004; Hiruta, Terauchi, & Hirayama, 2001; Tachibana, Nakamura, Nakajima, Ishida, & Hagihara, 2008
Support system from	
• Wife (partner)	• Condon, et al, 2004; Ferketich & Mercer, 1995; Shwalb et al., 2003
• Family, friends/co-workers, healthcare professionals	• Fagerskiold, 2006; Giefer & Nelson, 1981; Lundahl et al., 2008
• Society	• Dragonas, Thorpe, & Golding,1992; Fagerskiold, 2008; Sarkadi et al., 2008; Shwalb et al., 2003; Solantaus & Salo, 2005; St John et al., 2005
Characteristics including	
• Sociocultural aspects	• Cote & Bornstein, 2004; Draper, 2003; Rothbaum et al., 2002
• Age	• Hiruta et al., 2001; Lewis & Lamb, 2003; Sarkadi et al., 2008; Von Klitzing et al., 1999
• Synchrony	• Lundy, 2002, 2003; Trees, 2006; Van IJzendoom & De Wolff, 1997

Table 1. Continued

Variables to potentially influence father-infant attachment	Authors
• Sensitivity • Depression	• Broom, 1994 • Ferketich & Mercer, 1995; Huang & Warner, 2005; Lundy, 2002

Fatherhood carries culturally prescribed behavioral requirements and role expectations (Knoester et al., 2007). Unlike maternal-infant attachment, father-infant attachment or feelings of bonding and connection, can take up to two months to develop. A turning point in father-infant interaction typically occurs when the new infant is six to eight weeks of age, when fathers perceive their infants as more responsive, predictable, and familiar (Goodman, 2005). Without ongoing contact with the infant prior to this typical turning point, fathers separated from their infants may not be able to experience this familiarity and instead may have further delay in attachment or even disengage from their new infant. In studies on fathers separated from their new infants during *Satogaeri Bunben*, it was noted that fathers established paternal consciousness more slowly and had less motivation for childrearing (Higuchi, 2001; Kimura et al, 2003; Morita, 2002; Ohga et al, 2005; Sasaki et al, 2005).

Brown et al. (1998) stated that a lack of feelings of warmth and low paternal involvement with his infant or child are risk factors for child abuse/neglect. Guterman et al. (2009) also stated that a father's positive involvement with his infant predicted lower paternal and maternal physical child abuse risk. Further, Ricci et al. (2003) found that in children who were victims of abusive head trauma, 32% of their risk for abuse was

explained by attachment problems. In Japan, the number of alleged child abuse/neglect cases has dramatically increased over the past 20 years. In 2006, the number of alleged cases was 34 times higher than it was in 1990. The latest statistics reported 42,210 cases in 2009. Of particular concern is not only that the number of alleged cases of child abuse/neglect have increased from one to three thousand cases in each year for five years, but also the number of cases in which the biological parents are the main abusers has increased annually (JMHLW, 2007; 2010c).

In other situations in which infant separated from parents, such as NICU or military deployment, researchers described the influence of separation and fathers' feelings toward their infants. Levy-Shiff, Hoffman, Mogilner, Levinger, and Mogilner (1990) stated that the frequency of paternal visits to the hospitalized preterm infant was significantly associated with the father's later relationshiop with his infant and the quality of the infant's development in Israel. Schachan (2010) mentioned that American troops deployed outside of the U.S. and missing attendance of their first-time childbirth promoted a connection with their infants through on-line communication with their wives. In Japan, Tsuneta and Hiratsuka (2006) followed two young fathers for one year after premature delivery of their infants. They found that even though their premature infants had to be hospitalized longer than normal infants, improved infant attachment occurred as the infants got ready to discharge and went home allowing the fathers more time with them. Yamada and Ohara (2003) mentioned that although fathers of both low-birth rate infants and normal infants improve attachment with direct child care, fathers of infants in NICU require more support to improve father-infant attachment because of longer separation. Although these studies were conducted in different countries, situations, and

people, the influence of separation on fathers' attachment toward their infants causes the similar results. Therefore, new father's separation during *Satogaeri Bunben* maybe influence father-infant attachment and require support to the father to spend time with his infant.

The findings in each of these studies above identified the need for better support for couples separated during *Satogaeri Bunben.* However, only one study developed an intervention to address the potential problems. Furuya (1997) identified that sending recordings of the wife's voice and the fetal heart tones, accompanied by a whole body photograph of the pregnant wife, positively affected the father's connection to the fetus and eventual attachment to the infant. However, the study involved only one family and has not been replicated. In a recent study exploring military couples, Schachman (2010) suggested that frequent communication with spouses/partners, through e-mail, texting, and instant messages, supported first-time combat-deployed fathers during the births of their infants, decreased psychological stress, and contributed to their feelings of involvement with their infants and wives and their view of themselves as a contributing partner.

The Marital Relationship. Childbearing and childrearing represent a life transition for the man and woman, both as individuals and as a family. Further, "the stability of family dynamics across the transition to parenthood is a sign that most families negotiate this transition without difficulty" (White, Wilson, Elander, & Persson, 1999, p.171). The stress of this transition is reflected in the identification of both pregnancy and postpartum periods as risk factors for potential domestic violence between couples (Condon et al., 2004). Duvall and Miller (1985) highlighted that one of the

primary developmental tasks of new parents is to learn how to maintain a satisfying companionship with each other. Cowan and Cowan (1995) identified five domains for examining family well-being during the transition to parenthood: 1) the quality of relationships in the new parents' families of origin, 2) the quality of the new parents' relationship as a couple, 3) the quality of relationship that each parent develops with the baby, 4) the balance between life stress and social support in the new family, and 5) the well-being or distress of each parent and child as individuals. Stafford (2005) stated that "relationships are considered to be long distance when communication opportunities are restricted because of geographic parameters and the individuals within the relationship have expectations of a continued close connection" (p.7) and described that communication influences a couple's satisfaction and relationship. During the childbearing and childrearing period, a marital relationship is forced to readjust, and their success as a couple has a lot to do with how well they learn to communicate, share new roles, and cooperate.

During *Satogaeri Bunben*, if a couple's house is near the wife's parents' house, a father can easily see his wife and his infant. But, if the couple's house is far away for the wife's parents' house, a father's visitation can be difficult, depending on his working situation. In cases when very little visitation occurs during the separation time, there will be a period of readjustment later, after the period of *Satogaeri Bunben* is over, and a couple and their infant begin living together. Early studies have shown, in these circumstances, that wives were anxious about living with their husbands again and worried about the couple's cohesion (Morita, 2002). Studies about the husbands, separated from their wives and infants during *Satogaeri Bunben,* revealed that the

husbands thought that *Satogaeri Bunben* should have provided enough time for their wives to physically and mentally recover from childbirth, so their wives would not need any additional support and could adequately do both childrearing and housework (Ohmura, 1990). In other words, the husbands thought that they (the husbands) would not have to be or do anything different when the wife returned with their new infant. In contrast, Kimura et al. (2003) described that husbands' housework allotment increased with those couples not choosing *Satogaeri Bunben* because they developed a deeper understanding of their wives. For the wives, in couples not choosing *Satogaeri Bunben*, it appeared that they cared more for their husbands than wives in couples choosing *Satogaeri Bunben*, which suggests that physical co-presence with the other during the perinatal period and early postpartum is important for the marital relationship. However, Kobayashi and Chen (2008) stated that they could not find any influence on the marital relationship by *Satogaeri Bunben* and Ohga (2009) mentioned that there is no study yet that has focused on the influence of lack of time together as a couple during *Satogaeri Bunben*.

Separation during *Satogaeri Bunben* has the potential to influence the marital relationship because of decreased spontaneous daily communication, which is important for mutual understanding. In addition, maintaining communication is especially important because the incidence of intimate partner violence increases during pregnancy and postpartum, which are both considered risk factors for domestic violence (DV) between couples (Condon et al., 2004). For example, Kataoka, Yajyu, Eto, and Horiuchi (2005) studied DV during pregnancy in Japanese women and found that approximately five percent of them were abused during pregnancy. This suggests that the risk for DV

may potentially increase after *Satogaeri Bunben*, when husband and wife are reunited, because they did not share the same time and experience before/after childbirth. Intimate partner violence not only jeopardizes the spouse, but also the new infant and children because the presence of domestic violence between couples is associated with increased occurances of child abuse (Ricci et al., 2003; Ross, 1996; Rumm et al., 2000). In addition, men who were abused as children have a higher predilection toward marital conflict and abuse (Belt & Abidin, 1996) and children, either male or female, who witness parental violence are at risk for serious psychological and social problems (Strauss, 2001).

The reporting of domestic violence, like the repot of child abuse/neglect, is also on the rise in Japan. In 2009, the number of domestic violence cases between married couples increased to 28,158, which was an approximately twice increase from 2004 (JGEBCO, 2010). The most common age group for intimate partner violence is between 30-39 years (35.6%), followed by 40-49 year olds (23.7%), and 20-29 year olds (20.1%) (Japan National Policy Agency [JNPA], 2010). The 2008 national survey of 2,435 people who were over 20 years old and had been married showed that 33.2 % of women and 17.8 % of men had abusive experiences. In the same sample, 53% of the women and 77.2 % of the men shared that never discussed the experience. The first occurrence of DV in women was primarily after they were married (or living together) (55.9%), during their pregnancy (4.0%), after childbirth (2.4 %), and finally during childrearing (12.4%). The first occurance for the men was also after marriage (or living together) (59.7%), during childrearing (7.9%), during their wife's pregnancy (2.1%), or after childbirth (1.0%), (Cabinet Office Government of Japan [COGJ], 2009). The patriarchal system in Japanese culture may influence the reporting of intimate partner violence by Japanese women

(Nagae & Dancy, 2009), so the actual incidence of domestic violence between couples is often hidden and is understood to be a more serious social issue than what is reported.

Summary

While there are many reasons to explore the Japanese tradition of *Satogaeri Bunben*, this study focuses primarily on the impact of the separation of the couple and later the separation of the father from his new infant. The literature supports that the more a husband is present throughout the pregnancy and birth, the more he will know how his wife experiences the pregnancy and delivery and how his wife begins to bring up their new baby. This, in turn, allows for better communication and, the more deeply he can understand and develop his role or cooperation in childrearing. Therefore, it is important for couples to be able to communicate with each other effectively during *Satogaeri Bunben*. The following section will discuss family communication and how it is affected by distance and culture, or in this study, specifically by family communication patterns in the Japanese culture.

Family Communication

Family communication is influenced by culture (Shearman & Dumlao, 2008), gender (Mehrabian, 2007), and generation (Weigel & Weigel, 1993). The following section reflects these variables and focuses on three collateral aspects of family communication: 1) communication with distant family members in the current technlogoical generation, 2) father-infant communication, and 3) cultural traditions that inform communication in the Japanese family.

Communication with Distant Family Members

Communication is “a transactional process in which individuals create, share,

and regulate meaning" (Segrin & Flora, 2005, p.15). Further, "according to the transactional perspective, interaction among family members is characterized by intimacy, interdependency, commitment, feelings of family identity, emotional ties, self-defined symbols and boundaries for family membership, and an ongoing history and future" (Segrin & Flora, 2005, p.10). Caughlin (2003) developed ten underlying dimensions of the most commonly mentioned standards for "good family communication", including openness, expression of affection, emotional and instrumental support, politeness, use of appropriate humor and sarcasm, routine interaction, clear and effective discipline, avoidance of personal or hurtful topics, maintenance of structural stability, and mind-reading (p.60).

However, when family members do not share the same time and space because of a job, school, or marriage, it is unavoidable that their communication style is going to change. When one member has to live apart from their family, leaving behind what and who is familiar, they often experience feelings of longing for or missing people and places. For instance, the need to "stay in touch is primarily a reference to the aspiration not only to maintain open channels of communication but some level of emotional connection" (Baldassar, 2007, p.387) and this need is "more important in transnational contexts than in proximate ones where distance needs to be worked at to be overcome" (p.406). Baldassar (2008) also described that emotions of missing and longing for people and places manifest in a variety of ways: 1) discursively (through words), 2) physically (through the body), 3) actively (practice), and 4) imaginatively (ideas), as people try to increase the sense of "presence" of family members across time and space. Baldassar also proposes that a sense of "shared presence" can be constructed in four ways: 1) virtually,

2) by proxy, 3) physically, and 4) through imagination. She explained that *virtual* co-presence is constructed through the use of various communication technologies in contrast to *physical* co-presence which takes place only through actual visitation and face-to-face communication.

Today, many families who are separated geographically, such as transnational families, turn to various communication technologies to facilitate ongoing communication and maintain a sense of virtual co-presence with their distant family member(s). The type, frequency, and regularity of long distance and/or transnational contact are largely determined by familiarity with and access to reliable and affordable technologies (Baldassar, 2007; 2008). Stafford (2005) states that "relationships are considered to be long distance when communication opportunities are restricted (in the view of the individuals involved) because of geographic parameters and the individuals within the relationship have expectations of a continued close connection" (p.7). Further, the maintenance of communication influences a couple's satisfaction and relationship. In addition, self-disclosure, which requires openness with and to each other, is associated with marital satisfaction (Yelsma & Marrow, 2003) and a positive marital relationship, or 'happy' marriage, is correlated with ongoing and open communication with each other (Beach & Arias, 1983; Navran, 1967; Yelsma, 1986).

During the childbearing and childrearing period, a marital relationship often must readjust and their future success as a couple will have a lot to do with how well they learn to communicate, share new roles, and cooperate. Sasaki (2005) stated that communication between husband and wife is associated with recognition of fetus in mothers. Couples who are separated during this time, for example for *Satogaerio Bunben*,

may put their marriage at additional risk. However, today, the upcoming generation of couples may be more familiar with and adept at using new communication technologies, such as email, texting, and video-conferencing. The familiarity of newer generations may introduce new communication intervention possibilities for couples separated for *Satogaeri Bunben* and allow for ongoing, meaningful conversation and maintenance of marital relations. While new communication technologies may assist couples during *Satogaeri Bunben*, there is still the issue of fathers separated from their new infants.

Importance of Father's Presence for Communication with Infants

It is already understood that a fetus is able to hear by the 20th week of gestation (Ward & Cooper, 1999). Because of their extended prenatal exposure to their mothers, new infants can recognize their mothers' voice as early as 24 hours after birth (Hepper, Scott, & Shahidullah, 1993; Ward & Cooper, 1999). Recognition of their father's voice comes later, depending on the frequency of the father's presence during the prenatal period. After birth, multisensory cues (e.g. face, voice, touch, and smell) and experience with the parents will improve the infants' recognition of both parents (Decasper & Prescott, 1984; Segrin & Flora, 2005; Ward & Cooper, 1999).

Brookes et.al. (2001) regarded the human face and voice as one of the most important and meaningful multimodally represented objects in the perceptual world of the baby. Segrin and Flora (2005) emphasize the importance of nonverbal communication and messages by parents, through touch, physical proximity, gaze, facial expression, and paralanguage, to enhance communication with their new infant. Yet, Bahrick, Hernandez-Reif, and Flom (2005) remind us that "because younger infants process information more slowly and attention is limited, they may disengage before attending to

more specific levels of stimulation, such as the appearance of faces and the sound of voices" (p.550). As infants share time and space with fathers, they progressively recognize them, both visually and verbally. This familiarity and recognition is important in the development of father-infant attachment, just as it is for mother-infant attachment. The important thing is that there must be both visual and auditory stimulation for this to occur, which means fathers need to be present, either physically or virtually.

Communication in the Japanese Culture

Japan is a country located east of the Asian continent. It is composed of 6,852 islands and surrounded by four different bodies of water: the Japan Sea, the Pacific Ocean, the Okhotsk Sea, and the East China Sea (Japan Ministry of Internal Affairs and Communications [JMIAC], 2009a). Such isolation geographically has allowed the Japanese to cultivate a unique culture, insulated from the influence of others.

The Japanese emphasize groupism, rather than individualism, dislike when people offer different opinions, and shame mistakes or incomprehension, particularly when the mistakes or incomprehension occur in front of other people (Hitokoto, Niiya, & Tanaka-Matsumi, 2008). Thus, the Japanese use ambiguous expressions to maintain the group harmony instead of expressing their real opinions in public. One example is "*Honne"* and "*Tatemae*". *Honne*, which means what a person really wants to do, and *Tatemae*, which means a person's submission to moral obligation. Honest feelings are considered personal. Premature expression of honest feelings can incite a strongly negative response from the other person in the relationship (Miyanaga, 1991). Further, Japanese communication is primarily nonverbal, in that what is not said is often more important than what is. There is an emphasis on the use of ambiguity and/or lack of

explanation, silence, hesitation, and pauses.

A distinct characteristic of Japanese communication is the extensive use of silence (Fuki, 2002; Ishii & Bruneau, 1991; Kamijima, 1975; Lebra & Lebra, 1986; Ramsey, 1984; Thompson, Klopf, & Ishii, 1991). Communication amongst the Japanese is highly contextual. Ishii (1984) introduced the term *enryo-sasshi* communication, which highlights the high-context needed in Japanese interpersonal relations. "*Enryo"* refers to the Japanese reserve, restraint and deference, and "*sasshi*" means to surmise, to guess and to consider (Ramsey, 1984). Miike (2003) stated that "the *message-expanding need* is the communicator's need for *sasshi* on the part of the fellow communicator" (p.100) so that in Japanese interpersonal relations, a person with good *sasshi* is highly appreciated. Therefore, comprehension of nonverbal behavior, such as occurs in *enryo-sasshi* communication, may be difficult for individuals without practice and understanding of Japanese culture and communication style (Lebra & Lebra, 1986; Ramsey, 1984).

Japanese communication style also surfaces in text or e-mail messages by the insertion of pictographs. Pictographs are images that convey meaning and have been developed as an adjunct communication tool in Japan that prompt users to share their feelings and save on time and space (Kubota & Ishizaki, 2009; Shimizu & Akama, 2006; Uekita, 2003). For example, in Figure 2, the popular pictograph that might be added when something is overwhelming is illustrated by the pictograph in the last row middle picture (). However, there is a lack of logical expression on pictographs, so it is better that senders and receivers have a close relationship and can share the emotional state (Igarashi & Itoi, 2004; Kitamura & Sato, 2009; Uekita, 2003). When senders want to convey their feelings plainly or have to e-mail to a person of higher rank or supervisors,

they do not use pictographs on text (Igarashi & Itoi, 2004; Kitamura & Sato, 2009; Uekita, 2003). While pictographs are popular to show users' emotions and shorten the time to read text, users have to understand the context and adjust to a receiver and a situation.

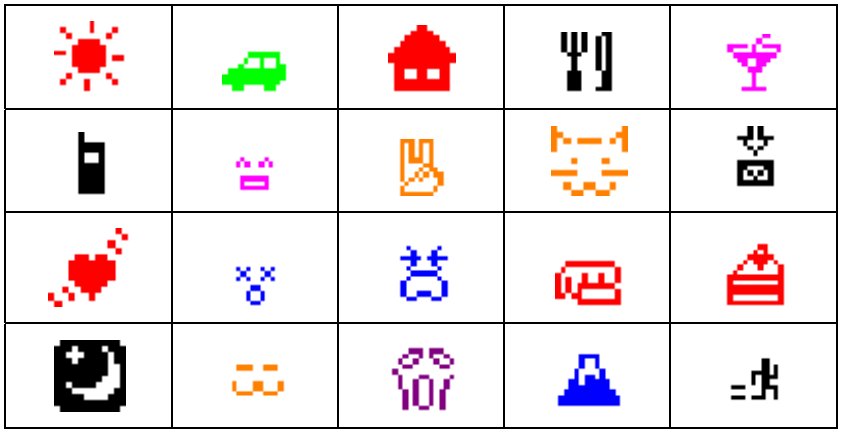


Figure 2. Examples of Pictographs in NTT Docomo (cell phone company)

Summary

For Japanese couples separated during *Satogaeri Bunben*, there are some unique challenges: 1) maintaining communication between the couple, 2) developing father-infant attachment without presence of the father, and 3) communicating from a distance in a culture whose communication style is highly contextual and nonverbal. Today, there are new technologies that are becoming increasingly familiar and available to the new generation of families. In the next section, video-mediated communication (VMC) is presented as one possible technology that may help to support couples and new fathers, choosing *Satogaeri Bunben* because it can provide context and visualization of nonverbal, as well as verbal, communication cues.

Video-Mediated Communication

The advent of the computer has dramatically changed human society, particularly human communication, business, and educational styles. The number of internet users worldwide is 6,845,609,960, with an overall penetration rate of 28.7%. The percentage of internet user growth between 2000 and 2010 has been 444.8%. The amount of internet utilization differs from region to region and country to country; however, computers and the internet have penetrated worldwide and are forecast to continue this trend in the future. The number of internet users, and penetration rate, are lowest in Africa and the Middle East, compared with Asia, Europe and North America where they are higher. However, the percentage of internet users' growth is surprisingly high in both Africa (2,357.3%) and the Middle East (1,825.3%) (Miniwatts Marketing Group, 2010).

The Computer and Internet Utilization in Japan

The internet penetration rate in Japan is 78.0%, which is three times the overall world average, and the rate of internet users with a computer is 90.5% (JMIAC, 2010b). The Japanese rank in Information and Communication Technologies (ICT) competitiveness, which considers environment, correspondence, and utilization, was 17th in the world in 2008 (World Economic Forum, 2009). However, at the same time, the broadband quality of Japan was rated as the best in the world (JMIAC, 2009b). Although the penetration rate of PC use was 87.2 % in 2010 (JMIAC, 2010a), it should be cautioned that the older a person is or the lower a person's economic status is, the less likely it is that a person uses PC (JMIAC, 2010b). The use of video-mediated communication uses a computer and the Internet. Therefore, this is important when considering *Satogaeri Bunben*, because while the wife and husband may use a PC and the

Internet, the wife's parents may not.

Video-Mediated Communication

The popularization of internet usage has created multiple communication methods. Computer-mediated communication (CMC) systems Pornsakulvanich, Haridakis, and Rubin (2008) described that "communicating interpersonally is one of the most important uses of CMC and it has been a valuable tool for many people for forming, maintaining, and developing relationships" (p.2293). Video-mediated communication (VMC), one form of CMC, has become popular via internet programs such as Skype™ and MSN Messenger, which is now known as Windows Live Messenger, and Facebook. After downloading the program to your computer and setting up a web camera, anyone can participate in VMC with any other person who is registered with the program and has a web camera. Of particular note is that downloading these programs to your computer is free.

The positive impact of VMC is that it provides a visual and real time context for a conversation (Panagakos & Horst, 2006). Interpersonal communication is transformed by the impact of adding visual images to related vocal cues and conduct, which allows participants to communicate and engage in an interaction more realistically than when using audio-only communication technologies (Doherty-Sneddon, et.al., 1997; Heath & Luff, 1992). Mehrabian (2007) stated the equation for any feeling is: "Total feeling = 7% verbal feeling + 38% vocal feeling + 55% facial feeling", which illustrates that facial feeling has more to do with communicating total feeling than verbal feeling and vocal feeling, individually or together. Yet, while VMC has the potential of providing a virtual sense of co-presence, it is not equal to physical co-presence because camera images can

be disproportionate in size to what is real and sometimes lack clarity, depending on the pixels in the web camera (Doherty-Sneddon et al., 1997; Heath & Luff, 1992; Sellen, 1992).

O'Malley, Langton, Anderson, Doherty-Sneddon, and Bruce (1996) stated that poorer quality VMC systems exaggerate the lack of similarity between video-mediated and face-to-face interactions. Ashida, Kamata, Wakisaka, and Iizuka (2006) indicated that even though internet environment has improved enough to use for telemedicine, the quality such as time delay in voice and video differs in internet communication tools. VMC also has critical issues involving privacy and autonomy (Dourish, Adler, Bellotti, & Henderson, 1996; Hemmeryckx-Deleersnijder & Thorne, 2007). For example, when one individual is on-line, another person can see this and may try to initiate a conversation with him/her. Sometimes the person may not want to talk with another person, but s/he may feel obligated because s/he knows that another person is there.

The PI conducted an exploratory study regarding family communication with distant family members using VMC (Furukawa, Driessnack, & Hourcade, 2011). Three hundred and fourty one subjects participated. Of the particpants, 76.2 % had experience using Skype™, with 64 % choosing Skype™ as their primary VMC program. Moreover, 73% had at least one year of experience using VMC to communicate with distant family members. Sixty percent reported using VMC at least once/week, although it was not their sole method of maintaining contact. They reported that VMC was more personal because of both visual and audio cues and the real-time communication. Particularly, visual perception was felt to be supportive for communicating with certain individuals, such as infants, young children, and even pets, who do not speak or speak well. Regarding issues

of VMC, most participants mentioned the quality of video or related technical problems. However, only a few stated the other potential issues such as privacy, security, and obligation.

Figure 3 provides a visual of what is seen at either end of a VMC exhange. The first picture shows the view from one participant's computer screen, with the larger image on the screen coming from the distant family member(s) and the smaller image on screen is of oneself. The second picture shows the reverse view, although in this case, the two images were not taken from the same exchange.

Figure 3. Examples of Participant Images Using Video-Mediated Communication

The Implications of Video-Mediated Communication to Support Couples Choosing Satogaeri Bunben

Stafford (2005) considered that the challenge of long-distance relationships

(LDRs) is that "frequent face-to-face (FtF) communication is necessary for close relational ties; geographic proximity is necessary for relational maintenance; and family members, especially married parents, and parents and young children, are supposed to share a residence" (p.1). Therefore, video-mediated communication (VMC) is considered to be a useful method for providing *virtual* co-presence to maintain family cohesiveness. It may be especially useful with Japanese individuals at a distance from each other, because Japanese communication relies on high- context and nonverbal cues for total understanding. In the Japanese culture, an individual's facial expression and physical demeanor and posture disclose more information to another than the words being said. And, in fact, as mentioned earlier, the Japanese often choose to be silent.

Video-mediated communication (VMC) may also be particularly appropriate for Japanese people and communication because internet availability, as well as the quality of internet capabilities, is high in Japan. According to recent reports, Japan ranks third in the world in internet dissemination and active use (Miniwatts Marketing Group, 2010). While VMC technology is available via cell phones, a personal computer (PC) provides a larger screen. The larger screen allows for both close-up and background images to be communicated, permitting individuals to see the living environment as well as interaction with multiple people (Figure 2). Further, the price of VMC via PCs is much lower than via a cell phone because PC users can use VMC for free by accessing open VMC programs, such as Skype™.

Summary

Satogaeri Bunben is a unique Japanese tradition that was established to provide perinatal couples with family support during the immediate prenatal, intranatal and

postpartum period. However, couples choosing *Satogaeri Bunben*, while receiving support, may be at risk for decreased father-infant attachment and marital relationship issues because of the husband's (father's) physical absence from his spouse and new infant during this important transition period. These risks not only have short term consequences, but also may increase the possibility of child abuse/neglect and domestic violence, which jeopardize the entire family.

The working hypotheses in this study is that if health care providers can develop an intervention to support Japanese couples, who choose to honor the *Satogaeri Bunben* tradition, so they are able to maintain a sense of closeness to each other and their new infant during this temporary but timely separation, the couple will have a better chance to sustain their marital relationship and the father will have a better chance to develop an early bond with his new infant. VMC is selected because it has both visual and auditory information which can create a sense of being together, or *virtual co-presence,* in a way auditory information alone can not because you can see the individual(s) you are speaking with in context (Figure 4). The addition of visual images is especially important for this study because many aspects of Japanese communication rely on nonverbal, rather than verbal, cues. While it is recognized that the infant is not yet able to communicate with the father, the father sees the infant and his wife together and their interaction.

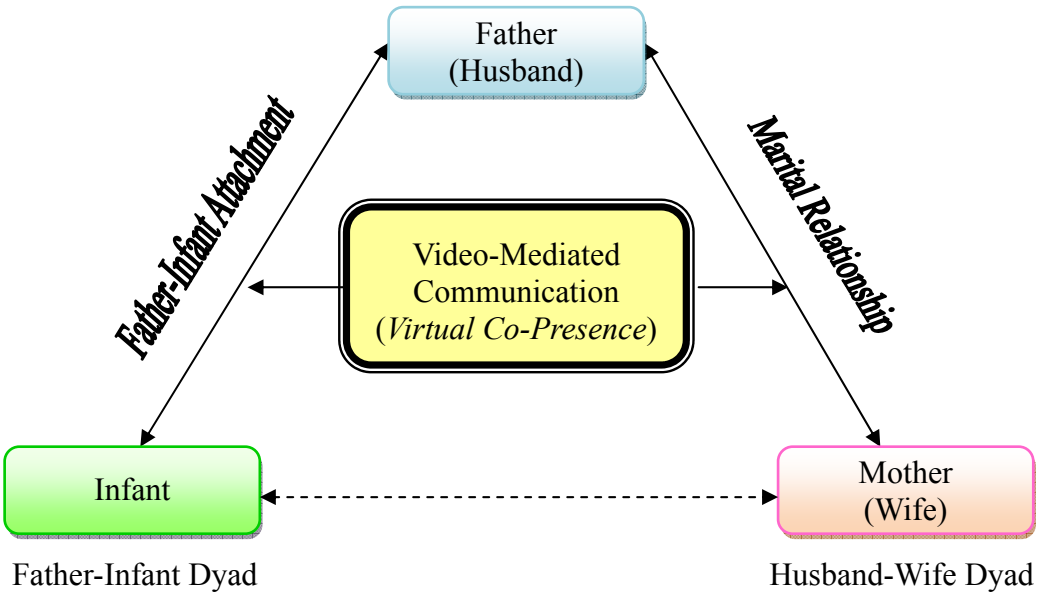


Figure 4. Visual Model of Potential Impact of VMC on Couples Separated during *Satogaeri Bunben*

Health care professionals need to explore new avenues of support for couples choosing *Satogaeri Bunben* in order to decrease the potential negative impact from the separation on both father-infant attachment and the marital relationship. This study represents the first attempt to explore the use of VMC to create a sense of virtual co-presence for Japanese couples choosing to honor *Satogaeri Bunben*.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study is to explore the use of video-mediated communication (VMC) to support Japanese couples separated during *Satogaeri Bunben*. The primary phenomenon of interest is how using VMC impacts father-infant attachment. A secondary focus is how using VMC impacts the marital relationship. This chapter begins with a discussion of the design of the study. This discussion is followed by the proposed processes for: 1) participant selection/recruitment, including strategies and setting, 2) the approach to data collection, including selected instruments and proposed research steps, 3) ethical considerations, and 4) the approach to data analysis.

Design of the Study

This is an exploratory descriptive study on the use of VMC by Japanese couples separated during *Satogaeri Bunben*. The specific aims of this study are:

1. To explore using VMC during *Satogaeri Bunben* in relation to:
    a) Father-infant attachment
    b) The marital relationship.
2. To describe the VMC experiences of Japanese couples separated during *Satogaeri Bunben.*

To accomplish the study aims, a comparative case study approach to data collection and analysis was used. Researchers use case study to gain knowledge of contextual phenomena about an individual, group, or a situation where people share a particular contemporary phenomenon (Luck, Jackson, & Usher, 2006, p.105). Case study approach

is defined as an intensive, detailed, in-depth study, examination or investigation of a single unit, or a case. The methods used in case study research depend on the theoretical construction of the case, making it a methodologically flexible approach to research design (Luck et al., 2006; Rosenberg & Yates, 2007). Case studies are used when phenomena of interest are complex and highly contextualized with multiple variables that are difficult to control. This is the rationale to choose it in this study.

The specific mixed methods approach being used is a [QUAL + quan] triangulation-convergence model. In this model, the researcher collects and analyzes both qualitative [QUAL] and quantitative [quan] data. Each of the findings is first analyzed *within* method, and then the two different sets of findings and/or results are compared and contrasted *across* methods and then converged during the final interpretive phase. This model is often used when researchers want to collect a broad base of information about a phenomenon and then use the different types and sources of information to produce a well-substantiated accounting or understanding of the phenomena (Creswell & Clark, 2007). When using mixed methods, it is important to recognize the theoretical drive of the study and adhere to its methodological assumptions (Tashakkori & Teddlie, 2002). The theoretical drive of this study is qualitative (QUAL) with a quantitative (quan) supplement (Figure 5).

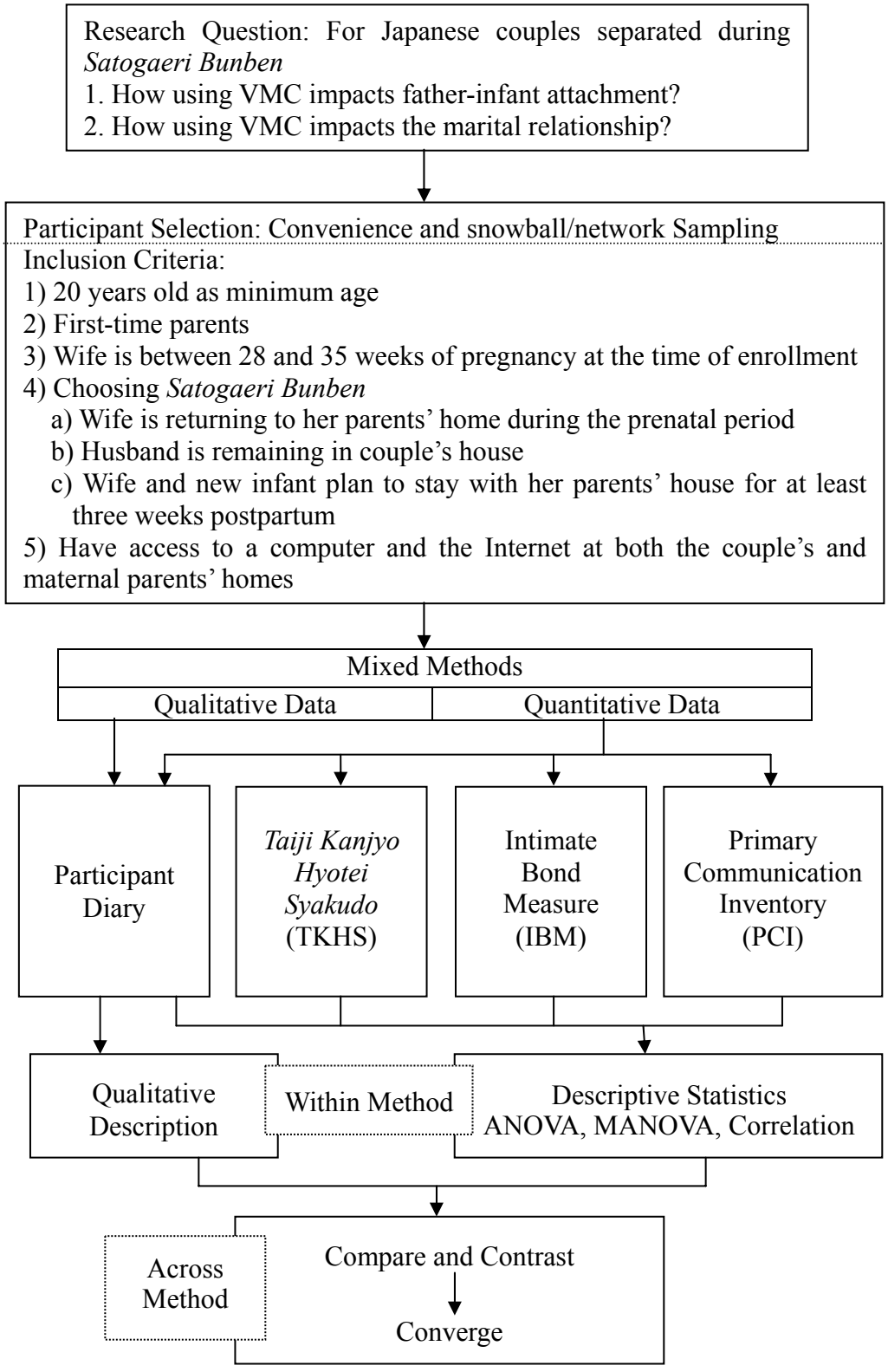


Figure5. Comparative Case Study Approach Using Mixed Methods

Participant Selection/Recruitment Strategies and Setting

Participant Selection

Participants were selected using convenience sampling and the unit of analysis, or case is marital dyad. The inclusion criteria for each of the Japanese marital couple are the participants must be: 1) 20 years old as minimum age, 2) first-time parents, 3) wife is between 28 and 35 weeks of pregnancy at the time of enrollment, 4) choosing *Satogaeri Bunben*, in which a) the wife is returning to her parents' home during the perinatal period, b) the husband is remaining in couple's house, and c) the wife and new infant plan to stay at her parents' house for at least three weeks postpartum, and 5) have access to a computer and the Internet at both the couple's and maternal parents' homes. The minimum age is set at 20 years because at 20, an individual is formally regarded as an adult in Japan. No maximum age is set because of advancing maternal age in Japan. The average maternal age for the first child in Japan is 29.7 years-old in 2009 (JMHLW, 2010b). Participants were recruited between 28 and 35 weeks of pregnancy and followed through to one month postpartum. This time period is proposed because it is the most typical for women to start *Satogaeri Bunben* (Endo, Fujimori, & Sato, 2006; Ohmura, 1990; Suzuki et al., 1996; Tamada et al., 1988). Further, one to two weeks would be needed to to initiate VMC. The exclusion criteria are: 1) a woman who is hospitalized at the time of recruitment or who has known complications that will require extended hospitalization (e.g. preterm birth, multiple birth, placenta previa), or 2) when the infant has known complications and is expected to have postnatal problems at the time of recruitment.

The estimated sample size for the study was 20 couples. Estimating the number

of participants required to reach saturation in a qualitatively-driven study depends on the amount and quality of information from each participant (Creswell, 2007; Morse, 2000). Morse (2000) suggests that a large amount of data per participant requires 6-10 participants and a small number of data per participant requires 30-60 participants. Moderate sample sizes in qualitative descriptive studies often fall between 20 and 50 (Sullivan-Bolyai, Bova, & Harper, 2005). While 6-10 may be all that were needed, a moderate sample (20) was initially sought to guard against participant attrition, which is identified as a potential threat in this study population due to unanticipated problems with the pregnancy and/or new infant.

As this study was qualitatively driven (QUAL + quan), the sample size is selected using qualitative assumptions and guidelines. The quantitative data were collected for exploratory purposes only and compared to normative data when possible.

Recruitment Strategies

Convenience sampling as well as snowball and network sampling were used for recruitment in this study.

Recruitment was done with permission from OB staffs of the supporting institutions in Niigata prefecture. Prefectures are similar to U.S. states, with set geographic boundaries and governments. An informational leaflet was made available to women choosing *Satogaeri Bunben* and provided in out-patient unit. The leaflet briefly describes the purpose of study and inclusion criteria and provides the PI's contact information. Those pregnant women who contact the PI will be given the opportunity to ask further questions and/or receive clarification. Those women who decide to participate were assessed for inclusion/exclusion criteria. However, data collection did not begin

until both members of the marital couple consented.

Snowball and network sampling were also employed. In snowball sampling, the researcher asks participants, who have already been selected for the study, to recruit other potential participants (Onwuegbuzie & Leech, 2007). Japanese tend to hesitate to participate in research, especially for unknown researchers to tell their private stories. Thus, snowball and network sampling were considered useful recruitment methods for Japanese married couple. These *potential* participants contacted the PI using information given to them by *actual* participants or the PI. In this study, four couples were recrtuited and presented in Chapter IV.

Setting

Niigata prefecture is located on the West side of Japan and faces the Sea of Japan. The area is the fifth largest in Japan. The transportation from Niigata prefecture to Tokyo, the capital city of Japan, is quite enhanced by Shinkansen bullet trains, express buses, and an express highway. The population of Niigata prefecture was 2,382,134 in January, 2010 and has been decreasing every year for more than ten years (Niigata Prefecture, 2010). 12.9 % of the population were 0-14 year-olds, 60.8% were 15-64 year-olds, and 26% were over 65. In 2008, the emigration rate from Niigata to other prefectures (35,820) was much higher than the immigration rate (29,849). Half of those who emigrated moved to the surrounding areas of Tokyo, primarily for economic reasons, such as education or employment. A large number (11,128) of 20-44 year old females were among those who had emigrated to other prefectures. However, the birth rate in Niigata prefecture was 1.37, which was the same as the Japanese national average (Niigata Prefecture, 2010). This may be because many of the women are choosing to return to their birth home in the

Niigata prefecture to deliver their infants. The majority of pregnant women in the Niigata prefecture were 30-34 years of age (6,731) and 25-29 years of age (5,784). The proportion of the births by maternal age indicated that woman over age 20 account for 99 % (18,214) of the total birth numbers (Niigata Prefecture, 2010).

Approach to Data Collection

This study includes both qualitative and quantitative approaches to data collection (Table 2). For the qualitative data, the primary source of data was obtained using a participant diary. The primary sources of quantitative data were three instruments: 1) *Taiji Kanjyo Hyotei Syakudo* (TKHS), 2) Intimate Bond Measure (IBM), and 3) Primary Communication Inventory (PCI). Each is discussed in the following paragraphs.

Table 2. Overview of Approaches to Data Collection

Instruments	Participants	Collection
Baseline information (pre-initiation of VMC): due date, age, educational level, occupation, couple's annual income, family structure, marital length, planned pregnancy, decision-making around *Satogaeri Bunben*, available support systems	Both husband and wife	Web survey (Survey Monkey)
QUALITATIVE **Participant Diary** ・VMC Record/Reflective narratives ・Husband's Visitation Record ・First Encounter Note	Both husband and wife	To/ from participants using Mail
QUANTITATIVE ***Taiji Kanjyo Hyotei Syakudo* (TKHS)**: a widely- used Japanese tool that assesses the feelings of new parents toward their fetus or new infant ・Published by Hanazawa in 1992 (Japanese only) ・28 adjectives ・2 subscales: 14 words for feelings of closeness toward infants, and 14 for feeling of avoidance toward infant ・Feelings of closeness toward infants = 0-42 range ・The higher the score, the closer the parent is said to feel toward their new infant ・2 month test-retest reliability was 0.85	Husband only	Web survey (Survey Monkey)
Intimate Bond Measure (IBM): a tool used to assess the level of intimacy in a couple's relationship. ・Published by Wilhelm & Parker in 1988 (English version); by Inomata in 1994 (Japanese version) ・24 items ・2 subscales: 12 items for the care dimension, and 12 for the control dimension ・Both subscales range 0-36 ・The cut-off point for dysfunctional intimacy is >25 (Care) and >12 (Control) ・An internal consistency: 0.94 for the Care scale and 0.89 for the Control scale in English version and 0.87-0.90 for Care and 0.86-0.89 for Control in Japanese version ・6 months test-retest for Care and Control were 0.80 and 0.89, respectively	Both husband and wife	Web survey (Survey Monkey)

Table 2. Continued

Instruments	Participants	Collection
Primary Communication Inventory (PCI): a self-report questionnaire that reflects satisfaction with a couple's communication by individuals in the couple ・Developed by Locke, Sabagh, & Thomes in 1956 and modified by Navran in 1967; Translated to Japanese by the PI (Furukawa) in 2010 ・25 items ・2 subscales: 7 items for nonverbal communication, and 18 for verbal communication ・Nonverbal communication ranges 7-35, Verbal communication ranges 18-90, and Total communication ranges 25-125 ・Higher scores reflect higher couple satisfaction with their level of communication ・8 weeks test-retest reliability was 0.86	Both husband and wife	Web survey (Survey Monkey)
Follow-up information (post-initiation of VMC): communication method during *Satogaeri Bunben*, expected date to complete *Satogaeri Bunben*, experience of video-mediated communication	Both husband and wife	Web survey (Survey Monkey)

Qualitative Data

Participant Diary

A semi-structured diary was used to collect qualitative data from both the husband and wife. Diaries are often used to capture the personal experiences and reflections of individuals as they experience life transitions and important life events (Chase, 2005). For example in Japan, the Mother and Child Health Handbook, called *Boshi Techo* in Japanese, is an unique booklet for all pregnant women published by Japanese Ministry of Health, Labour and Welfare (JMHLW, 2008) since 1942. It has lots of information for mothers through pregnancy and childrearing, such as records of prenatal/postnatal check up, childbirth, child's growth and immunization until child is six

years old. It also has free space to write mother's and father's feelings at the time. Therefore, the mother and child health handbook is used not only as records but also as diaries with memories of childbearing and childrearing during the specific time from pregnant to entrance of elementary school. Also, the Father and Child Health Handbook is provided to husbands to improve fatherhood and share child's growth records before and after childbearing and childrearing. The handbook has adequate space to write father's feelings as well as attach fetus and child photos. However, the Father and Child Handbook is not published under law and provided anywhere (several prefectures do not provide) compared with the Mother and Child HealthHanbook (Tanaka, 2007) (See Figure 6).

Figure 6. Examples of the Mother and Child Health Handbook (left) and the Father and Child Handbook (right) in Joetsu City, Niigata Prefecture

In this study, the Participant Diary included three pieces: 1) VMC Record, with a space for reflective narratives, 2) Husband Visitation Record, and 3) First Encounter Note. The *VMC Record* includes the date and time spent for each VMC session. In addition, instructions were provided to guide participant reflections and entries. The *Husband*

Visitation Record is a simple log that documents the date and time when the husband physically comes to visit his wife and/or his new infant during *Satogaeri Bunben*. The *First Encounter Note* is for participants to share their experiences when they first saw their new infant. This is most likely to be on the day the infant is born. However, some fathers might not attend the birth. If the father did not attend the birth, he was asked to indicate how old his infant was (in days) when he did visit, and to complete the First Encounter Note after that time. The instructions for each of these were distributed with the diary package and include specific prompts and blank space (Appendix A-1. English version, 2. Japanese version).

Quantitative Data

There were three quantitative tools used: 1) *Taiji Kanjyo Hyotei Syakudo* (TKHS), 2) Intimate Bond Measure (IBM), and 3) Primary Communication Inventory (PCI).

Taiji Kanjyo Hyotei Syakudo (TKHS)

The *Taiji Kanjyo Hyotei Syakudo* (*TKHS*) (Hanazawa, 1992) is a widely-used Japanese tool that assesses the feelings of new parents toward their fetus or new infant. It was used in this study to explore father-infant attachment. The *TKHS* was administered to the husbands twice. The first time was before or pre-initiation of VMC and the second time was at the completion of the study. The *TKHS* presents new parents with 28 adjectives and asks them to respond to each adjective using a 4-point Likert scale reflecting how much they agree or disagree. Half (14) of the adjectives reflect feelings of closeness toward the new infant and the other half (14) reflect feelings of avoidance or lack of closeness. In this study, feelings of closeness toward infant (fetus) were only

measured to look at parent-infant attachment. The score of closeness toward infant ranges from 0 to 42. The higher the score, the closer the parent is said to feel toward their new infant. The two month test-retest reliability was reported to be 0.85 (Hanazawa, 1992). Regarding mothers' closeness score, Hanazawa showed that the average score during pregnancy was 28.3 (*SD* = 6.75, *N* = 185) and that in postpartum was 30.4 (*SD* = 7.05, *N* = 185). Regarding fathers' closeness score, Okuzumi et al. (2001) stated that the average score of fathers in early postpartum was 27.92 (*SD* =7.639, *N* = 100). Takechi et al. (2004) stated that the average score of fathers (*N* = 20) was different between before and after childbirth and between early contact and no early contact with infants after childbirth (38.0 before childbirth and 35.5 after childbirth for fathers with no early attachment). Although there were only five fathers in a study of Kangaroo care soon after childbirth, the average score before Kangaroo care was 29.6, while that after the care was 32.2 (Kawashima et al., 2005). The *TKHS* has been used for prenatal mothers and for new mothers and fathers; however, this study represents the first use of the *TKHS* for 'prenatal' fathers (Appendix D-1. Original Japanese version, 2. English translation).

Intimate Bond Measure (IBM)

The *Intimate Bond Measure* (*IBM*) (Wilhelm & Parker, 1988) is a tool used to assess the level of intimacy in a couple's relationship. In this study, the *IBM* was collected from both spouses before or pre- initiation of VMC and again at the completion of the study. The *IBM* is a 24-item self-report tool that contains two dimensions: 1) *Care* and 2) *Control*. Participants reply to each of the items using a 4-point Likert scale. For each dimension, the higher the score, the higher the perceived degree of Care or Control (Black Dog Institute, n.d.). The scores of both dimensions range from 0 to 36. The cut-off

point for dysfunctional intimacy is < 25 (Care) and >12 (Control) (Boyce, Hickie, & Parker, 1991). The *IBM* has an internal consistency of 0.94 for the Care scale and 0.89 for the Control scale. The six week test-retest reliability of Care and Control were reported to be 0.80 and 0.89, respectively (Wilhelm & Parker, 1990). The *IBM* had previously been translated into Japanese (Inomata, 1994). The internal consistency for Japanese subjects was 0.87-0.90 for Care and 0.86-0.89 for Control (Furukawa et al., 2002; Hori et al., 2002) (Appendix E-1. Original English version, 2. Japanese translation).

Primary Communication Inventory (PCI)

The *Primary Communication Inventory* (*PCI*) (Locke, Sabagh, & Thomes, 1956; Navran, 1967) is a self-report questionnaire that reflects satisfaction with a couple's communication by individuals in the couple. It was developed by Locke et al. (1956) and modified by Navran (1967). The modified version has 25 items with 5-point Likert scale responses. For this study, the *PCI* was collected from both husbands and wives twice, at the beginning of the study, before or pre- initiation of VMC and again at the completion of the study. The scores on the *PCI* range from 5-125, with higher scores reflecting higher couple satisfaction with their level of communication. There are two subscales: Nonverbal communication (7 items) and Verbal communication (18 items). The range of Nonverbal communication is 7 to 35 and the range of Verbal communication is 18 to 90. The eight week test-retest reliability for the *PCI* was reported as 0.86 (Ely, Guerney Jr, & Stover, 1973). The *PCI*, when compared with other marital assessment tools, is able to discriminate between happy and unhappy married couples (Beach & Arias, 1983; Navran, 1967). Couples who are happily married typically have a mean of 105.2 (76.1 verbal/29.1 nonverbal) while less content couples typically have a mean of 81.4 (58.2 verbal/ 23.2

nonverbal) (Navran, 1967) (Appendix F-1. Original English version, 2. Newly Japanese translation). The *PCI* was not yet translated to Japanese. As a preliminary step for this study, the PI undertook this task and the *PCI* was translated using a committee approach to translating instruments (Pan & De La Puente, 2005).

Committee Translation Approach: Translation of assessment tools is often discussed in cross-cultural research because a cross-cultural approach emphasizes identification of universals in development as well as discovery of attributable variation to linguistic and cultural differences (Peña, 2007). The main goals of translation are following; adaption of the translated instrument in a culturally relevant and comprehensive form while maintaining the meaning and intent of the original items (Pan, Sha, Park, & Schoua-Glusberg, 2009; Sperber, 2004), and achievement and reports of evidence of the accuracy, reliability, validity, equivalence, fluency of translated instrument (Maneesriwongul & Dixon, 2004; Nasser & Diefenbach, 1996; Pan et al., 2009; Villagran & Lucke, 2005; Weeks, Swerissen, & Belfrage, 2007; Willgerodt, Kataoka-Yahiro, Kim, & Ceria, 2005). However, appropriate translation is expensive and time consuming (Acquadro, Conway, Hareendran, & Aaronson, 2008; Guillemin, 1995; Sperber, 2004; Willgerodt et al., 2005), so it is crucial that researchers understand the various translation methods available to them, choose a relevant translation process, and report the process before starting research that requires translation (Sperber, 2004).

This study emphasizes content equivalence and conceptual equivalence because the committee approach used in this study focuses on them. The two languages and cultures in this study, Japanese and English, are quite different. The similarity of languages influences translation (Brislin, 1970; Weeks et al., 2007); therefore, it is very

difficult to have equivalence associated with linguistics between these two languages.

Translation methods used for nursing research depend on the research objectives, availability of translators, budget, and time; yet there is no perfect translation method (Acquadro et al., 2008; Maneesriwongul & Dixon, 2004). Therefore, multiple translation methods with multiple competent translators are usually recommended (Acquadro et al., 2008; Brislin, 1970; Peters & Passchier, 2006). However, the burden of time and money for translation prompts researchers to choose one translation method rather than multiple methods. I will compare two translation methods, back-translation that is the most popular and widely used and the committee approach that is the currently attractive and used in this study below.

Back-translation is the most popular translation method and typically used in cross-cultural research (Harkness, 2003; Peters & Passchier, 2006; Sousa, Zauszniewski, Mendes, & Zanetti, 2005). Back-translation requires at least two translators, one translates an instrument from the source language into the target language and another translates already translated instrument from the target language back into the source language, and compares the original and the back-translated instrument (Hilton & Skrutkowski, 2002; Villagran & Lucke, 2005). Comparison of the original instrument and the back-translated instrument is important to examine the quality of translation, especially linguistic accuracy (Simonsen & Elklit, 2008; Weeks et al., 2007).

Although back-translation is highly recommended by some researchers, back-translation is particularly less equivalent in cultural and language differences as well as in meaning of the instrument because it focuses on words only (Hilton & Skrutkowski, 2002; Nasser & Diefenbach, 1996; Pan et al., 2009; Swaine-Verdier et al., 2004;

Villagran & Lucke, 2005; Vinokurov, Geller, & Martin, 2008). Therefore, if the source and target language are not similar in words, idioms, and colloquialisms (as is the case with Japanese and English), back-translation is not the best choice for translation (Weeks et al., 2007). Furthermore, back-translation also lacks assessment of the procedure to check where a translation is adequate (Harkness, 2003) and requires adequate time as review and modification may be necessary after comparison of the original instrument and the back-translated instrument (Hilton & Skrutkowski, 2002). Thus, the combination of expert group consultation (Jones, Lee, Phillips, Zhang, & Jaceldo, 2001), pretest (Maneesriwongul & Dixon, 2004), decentering (Brislin, 1976) and utilization of several raters (Brislin, 1970) and assessment tool for back-translation (Sperber, 2004) redeem negative points of back translation.

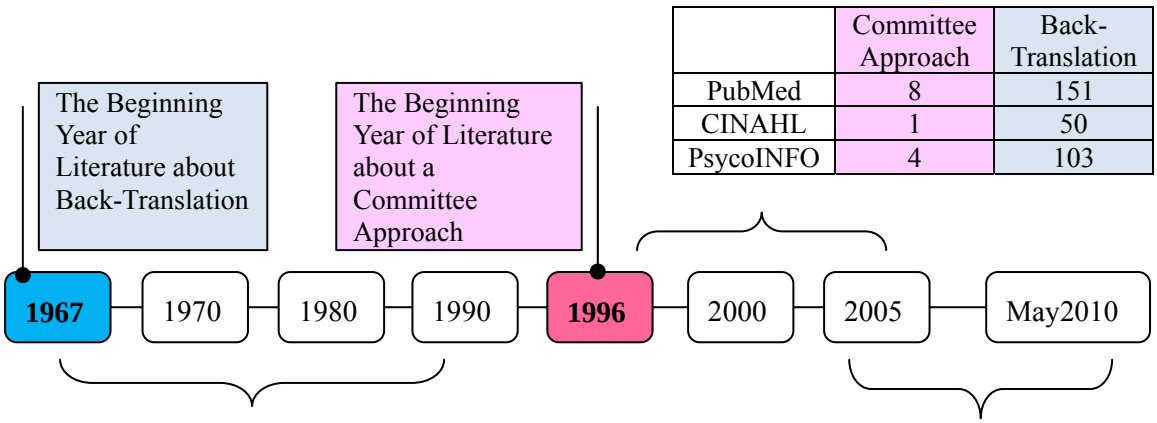
The committee approach is a comprehensive collaborative approach to translation of instruments that is emerging as a preferred method for translation over back-translation (Pan & De La Puente, 2005). This shift away from back-translation is because the committee approach achieves a higher equivalence in meaning by incorporating translations by a committee of culturally- competent translators, trained not only in the target language but also knowledgeable about the target culture and society (Douglas & Craig, 2007). The proposed study will be a pilot for the newly translated Japanese version of the PCI.

The process used in the committee approach begins with the parallel translation. The process of parallel translation is that several translators make independent, or parallel, translations of the same instrument and the translators, along with at least one reviewer, go through the entire translation of the instrument until they agree on a final version. This

meeting is referred to as the reconciliation meeting (Harkness et al, 2003).

Back-translation is the most popular and used translation method, while the committee approach is the latest focused method particularly since 2005 that Pan and de la Puente recommended the committee approach in census bureau guideline in the U.S. Literature was briefly searched how publication of the committee approach and back-translation have been undergone a transition through literature survey on three large medical databases, PubMed, CINAHL, and PsycINFO in May, 2010 (see Figure 7). Literature about the committee approach searched with key words of "committee translation approach" or "committee approach and/or translation." Literature about back-translation used a key word of "back-translation."

It is obvious that the number of back-translation literature is far more than that of the committee approach literature and back-translation has been utilized by researchers approximately thirty years longer than the committee approach. This literature comparison will prompt researchers understand why back-translation is well-known and used in research regardless of the questionable equivalent issues as a translation method.



	Committee Approach	Back-Translation
PubMed	8	151
CINAHL	1	50
PsycoINFO	4	103

Back-Translation Only

	1967-1969	1970-1979	1980-1989	1990-1996
PubMed	0	1	5	27
CINAHL	0	0	0	5
PsycoINFO	2	7	6	14

	Committee Approach	Back-Translation
PubMed	13	317
CINAHL	4	111
PsycoINFO	4	144

Figure 7. Transition of Literature about a Committee Approach and Back-Translation

For the translation of the *PCI* in this study, there were four committee members who were considered to be culturally competent, having adequate knowledge of Japanese language, society, and culture. Three of the committee members are Japanese natives, able to speak English, and nursing professionals with US credentials. The fourth member is an American native and ESL educator, fluent in Japanese. The PI, along with one Japanese native nursing professional and the American ESL educator, translated the *PCI* for the parallel translation step. The PI along with the remaining Japanese native nursing professional, adjudicated during the committee translation meeting that followed (Figure 8).

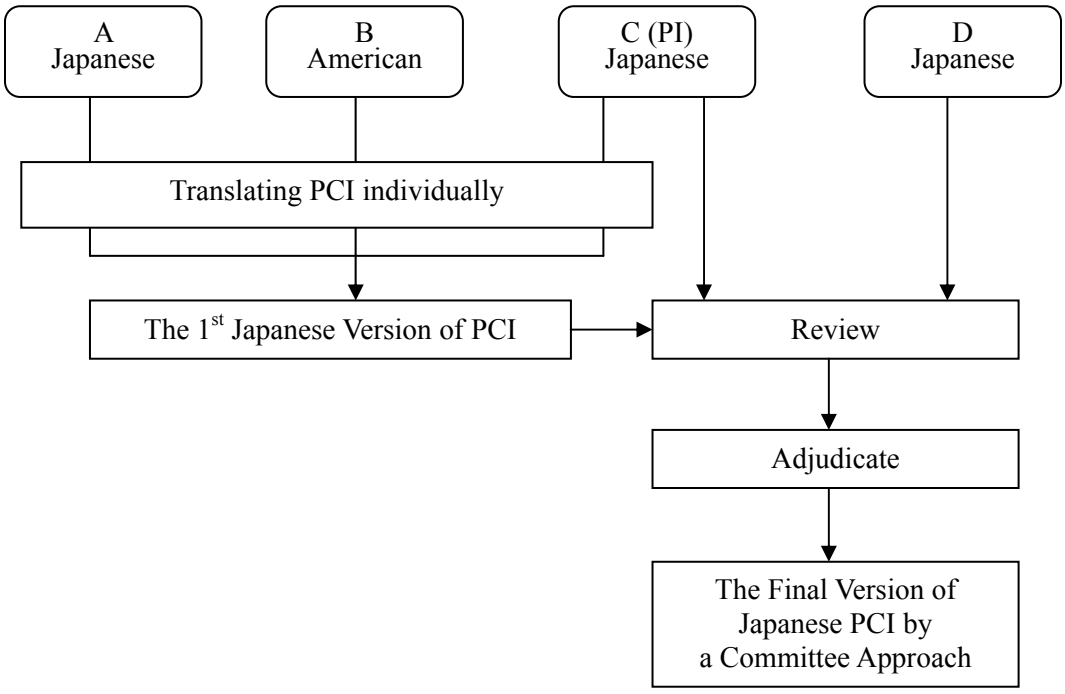


Figure 8.Translation Process with a Committee Approach

During the committee translation process for the *PCI*, Item 16 ("Can you and your spouse discuss your most sacred beliefs without feelings of restraint or embarrassment?") was the most difficult item for adjudicators to finalize for translation into Japanese because it is associated with religious feelings. Although the Japanese are religious, they are a polytheistic civilization. The emphasis is not on one God, as with monotheistic religions, such as Christianity, but on harmony, order, and self-development. Their beliefs focus more on Japanese culture, traditions, attitudes, and ideology rather than on one system of sacred doctrines. The Japanese believe that gods or spirits reside in all of the nature (e.g. mountain, river, sun) and assign great value to them. The Japanese people feel an obligation to nature and to those around them, rather than to one god. Religious practice in Japan is not about adhering to the sacred beliefs unique to one

religion, but to the maintenance of harmonious relations with others, both spiritual and human, and the fulfillment of social obligations as a member of a family and a larger community. Therefore, when terms such as “sacred” are attached to the word belief, it often prompts Japanese people to hesitate as it appears to be asking about your religion (Hasizume, 2007). In a recent survey, Ishii (2008) reported that less than 30 % of Japanese identified a specific religious belief. This low rate may be because in 1995 there was a terrible incident in Tokyo involving sarin poisoning. The people who claimed responsibility were members of Aum Shinrikyo, a religious cult. After the incident, many young Japananese people changed their view toward religion (Yamamoto, 1996). Therefore, adjudicators decided to delete the word, “sacred”, in the Japanese version to make the item concept more understandable to Japanese people.

Baseline/Follow-up Information

Baseline/follow-up information was collected from each spouse at the beginning of the study and again at the completion of the study. Baseline data included: the due date, age, educational level, occupation, couple’s annual income, family structure, marital length, planned pregnancy, decision-making around *Satogaeri Bunben*, expected date to complete *Satogaeri Bunben*, available support systems, communication method during *Satogaeri Bunben*, and experience of video-mediated communication (Appendix B-1. Baseline information English version, 2. Japanese version, C-1. Follow-up information English version, 2. Japanese version).

Equipment

To participate in this study, each spouse needed a computer and access to the Internet, and the Skype™ program, a real-time online communication program. A web

camera was provided participants as one form of compensation. There are currently over 500 million registered users of Skype™ (Schonfeld, 2009). Skype™ has various applications, including instant messaging, video calling, and conference calling (Dean, 2009). The video calling application is what will be used for VMC in this study. Both callers can see each other as they interact throughout their real time conversation (Figure 2). The Skype™ program and applications are available to anyone, easily downloaded, and free of charge.

Research Steps

The first step was to secure a letter from a local context reviewer to confirm the cultural appropriateness of the study. Once the local context review letter was received, the PI completed the Institutional Review Board (IRB) application process at the University of Iowa. The PI also sought support letters from Japanese hospitals/clinics in the Niigata prefecture for recruitment of participants for support of the IRB application.

After IRB approval was secured, the second step was to begin recruitment. Participants were recruited as a marital couple, or dyad, although the primary contact was the expectant wife. The wife then discussed the study with her husband. If both agreed, they contacted the PI, who reviewed inclusion/exclusion criteria and secured informed consent.

The third step was to obtain the baseline data and have the couples complete the three tools. This was done using SurveyMonkey, an internet survey tool, used to collect quantitative data. SurveyMonkey allows researchers to develop a web survey in multiple languages, and collect the data quickly and easily. The sampling bias is the weakness of a computer-based marketing survey in Japanese culture; however, this study chooses the

participants purposefully ahead, so that the negative influence of the sampling bias is less problematic. Each spouse was directed to the website.

Once the couples had completed this first data collection step, the fourth step was for the PI to mail web-cameras to participants at their respective locations along with the instructions for the Participant Diary and a birth notification letter. If participants requested assistance with setting up their camera, the PI would consult over the phone. If the wife needed additional help, the PI was able to go to their home and helped to set up their camera because the PI was close, residing in Niigata prefecture during the study. The PI also offered a practice session and support to both spouses with Skype™ and VMC as requested. None of participants requested assistance in seting up a web camera or practice using Skype™.

After childbirth, either the husband or wife mailed a birth notification letter to let the PI know the birth had occurred. The Participant Diary was to be maintained for one month postpartum. The fifth, and final step was when the couple returned the Participant Diary to the PI and completed the follow-up surveys and three tools via online. The study was completed when the PI received the diary by mail and web survey responses.

Couples could keep the web cameras as one form of compensation. If the subjects already owned a web camera, equivalent monetary compensation was provided (3,600 yen ~ 40 dollars per person). At the completion of the study, a gift card (3,000 yen ~ 34 dollars per couple) was sent for the participants' time and effort in this study. Moreover, the participant diary was returned to participants after the PI saved the data in the PI's computer. So, participants could keep the Diary as the important memory and experience of pregnancy, childbirth, and early infancy during *Satogaeri Bunben*. The

study required two to three months per marital dyad to complete (See Figure 9).

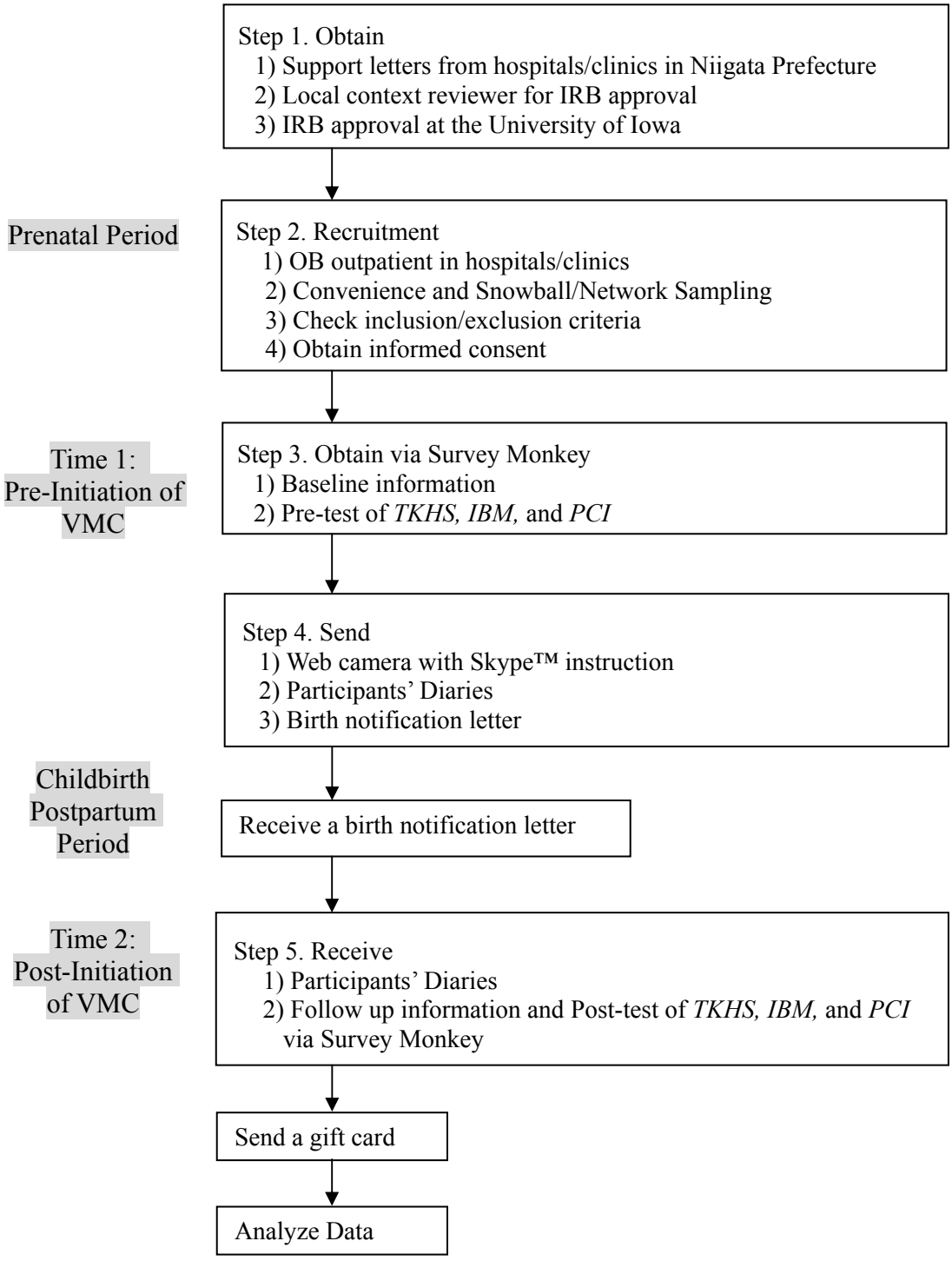


Figure 9. Workflow Steps of the Study

Ethical Consideration

This was a low risk study that was not anticipated to evoke participant stress and burden. The participants were assured that they would be able to withdraw from participation at anytime. Only the PI had access to information about the participants. The participants' data were de-identified, using a chronological identifier that linked the data to the basic demographics only. The access to SurveyMonkey was secure and specific access to the information and survey tools was permitted only by the PI, using password protection. In addition, all data were stored in a password-protected computer which, in turn, were stored in a locked cabinet. The compensation to participants was adequate for the level of effort and was not excessive or coercive. Each participant was able to keep the video camera and received a gift card of 3,000 yen (~$34) as a couple. While $34 is an odd amount, 3,000 yen is a common gift card amount in Japan. All participants completed this study, although the PI was prepared for the situation if the participants would withdraw from participation in this study anytime and the web camera was to be returned to the PI if they decide to withdraw without specific reasons before one month postpartum.

One risk that might emerge is identification of potential child abuse/neglect and/or domestic violence (DV) through the score of three assessment tools (TKHS, IBM, and PCI) used for a web survey. If the participant's score of IBM is < 25 (Care) and >12 (Control), it means dysfunctional intimacy. TKHS and PCI do not have information of the cut-off points. According to literature, the mean TKHS score of closeness toward infant is 27.9 (standard deviation 7.6). Therefore, the PI considered that the score lower than 20 may be low closeness feelings toward infant and/or fetus and a lack of attachment. The

mean scores of PCI between happy married couples and unhappy married couples as well as husbands and wives are different. Therefore, the PI used the PCI scores as supporting data of the IBM scores. The PI sent information regarding resources for child abuse/neglect and DV to three couples based on the IBM scores when sending the gift card the next time. In Japan, there is no official reporting mechanism for suspected abuse.

Approach to Data Analysis

A comparative case study approach using a mixed method [QUAL + quan] triangulation-convergence model was used. Qualitative and quantitative data were analyzed individually *within* method first, then *across* both methods to triangulate or converge on the findings.

The working hypotheses in this study is that if Japanese couples who choose to honor the *Satogaeri Bunben* tradition are offered a way to maintain their closeness to each other and their new infant during their *Satogaeri Bunben* separation period, the couple will have a better chance to sustain their marital relationship and the father will have a better chance to develop an early bond with his new infant. Therefore, the approach to data analysis began with the within-method analysis. Each individual was evaluated first, then the dyad. Once completed, an across method analysis, both across individuals and dyads, occured. Each case contained both qualitative and quantitative data, but the within method was analysed first. The final stage of analysis was when all of the data had been analyzed, then compared and contrasted across methods and cases, both individually and by dyad, to capture the overall experience of using VMC for these couples.

Within-Method [QUAL] Analysis

The qualitative data, obtained from the participant's diaries, were analyzed using qualitative description (Sandelowski, 2000; Wittich & Southall, 2008). The goal in qualitative description is a rich, comprehensive summary of an experience from the participants' points of view (Sullivan-Bolyai et al, 2005). This approach to analysis has also been noted to be especially useful for preliminary studies working with other cultures and intervention development (Sullivan-Bolyai, et al, 2005). The Participant Diary is the primary source for the qualitative data, meaning the data were in narrative format. The instructions for the participant data provided a focus for participant entries. In particular, the PI was looking for reflections about father-infant attachement and clues about the marital relationship. In addition, information was sought about the VMC experience, its strengths and weaknesses, and its potential for impact on developing father-infant attachment and maintaining the marital relationship. A two-step approach to qualitative description was anticipated, beginning with content analysis and then organizing the content by themes.

Within-Method [quan] Analysis

The quantitative data were analyzed using a combination of basic descriptive and selected inferential statistics, recognizing that the findings are exploratory. Descriptive statistics were used to describe the sample and some of the baseline and follow-up data. Each individual's data were analyzed first. The information from baseline to follow-up was compared, recognizing that the birth of the infant represents an important confounding variable. However, the primary focus was on the identification of patterns in VMC use that allowed separation of participants into two or perhaps three

distinct groups. For example, the amount of time spent in each VMC exchange, the frequency of VMC exchanges, or the combination of these two factors might allow the PI to compare and contrast the impact of VMC. The outcome variables in this comparison were the three instruments in two phases, prenatal and postpartum, and analyzed using MANOVA and ANOVA.

Correlation is used to assess the strength and direction of a relationship between two variables. Correlations done in this study were between father-infant attachment (TKHS) and other variables, including the marital relationship (IBM and/or PCI), utilization of VMC (length and/or frequency), husband visitation (frequency), planned pregnancy, and the number of support systems. Correlations provided insight into the relationship between intimacy and/or satisfaction with communication (IBM and PCI) and other variables, such as the amount of VMC communication (length and/or frequency), husband's visitation (frequency), planned pregnancy, and support system. To describe the VMC experience during *Satogaeri Bunben*, correlations were also calculated between the PCI scores and other variables which are utilization of VMC (length and/or frequency), husband visitation (frequency), and the number of support systems. SPSS 19.0 was used for data analysis.

Across-Method [QUAL+quan] Analysis

This study used a triangulation design – convergence model. In the final interpretive phase, the data was compared, contrasted, and then converged in order to describe the overall experience of using VMC.

CHAPTER IV

FINDINGS

The presentation of findings begins with an overview of the types of data collected, a description of the sample, the qualitative [QUAL] findings, followed by the quantitative [quan] findings, and ends with across [QUAL+ quan] methods findings.

Overview of Data Collected

Data were collected in Japan from July, 2010 through the end of December, 2010. The types of the data included the *Participant Diary* and three instruments: 1) *Taiji Kanjyo Hyotei Syakudo* (TKHS), 2) Intimate Bond Measure (IBM), and 3) Primary Communication Inventory (PCI). The Participant Diary was kept by each member of the couple throughout the entire prenatal and postpartum period and primarily provided the qualitative data about VMC use and the reflective narratives accompanying each use. The Diary also contained a quantitative record of the husband's visitation and the First Encounter Note. Basic demographic data were obtained to provide additional insights.

The three instruments provided the majority of the quantitative data. The instruments were administered twice, using a web survey format. The first administration, at baseline, occurred during the prenatal period and the second administration occurred at one month postpartum. An overview of the data collection process was provided earlier in Figure 5. Figure 10 combines this information and presents it within the research design. Both qualitative and quantitative data provided information to meet the specific aims of the study, which focused on the VMC experiences of the couple, especially in relation to the effect of the VMC experiences on father-infant attachment and the marital relationship.

	*QUAL*itative Data	*quant*itative Data
Data Collection Method	*Participant Diary* • VMC Use • Reflective Narrative • Husband Visitation Record • First Encounter Note	• *Taiji Kanjyo Hyotei Syakudo* (TKHS) • Intimate Bond Measure (IBM) • Primary Communication Inventory (PCI)
Within Method Data Analysis	Qualitative Description	Descriptive Statistics *Correlation* *MANOVA*
Across Method Data Analysis	Compare and Contrast Data ↓ Converge Data	

Figure 10. Visual Representation of Research Design

Sample

Seven couples contacted the PI. Of the seven, four couples participated in this study. Each married couple included a husband and a wife, both of whom were first-time parents. The wives were between 28 and 35 weeks of pregnancy at the time of recruitment. All of the couples met the criteria for 'classic' *Satogaeri Bunben*, as defined earlier in Chapter II. The mean age of all participants was 30.3 years of age (*Range* = 24-34, *SD* = 3.1), with the husbands slightly older at 31.0 years of age (*Range* = 28-34, *SD* = 2.4), and the wives slightly younger at 29.5 years of age (Range = 24-33, *SD* = 3.9). All of the husbands worked full time throughout data collection. Two of the wives planned to return to their full time jobs after their postpartum leave, while the other two wives will remain housewives. All of the participants had additional education beyond high school. One wife had technical school; one had junior college, and the other two had

college degrees. Three of the husbands held a college degree and one also had a graduate degree. The couples were all relative newlyweds, as all had been married less than 5 years (range = 0-4 years of marriage). All of the couples reported the current pregnancy was planned.

At baseline, during the prenatal period, each of the couples was asked to discuss their reason for choosing *Satogaeri Bunben*. The number one reason identified by the couples was that the wife was worried about the first delivery. The next most common reasons were the wife's wish to have a sense of relief by receiving her parent's support. Each participant was also asked to identify the two persons who had the most influence on her/his decision to honor *Satogaeri Bunben*. All eight participants identified the wife. Four participants, three husbands and one wife, also identified the husband, and three participants, one husband and two wives, also identified the wife's mother. Two of the four couples were not consistent in their answers, identifying different sources of influence. The couples were also asked about the different types of support that would be available to them as individuals after childbirth. They identified two to six different types of support. The three most important supports identified were: 1) wife's parents, 2) spouse, and 3) wife's siblings.

Only one of the couples had prior experience using VMC. This couple had used VMC for more than five years when they lived separately before marriage. Other communication methods used by all of the couples during data collection included cell phone calls and texting. All of the participants reported they were satisfied with their VMC experiences during *Satogaeri Bunben.* They also all stated that they would like to continue using VMC for communication with their families after *Satogaeri Bunben,* only

not with each other but between the couple and new child with the grandparents and/or other relatives.

Within-Method [QUALitative] Data Analysis

The within method qualitative [QUAL] data analysis explored the VMC experiences of the couple during their separation, especially in relation to the effect of their VMC experiences on both father-infant attachment and the marital relationship. The source of the qualitative data was the Participant Diary.

It is important to note that the Participant Diary data were recorded in Japanese, not English, and literal translation does not always convey the equivalent meaning of a word or phrase in the original language. This is especially true when the languages and cultural context guiding communication are as different as English and Japanese. The exemplars shared in this section have been translated into English in a manner to capture the meaning of the original Japanese words or phrases. However, there are some words that are more difficult to translate because of the context. So, the participants' reflections in their diary may not be fully described here because of the delicate contextual differences between American and Japanese cultures. As so eloquently stated by De Unamuno, "an idea does not pass from one language to another without change" (p. xxxiii, 1954).

Overview

Each of the four couples' diaries during *Satogeri Bunben* provided the qualitative data to describe both their unique and shared experiences with VMC. While the four couples were different, there were many similarities. The similarities will be discussed first, followed by an introduction of the two groups identified by the differences.

For the husbands, prenatal VMC sessions were sources of relief as they wrote about being able to see their wives' faces and see the pregnancy progress. Comments were made about the visual images of their wives' growing tummies. For the wives, their comments focused on their husband's well being, noting their husbands' faces for signs of being tired, or noting the condition of the household in the background. All of the husbands attended childbirth; however one was unable to be in the delivery room because of his wife's C-Section delivery. But, he was able to meet his new twin babies within twenty minutes after their birth. In childbirth, the husbands wrote about being impressed that their babies were born safely and all thanked their wives for their hard work and sharing the experience. In their postpartum entries, the husbands enjoyed seeing their babies' growth and changes, especially their face and movement. They shared that they enjoyed seeing the babies' daily events, such as sleeping, waking, crying, and feeding. However, while they enjoyed seeing their new infants, they also realized that it took time from their wives' busy postpartum schedules.

For the wives, their prenatal reflections were primarily about their relief in seeing their husbands' faces. These reflections were based in loneliness, and at times, anxiety about childbirth and living apart. The wives showed their growing tummies to their husbands to help their husbands see how the fetus was growing and how the pregnancy was progressing. In childbirth, the wives were all satisfied in their delivery of their babies and they all thanked their husbands for encouraging them. In postpartum, the wives were glad to see how much their husbands enjoyed seeing the baby and sharing in the baby's growth and daily events. However, they had mixed feelings, because while the husbands enjoyed watching their new babies, it took precious time away from the wives'

busy activities. This was a conflict for the wives who felt sorry for their husbands because they were not there and wanted them to be able to see their new babies, but they also noted that they needed the time themselves.

The couples all spoke about the addition of the visual images in VMC and how they relieved the couple's feelings. The visual images also prompted the couples to share more and at times even synchronize their activities during the sessions. VMC was used for practical communications too, such as discussions about preparation for hospitalization and baby goods. The addition of other attendees added to the VMC experience and provided the couples with thoughts of continuing their use of VMC with extended family members after *Satogaeri Bunben*, once the couple was reunited. Of particular interest was how surprised the wives were by their own responses to seeing their husbands respond to seeing their growing tummy at first and then their new baby.

The negative aspects shared by the couples were primarily technical issues with connections and one couple's camera shifted so they were unable to see each other's eyes. In addition, one husband felt an obligation that he had to be in front of PC during VMC and noted that it took more to start the PC and use VMC compared with the time to use a cell phone.

There were also some differences between the couples. The couples' data fell into two groups, or types, of couples: 1) engaged, or 2) detached. Three of the couples made up the 'engaged' couple group because their reflections showed that the individuals truly interacted with and were concerned about each other by being attentive to each other's appearance, needs, and/or words. The one couple that was considered 'detached' did not interact with each other, but remained almost in parallel, rather than connected

conversation, and inattentive to each other.

The next section briefly introduces each couple, followed by a description of the three engaged couples (Couple 1, 2, & 4), and the detached couple (Couple 4) in relation to father-infant attachment, the martial relationship, and VMC experience.

Introduction of Couples

Couple #1: Couple One was the youngest couple (Wife = 24, Husband = 28) among the participants. They also were the newest wed couple, having been married between 0 and 1 year. Prior to this planned pregnancy, the husband worked full-time and wife was a housewife. Both are college graduates. The couple's home was approximately five hours by car from her parents' house during *Satogaeri Bunben*. The decision to honor *Satogaeri Bunben* for this couple was made by wife and wife's mother, primarily because the wife was worried about her first delivery. The couple did not have any prior VMC experience. In their follow-up survey, the husband reported his response to the VMC experience as very satisfied; the wife reported her response as satisfied. They both stated they would like to continue to use VMC for communication with wife's parents after *Satogaeri Bunben* to share the news of baby with wife's parents.

Couple #2: This second couple was older than the first couple (Wife = 30, Husband = 31), although they were not the oldest couple among the participants. They had been married for two years before this planned pregnancy. Both the husband and wife worked full-time and both held college degrees and the husband also has a graduate degree. The couple's home was approximately 12 hours by car from her parent's house during *Satogaeri Bunben*. For this couple, the decision to honor *Satogaeri Bunben* was made by wife and/or husband and the wife's mother. It was noted that the decision was

influenced by the wife's worry about her first delivery, and especially because she was expecting twins. Unlike the first couple, who had no VMC experience, this couple had had more than five years of VMC experience, stating they had used it when they lived far apart before their marriage. The wife brought her own computer for use during *Satogaeri Bunben*. In their follow-up survey, both were satisfied with their VMC experience during *Satogeri Bunben* and shared that they would like to continue to use VMC to communication with parents and siblings after *Satogaeri Bunben*. They specifically noted the importance of being able to see the faces of those who they are communicating with.

Couple #3: Couple 3 was the oldest couple among the study participants (Wife = 33, Husband = 34). The husband worked full-time and wife was a housewife. The couple had been married for three to four years. The husband had a college degree and the wife has a junior college education. The couple lived in a different city, but the same prefecture, with only a two hour drive between the couple's house and that of the wife's parents. This was the shortest distance among couples in this study. The decision to honor *Satogaeri Bunben* was made by wife and husband, both stating they were relieved that her parents would be there. It was also considered a sign of devotion to her parents for the wife to stay with them, especially because of worry for the first delivery. This couple did not have any prior VMC experience. In the follow-up survey, the couple's VMC experience was reported as satisfied. The couple also shared they would like to continue to use VMC for communication after *Satogaeri Bunben* to show the new baby to the wife's parents.

Couple #4: The last couple was both 31 years old. They had been married three years prior to this planned pregnancy. Both worked full time and the husband had a

college degree, while the wife had a technical school diploma. There was a seven hour distance between them during their *Satogaeri Bunben* separation. The decision to honor *Satogaeri Bunben* was made by wife and/or husband because they wanted someone to be available to the wife during the pregnancy as there were no relatives nearby where the couple lived. They also felt it was important for postpartum support. Like most of the other couples, this couple did not have prior VMC experience. In the follow-up survey, both shared satisfaction with their VMC experience during *Satogeri Bunben*. They also shared that they would like to continue to use VMC for communication after *Satogaeri Bunben* because of visual images and fresh or novel feelings compared with phone.

Father-Infant Attachment

Prenatal: There were differences between the three engaged couples and the one detached couple regarding father-infant (fetus) attachment during the prenatal period. The husbands from the three engaged couples spoke about the fetus' growth relaying images of their wife's growing tummy. These fathers also shared that they tried to talk to fetus during VMC. For example, when one husband saw the fetus' kicking against his wife's abdomen on the screen, he wrote "I realized that I will become a father" and played with fetus by "calling to a baby (fetus) via screen". The wives also stated "I felt fetus' movement during VMC, but did not feel it after VMC at all". These couples also discussed the fetus' sex, name, weight, the results of prenatal check up, and upcoming birth. Further, they showed each other's purchases for the baby and in preparation for the wife's hospitalization and enjoyed viewing the baby presents from the husband or the couple's parents. After one husband returned from his international business trip, he said that he talked to the fetus, saying "you can be born anytime" as he (the husband) was

ready to be there in childbirth.

Compared with the engaged couples, the husband in the one detached couple did not talk about the fetus' growth and imminent birth, except for discussions with his wife about the baby's name.

Birth: As noted earlier, all of the husbands attended the childbirth. Although one husband in the engaged group could not physically be in the delivery room because it was a C-Section. However, he met his new twin babies 20 minutes after they were born. All husbands and wives expressed how they were relieved that their new babies were born safely.

The husbands in the engaged group acknowledged their new babies and seemed to embrace their new role as fathers. As one husband stated "I realize that I did not know how sweet baby is", while another shared, "I should grow up as a human being to become a father of whom babies are proud", "I will do my best from now on", and "Although baby is small, baby has hands, legs, and fingers like a human being. I realize that we have to protect baby now because baby cannot live without us. I would like to actively participate in child care".

In contrast, the husband in the detached group remained somewhat separate from his new infant and role, saying "I cannot believe that baby was born". In addition, his wife focused only on reflections of herself in the new baby, saying "the baby's crying face is ugly, but looks just like me".

Postpartum: All of the couples enjoyed sharing the baby's face and daily events such as sleeping, waking, and feeding. The husbands in the engaged group were excited and eager to see their baby as much as possible, even on the day before his early morning

job. As one husband saw his baby, he shared “My heart is calm, gentle, and softened”. Another husband felt relaxed and relieved by seeing “even only face”, especially when the baby seemed to respond to his voice. One husband stated “Instead of morning phone call, we did VMC. Today might be a good day”. When he saw baby wearing a baby hat which was a Christmas present from him (husband), he described “Baby was very cute”. Two husbands of the engaged couples especially observed baby’s growth and changes and stated “One baby was a low-weight baby, but is growing up well and makes us difficult to distinguish twins. I felt temporarily relieved” and “We talk about eczema on baby’s face and tell that it is no necessary to worry”. These husbands understood when their wives were too exhausted and busy to do VMC more, but they tried to work around this to find more opportunity to see their new babies. For instance, one husband commented “We can do VMC when two babies are being good boys. If we do VMC regardless of babies crying, I can hear their voices. We need ingenuity of the device to do VMC more” and “I felt a lack of opportunity to use VMC with only my home PC…as I have to often go to business trips and leave my home, I cannot use it….. I want to use VMC easily like a cell phone”.

A different kind of comment toward his new infant came from the husband in the detached couple group. He stated that while he felt fun and glad watching the baby when the baby was quiet, he appeared to be bothered by baby’s crying, saying “baby’s crying is noisy because of clear sounds of VMC”.

The Marital Relationship

Prenatal: The differences between the engaged and detached couple groups were clearly apparent in the marital relationship.

The engaged couples observed each other during VMC and expressed their concerns about each other's physical and mental condition. Both the husbands and wives stated that they were "relieved to see each other" through visual images and felt peaceful when they were able to synchronize their activity, like watching the same TV program and eating dinner. As the wives' due dates were approaching, the wives became increasingly nervous about childbirth. Of particular note was when one wife had a cold, her husband noted his wife's condition in detail and showed much worry toward her, writing about his hope that his "Wife's condition will stay stable until the delivery is completed". Although his wife did not say anything about having any anxiety, he noticed that she looked nervous from her face and mood. The same happened in reverse with the husband's situation. Although the husband did not say anything about his tiredness from his job or a business trip, his wife noticed and wrote "he looked very tired". They appeared to rely on visual cues and knowledge about each other to understand each other, without the need for words about their feelings. The engaged couples shared the same experience of not only pregnancy but also normal life. All wives of the engaged couples showed their growing tummy to their husbands and the husbands commented "Her tummy looks like it is about to burst". One wife stated "I am relieved by seeing each other's face and talking about the same thing like what we are into lately". Through visual images shared during VMC, one wife noticed the background and could see the couple's house and stated "I am proud of him because he is doing the household better to the point". In another situation, when one husband tried to use VMC to see his wife before departure on a trip, his wife commented that it was a "fresh or novel feeling, like actually seeing him off, not like talking". However, when one of the husbands chose to

work or to use the Internet during VMC, his wife shared “I am sad that he does not see my face”.

Compared with the three engaged couples, the one detached couple focused on themselves and their own feelings instead of noticing each other’s feelings. For example, the wife stated “I enjoyed VMC…it helped me to relieve my unsettled state of mind in the last month of pregnancy because I talk more as stress built up”. The husband noticed that his wife talked more happily and longer using VMC than during their phone conversations, but did not reflect about her feelings and/or her condition at all.

Birth: In the birth time period, both engaged and detached couples focused on each other and the birth. All of the husbands and wives expressed thankfulness. The wives were thankful for their husbands’ encouragement during delivery. As one wife said, “Husband’s attendance was heartened for me” and felt “I will continue to cooperate with him”. The husbands were also appreciative of their wives’ efforts during delivery, often writing the word “*otsukaresan*” [a Japanese word that expresses “a good job” and “understanding of your effort”], and relaying “Let’s do our best for rearing babies together”, and “How great and wonderful a woman is. The labor pain grows motherhood. I think anew to want to take good care of my wife”.

Postpartum: While there were no differences between the couple groups during the birth, the postpartum period, like the prenatal, revealed differences between the engaged and detached couples’ diary reflections.

In the three engaged couples, all of the wives shared that they understood how much their husbands wanted to see baby and tried to show the baby as much as possible to share the baby’s growth and changes in real time. They also shared that they could not

do VMC as much as they did during the prenatal period, so they felt sorry, saying "I can show only babies sleeping and have to do the VMC in a dark room, so not to wake the babies" or "I want to show husband me feeding baby during VMC, if I am more able". All of the husbands noticed their wives' condition, saying "She looks tired because of lack of sleep" and "After the third postpartum week, my wife cannot afford to take time for everyday e-mail or phone". The husbands seemed to understand their wives' exhaustion and how busy they were taking care of their new babies. One husband often said "*otsukaresama*" [a Japanese word that expresses 'a good job' and 'understanding of your effort'] and "*ganbare*" [a Japanese word to encourage like that I know you do your best, so 'hang in there'] even though shorter VMC sessions made him "feel lonely… but have to be patience because of her hectic daily life so far". Sharing the same time and experience via VMC, these husbands noted how their wives appeared to be learning how to care for their new babies, "Wife is accustomed to take care of baby and less nervous about baby's crying with her mother's support after hospital discharge… It would be hard without support of wife's parents, as baby's temper and sleep are not stable". The wives also noted observations about how their husbands were faring, as one said "Husband looks tired and pale" or another said, "He looks fine today".

In contrast, the one detached couple returned to their prenatal pattern of parallel conversation. They did not talk about each other or observe the other's condition at all in their entries.

Video-Mediated Communication Experience during Satogaeri Bunben

Positive VMC Experience: All of the couples described VMC experience as "great" and "fun". However, the three couples in the engaged group talked about their

positive feelings, especially about the visual images and sharing of real time experiences together. One husband in the engaged group was “surprised by VMC because VMC seemed more real than he expected” and stated “We will be able to do VMC like face-to-face communication in person if we are accustomed to use it because video images and sounds are very clear…Time passed so fast”. Another husband expressed “We learned how to use video function, such as synchronizing movement of each other, showing lots of things, and playing. We cannot touch, but I think that it is mentally peaceful to see movement of one another”. He also shared, “We have more laughing since starting VMC”. Visual images were particularly helpful for the husbands to see growing and active fetus in their wives’ and to see their new babies who could not speak on the phone.

The engaged couples also utilized the visual images to see and share with each other baby presents, preparation for hospital admission, and baby goods, which otherwise would not be easy to understand verbally. The only couple with the prior VMC experience integrated VMC as a daily event, shared simple events such as stating “good night”, and discussed the babies’ names written using a Japanese brush-pencil. Another couple felt that VMC provided a “fresh or novel experience, like seeing him off in person” when the departure of the husband’s business trip was approaching. The addition of visual images supported the engaged couples ability to understand each other’s condition and feelings. For instance, the husbands stated about their wives “The due date is next week, so my wife looks nervous”, “She might be nervous because of the C-Section delivery date approaching”, and “It is good to talk about anxious feelings and see each other’s face at the same time”. The wives also reflected on their husbands’ condition,

"His facial expression prompted me to understand his mood" and "As my husband was back from his business trip, we did VMC. He looked tired, but fine".

In contrast, the wife in the detached group only shared her own experiences, that she liked "the empty-handed function of VMC because I can hold or cradle baby during VMC". Neither the wife nor the husband noted anything about sharing the pregnancy process, such as the wife's growing tummy or the fetus' movement, or anything about each other's feelings or condition. So while they both enjoyed VMC, they did not seem to enjoy it because of its ability to facilitate shared experiences.

Negative VMC Experience: All of the couples complained about technical problems. For the engaged couples, they enjoyed the face-to-face communication with VMC, so they were "irritated" if they could not use VMC because of a technical issue, such as a connection problem. For example, one wife commented "I was sad" or "I was bored" because "He did not see my face". She also stated "It is difficult for me to find a good time for both my husband and baby…his sitting in front of PC and baby waking". One couple wrote about problems with the camera's set up position and was "disappointed because we cannot see each other's eyes". In one entry, a husband also stated about inconvenience of only having VMC in their homes, in contrast to being able to have a cell phone anywhere, saying "I feel lack of opportunity to use VMC with only home PC". One couple had no negative comments about VMC.

The one detached couple complained about technical issues often, in almost a half of all sessions. The husband complained once that "Although my wife always talks long, she talked longer than usual today. When I use a cell phone, it allows for me to talk while doing something else. However, VMC makes me stay in front of screen. Therefore,

it is inconvenient in some cases".

Other Participants: All of the couples also included the maternal grandparents, siblings, and/or paternal grandparents in at least one of their VMC sessions. These other participants also enjoyed VMC, according to the couples' entries. Especially the maternal grandparents attended postpartum VMC sessions more often than in prenatal and showed the baby to the husbands in close-up or from various angles. One husband saw his wife and her parents during VMC and realized "It would be hard without support of wife's parents". Another one of the engaged couples used VMC with the paternal grandparents, but not the maternal grandparents.

The one detached couple had the most 'others' participate in VMC attendance. The wife noted the additional VMC experiences between her family (parents, brother, and herself) and sister, living apart, in her diary as very important. She said that her family enjoyed VMC during *Satogaeri Bunben* and commented "I would like to use VMC after *Satogaeri Bunben,* especially with my parents, because they enjoy VMC".

Within-Method [quantitative] Data Analysis

The within method quantitative [quan] analysis addressed both aspects of specific aim 1 of the study, to explore using VMC during *Satogaeri Bunben* in relation to father-infant attachment and the marital relationship and aim 2 to describe VMC experience during *Satogaeri Bunben*. The quantitative data primarily came from the three assessment tools, TKHS, IBM, and PCI, which were administered both prenatal and postpartum. The Participant Diary, which primarily included qualitative data, also provided the frequency and amount of time of each VMC exchange and the frequency of husband's visitation to wife.

Overview

The within-method [quan] analysis was conducted using descriptive statistics, MANOVA, ANOVA, and correlation. The quantitative data were obtained through a web survey and the participant's individual diaries. There was no significant difference between mothers and fathers on the twelve scores from the three assessment tools, but there were significant differences between couples and the TKHS postpartum scores. Regarding parent-infant attachment, there were significant relationships between TKHS prenatal score and 1) TKHS postnatal score and 2) the number of support systems after childbirth.

Regarding the marital relationship, significant relationships were found between the IBM scores and 1) the PCI scores, 2) the amount of VMC, and 3) the frequency of husband's visitation. Further, when the IBM scores were analyzed by gender, there were some inconsistencies in the significant correlation results between husbands and wives.

Regarding VMC experience during *Satogaeri Bunben*, significant relationships were found between the PCI scores and 1) the amount of VMC and 2) the frequency of husband's visitation. Further, when the PCI scores were analyzed by gender, there were some inconsistencies in the significant correlation results between husbands and wives.

Baseline Information

The raw scores of TKHS, IBM, and PCI are represented in Table 3. MANOVA was used to evaluate the overall significance of ten subscores within the TKHS, IBM, and PCI by gender and couples. In these, two one-way MANOVA analyses, gender and couples were used as an independent variable and the ten subscores of the three assessment tools in both prenatal and postpartum were used as dependent variables. The

results indicated that there was no effect of gender (F (6, 1) = 1.65, p = .53) or couples (F (12, 3) = 2.94, p = .21) on the ten subscores, meaning that there was no difference between gender or couples' effects in those scores of TKHS, IBM, and PCI (Table 4). In addition, four one-way ANOVA analyses, gender and couples were used as an independent variable and two PCI scores, Total scores of both prenatal and postpartum were used as dependent variables. However, the results indicated that there was no effect of gender (F (1, 6) = 0.18, p = .69 in prenatal; F (1, 6) = 0.31, p = .60 in postpartum) or couples (F (3, 4) = 2.20, p = .23 in prenatal; F (3, 4) = 1.12, p = .44 in postpartum) on the PCI Total scores.

Table 3. Raw Scores of TKHS, IBM, and PCI

	TKHS		IBM				PCI					
	Closeness		Care		Control		Nonverbal		Verbal		Total	
Case	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1 – H	27	30	35	26	12	8	25	25	70	66	95	91
1 – W	33	36	20	21	3	9	21	22	62	60	83	82
2 – H	24	28	34	25	2	2	27	23	70	63	97	86
2 – W	22	30	36	36	2	7	27	28	78	81	105	109
3 – H	20	19	22	19	22	19	22	23	55	55	77	78
3 – W	15	14	19	19	8	1	24	23	61	63	85	86
4 – H	25	18	32	28	15	10	27	24	78	73	105	97
4 – W	19	14	29	24	2	7	25	23	63	68	88	91

Note. Pre = prenatal, Post = postpartum, H = husband, W = wife.

Table 4. MANOVA Results of TKHS, IBM, and PCI in Gender and Couples

Measures		Gender		Couples	
		F	*p*	*F*	*p*
TKHS					
	Prenatal	.18	.69	4.23	.10
	Postpartum	.00	.97	14.86	.01*
IBM					
Care	Prenatal	.90	.38	2.40	.21
	Postpartum	.01	.91	2.28	.22
Control	Prenatal	4.20	.09	1.02	.47
	Postpartum	.91	.38	.25	.86
PCI					
Nonverbal	Prenatal	.34	.58	2.83	.17
	Postpartum	.03	.87	.56	.67
Verbal	Prenatal	.13	.73	2.00	.26
	Postpartum	.40	.55	1.36	.38

Note. The overall MANOVAs were not significant. All $N = 8$. *$p < .05$.

Father-Infant Attachment

The quantitative analysis regarding father-infant attachment focused on the TKHS scores. The TKHS was used as a measure of parent-infant attachment or close feelings toward the infant and scores can range from 0-42. The higher the score, the closer the parent is said to feel toward their new infant. There is no cut-off point of the TKHS scores. However, former studies showed that fathers averaged 1) 27.9 (*SD* =7.639) in early postpartum, 2) 38.0 before childbirth and 35.5 after childbirth with no early contact and 3) 29.6 before Kangaroo care, while 32.2 after Kangaroo care (Kawashima et al., 2005; Okuzumi et al., 2001; Takechi et al., 2004).

Husbands' scores ranged from 20 to 27 prenatal, and from 18 to 30 postpartum, and none of the husbands' scores were equal or higher than husbands' scores in the former studies using this tool (Kawashima et al., 2005; Okuzumi et al., 2001; Takechi et al., 2004). The TKHS scores of husbands in Couples 1 and 2 increased in postpartum, while the husbands in Couples 3 and 4 decreased. Of note was the Couple 1 husband had the highest TKHS score in both prenatal (27) and postnatal (30), and in contrast Couple 3 husband had the lowest score in prenatal (20) and Couple 4 husband had the lowest score in postpartum (18) with the largest decreasing score from prenatal (-7) (Table 3).

Pearson correlations (2-tailed) were used to explore the relationship of the TKHS scores with other variables, including the IBM and PCI scores, the time amount and frequency of VMC sessions, the frequency of husband's visitation, and the number of available support systems. One proposed correlation between the TKHS scores and planned pregnancy was not conducted because all couples answered that this pregnancy was planned. A significant correlation was found between TKHS prenatal score and 1) TKHS postnatal score ($r = .82$, $p < .05$), and 2) the number of support systems after childbirth ($r = .82$, $p < .05$) (Table 6).

Table 5. Means and SDs for TKHS, IBM, and PCI

Measures		Husband (n = 4) Mean (SD)	Wife (n = 4) Mean (SD)	Total (N = 8) Mean (SD)
TKHS				
	Prenatal	24.0 (2.9)	22.2 (7.7)	23.1 (5.5)
	Postpartum	23.8 (5.5)	23.5 (6.1)	23.6 (8.4)
IBM				
Care	Prenatal	30.8 (11.2)	26.0 (8.4)	28.4 (7.0)
	Postpartum	24.5 (8.0)	25.0 (7.0)	24.8 (5.6)
Control	Prenatal	12.8 (7.6)	3.8 (5.6)	8.3 (7.5)
	Postpartum	9.8 (8.3)	6.0 (2.9)	7.9 (5.5)
PCI				
Nonverbal	Prenatal	25.3 (8.0)	24.3 (11.9)	24.8 (2.3)
	Postpartum	23.8 (1.0)	24.0 (2.7)	23.9 (1.9)
Verbal	Prenatal	68.3 (9.6)	66.0 (8.0)	67.1 (8.3)
	Postpartum	64.3 (7.5)	68.0 (9.3)	66.1 (8.0)
Total	Prenatal	93.5 (7.0)	90.3 (3.5)	91.9 (10.3)
	Postpartum	88.0 (11.8)	92.0 (10.3)	90.0 (9.7)

Table 6. Summary of Correlation between TKHS Scores and a Variable

	TKHS Prenatal	TKHS Postpartum	Number of support systems
TKHS Prenatal	—	.82*	-.74*
TKHS Postpartum	.82*	—	-.39
Number of support systems	-.74*	-.39	—

Note. All N = 8. *$p < .05$.

The Marital Relationship

The quantitative analysis regarding the marital relationship focused on the IBM scores. The IBM has two scores, *care* and *control*. The IBM *care* score describes the feelings of care from a partner/spouse and the IBM *control* score describes the feelings of control from a partner/spouse. Each score range is from 0-36. The higher the IBM care score, the higher the person feels to be cared by a partner/spouse. But the higher the IBM control score, the higher the person feels s/he is being controlled by a partner/spouse (Boyce, Hickie, & Parker, 1991).

The mean IBM care scores were 28.4 (*SD* = 7.0) prenatal and 24.8 (*SD* = 5.6) postpartum. The comparison of mean prenatal IBM care scores between husbands and wives were 30.8 (*SD* = 11.2) for husbands and 26.0 (*SD* = 8.4) for wives. The mean postpartum scores were 24.5 (*SD* = 8.0) for husbands and 25.0 (*SD* = 7.0) for wives. Both husbands' and wives' mean of the IBM care scores decreased in postpartum. However, the mean prenatal IBM care scores of husbands were decreased more than those of the wives, meaning the husbands felt less cared by wives in postpartum.

The mean IBM control scores were 8.3 (*SD* = 7.5) prenatal and 7.9 (*SD* = 5.5) postpartum. The comparison of mean prenatal IBM control scores between husbands and wives were 12.8 (*SD* = 7.6) for husbands and 3.8 (*SD* = 5.6) for wives. The mean IBM postpartum control scores were 9.8 (*SD* = 8.3) for husbands and 6.0 (*SD* = 2.9) for wives. The mean postpartum IBM control scores of husbands were decreased in postpartum, meaning the husbands felt less controlled by wives in postpartum. On the other hand, the wives' scores almost doubled in postpartum, meaning the wives felt more controlled by husbands in postpartum (Table 5). The IBM control prenatal scores from three husbands

(Couple 1, 3, and 4), as well as the IBM score of Couple 4 wife decreased in postpartum. IBM care scores < 25 and IBM control scores > 12 point to dysfunctional intimacy. Abnormal or 'at risk' IBM care scores were noted in Couple 1 wife in both prenatal and postpartum, Couple 3 wife and husband in both prenatal and postpartum, and Couple 4 wife in postpartum. Abnormal IBM control scores were noted in Couple 3 husband in both prenatal and postpartum and in Couple 4 husband in prenatal.

Pearson correlations (2-tailed) were used to find any relationships between the IBM scores and other variables, including the PCI scores for couple's communication satisfaction, the amount of VMC communication (length and/or frequency), husband's visitation (frequency), and the number of identified support systems. In total data ($N = 8$), the prenatal IBM care scores were significantly correlated with the postpartum IBM care ($r = .83$, $p < .05$) and the prenatal IBM control scores were significantly correlated with the postpartum IBM control scores ($r = .73$, $p < .05$).The IBM care scores in both prenatal and postpartum were significantly correlated with the PCI total scores in both prenatal and postpartum ($r = .73$-$.95$, $p < .05$), and with the PCI nonverbal and verbal scores in prenatal ($r = .74$-$.84$ and $r = .82$-$.89$ respectively, $p < .05$). Moreover, there was a significant negative correlation between the IBM care scores in prenatal and 1) the total amount of VMC ($r = -.78$, $p < .05$), 2) the total frequency of husband's visitation ($r = -.74$, $p < .05$), and 3) the frequency of husband's visitation in prenatal ($r = -.76$, $p < .05$).

Correlations were also run by gender. Significant correlations between the IBM control scores prenatal and postpartum ($r = .97$, $p < .05$), and between the postpartum IBM care scores and the amount of VMC postpartum ($r = -.99$, $p < .05$) were found in husbands, but not in wives. On the other hand, in the only wives' scores significant

correlation were found between 1) the prenatal IBM care scores and the PCI postpartum verbal scores ($r = .95$, $p < .05$), 2) the prenatal IBM care scores and the total frequency of husband's visitation ($r = -.96$, $p < .05$), 3) the postpartum IBM care scores and the postpartum PCI nonverbal scores ($r = .95$, $p < .05$) and the total frequency of VMC ($r = .97$, $p < .05$), and 4) the prenatal IBM control scores and the frequency of husband's visitation prenatally ($r = 1.00$, $p < .05$) (Table 7).

Table 7. Correlations between IBM Scores and Other Variables

	Husbands Only (n = 4)				Wives Only (n = 4)				Total (N = 8)			
Variables	1	2	3	4	1	2	3	4	1	2	3	4
1. IBM Care prenatal	—	.87	-.78	-.90	—	.94	-.69	.36	—	.83*	-.21	-.18
2. IBM Care postpartum	.87	—	-.51	-.69	.94	—	-.61	.35	.83*	—	-.34	-.15
3. IBM Control prenatal	-.78	-.51	—	.97*	-.69	-.61	—	-.91	-.21	-.34	—	.73*
4. IBM Control postpartum	-.90	-69	.97*	—	.36	.35	-.91	—	-.18	-.15	.73*	—
PCI Total prenatal	.84	.98*	-.56	-.72	.91	.98*	-.45	.16	.85†	.88†	-.27	-.35
PCI Total postpartum	.73	.96*	-.27	-.47	.94	.97*	-.45	.13	.71*	.95††	-.34	-.25
PCI Nonverbal prenatal	.83	.89	-.76	-.86	.85	.77	-.22	-.19	.84*	.74*	-.26	-.45
PCI Nonverbal postpartum	.57	.58	.03	-.16	.86	.95*	-.34	.07	.68	.89††	-.12	-.04
PCI Verbal prenatal	.82	.99†	-.51	-.67	.88	.99*	-.49	.26	.82*	.89††	-.26	-.31
PCI Verbal postpartum	.71	.96*	-.29	-.49	.95*	.99*	-.48	.15	.69	.93††	-.38	-.29

Note. *$p < .05$, †$p < .01$, ††$p < .005$.

Table 7. Continued

Variables	Husbands Only (n = 4)				Wives Only (n = 4)				Total (N = 8)			
	1	2	3	4	1	2	3	4	1	2	3	4
Amount of VMC total	-.93	-.82	-.91	.98	-.79	-.78	.96*	-.85	-.78*	-.75*	.64	.33
Amount of VMC prenatal	-.53	-.65	-.11	.10	.35	.44	.42	-.67	-.02	.07	.02	-.13
Amount of VMC postpartum	-.79	-.99*	.45	.63	-.53	-.33	.92	-.80	-.59	-.53	.40	.14
Frequency of VMC total	.37	.11	-.87	-.74	.85	.97*	-.43	.20	.60	.65	-.52	-.38
Frequency of VMC prenatal	.19	.05	-.73	-.60	.89	.94	-.34	.02	.55	.61	-.43	-.35
Frequency of VMC postpartum	.47	.11	-.91	-.79	.73	.92	-.43	.31	.57	.61	-.54	-.38
Husband's visitation total	-.60	-.44	.93	.88	-.96*	-.99†	.70	-.45	-.74*	-.74*	.60	.39
Husband's visitation prenatal	-.93	-.91	.82	.92	-.75	-.69	1.0††	-.88	-.76*	-.72*	.60	.29
Husband's visitation postpartum	-.09	.15	.69	.52	-.75	-.88	.17	.09	-.44	-.51	.38	.33
Number of support systems	-.44	-.60	.59	.62	.67	.58	.03	-.44	.22	.39	-.13	-.16

Note. *$p < .05$, $^{\dagger}p < .01$, $^{\dagger\dagger}p < .005$.

VMC Experience during Satogaeri Bunben

VMC experience during *Satogaeri Bunben* was captured quantitatively using the PCI scores and the amount and frequency of VMC sessions. There are three PCI scores: nonverbal (7 to 35), verbal (18-90), and the sum of verbal and nonverbal scores (25-125). The higher the PCI scores, the higher a couple is satisfied with their communication. There is no cut-off point of the PCI scores. However, one study showed that happily married couples typically had a mean of 105.2 (76.1 verbal/29.1 nonverbal) while less content couples typically had a mean of 81.4 (58.2 verbal/ 23.2 nonverbal) (Navran, 1967).

The mean nonverbal PCI scores were 24.8 (*SD* = 2.3) prenatal and 23.9 (*SD* = 1.9) postpartum. The comparison of mean prenatal nonverbal PCI scores between husbands and wives were 25.3 (*SD* = 8.0) for husbands and 24.3 (*SD* = 11.9) for wives. The postpartum mean nonverbal PCI scores were 23.8 (*SD* = 1.0) for husbands and 24.0 (*SD* = 2.7) for wives. The mean verbal PCI scores were 67.1 (*SD* = 8.3) prenatal and 66.1 (*SD* = 8.0) postpartum. The mean prenatal verbal PCI scores between husbands and wives were 68.3 (*SD* = 9.6) for husbands and 66.0 (*SD* = 8.0) for wives. The mean postpartum verbal PCI scores were 64.3 (*SD* = 7.5) for husbands and 68.0 (*SD* = 9.3) for wives. The mean total PCI scores were 91.9 (*SD* = 10.3) prenatal and 90.0 (*SD* = 9.7) postpartum. The prenatal PCI total scores showed a mean of 93.5 (*SD* = 7.0) for husbands and 90.3 (*SD* = 3.5) for wives. The mean postpartum PCI total score was 88.0 (*SD* = 11.8) for husbands and 92.0 (*SD* = 10.3) for wives (Table 5). In total data (*N* = 8), the means of all PCI scores (nonverbal, verbal, and total) were decreased in postpartum, although it was not significant. However, the mean scores of all PCI scores (nonverbal,

verbal, and total) were decreased in postpartum for husbands, while the mean verbal and total PCI scores were increased in postpartum for wives.

The average PCI scores of unhappy married couples in the former study were 81.4 for total score, 23.2 for nonverbal score, and 58.2 for verbal score and the average of PCI scores of happy married couples were 105.2 for total score, 29.1 for nonverbal score, and 76.1 for verbal score (Navran, 1967). The PCI total score in prenatal of Couple 3 husband was lower than the average PCI total score of unhappy married couple. The PCI nonverbal scores in both prenatal and postpartum of Couple 1 wife and the score in prenatal of Couple 3 husband were lower than the average PCI nonverbal score of unhappy married couple. The PCI verbal scores of in both prenatal and postpartum of Couple 3 husband were lower than the average PCI verbal score of unhappy married couple. On the other hand, Couple 2 wife had the higher scores than the average PCI scores of happy married couples in the PCI total in prenatal and verbal in both prenatal and postpartum. Although the PCI total scores in prenatal of Couple 2 wife and Couple 4 husband, the PCI nonverbal scores in prenatal of Couple 2 and Couple 4 husband and in postpartum of Couple 2 wife, and the PCI verbal scores in prenatal of Couple 2 wife and Couple 4 husband were not higher than the average PCI scores, they were equal or close (under 1 or 2) to the average scores. Couple 2 and 4 showed the opposite direction of the PCI total scores of husband and wife. The PCI total scores of Couple 2 and 4 husbands were largely decreased in postpartum (-11 and -8), while those of Couple 2 and 4 wife were increased in postpartum (+4 and +3).

The amount of time spent in each VMC exchange, the frequency of VMC exchanges, and the frequency of husband's visitation to wife were different among

couples. The longest period of VMC diary was Couple 1 (59 days) and the shortest was Couple 4 (40 days). Couple 2 had the most VMC experiences, both in terms of time (623 minutes/ 51 days) and frequency (24 sessions/ 51 days), while Couple 1 had the least VMC experiences in both the amount of time (408 minutes/ 59 days) and the frequency (11/ 59 days). The average time of each VMC session was the longest in Couple 3 (60.6 minutes /one VMC session) and shortest in Couple 2 (25.8 minutes /one VMC session). All of the couples decreased the VMC amount and frequency in postpartum, with some more markedly than others. The number of husband's visitation remained stable for Couple 2. The husband's visitation increased for Couples 1 and 4 in postpartum and decreased for Couple 3. However, Couple 1 had the most husband visits overall (Tables 8 and 9).

Pearson correlations, between the PCI total, nonverbal, and verbal scores, prenatal and postpartum in total data ($N = 8$), were significantly correlated ($r = .74$-$.99$, $p < .05$) except between 1) the PCI nonverbal prenatal and postpartum, 2) the PCI nonverbal postpartum scores and the PCI total prenatal scores, and 3) the PCI nonverbal and the PCI verbal prenatal scores. There were significant negative correlations between the total amount of VMC and 1) the PCI total prenatal scores ($r = -.74$, $p < .05$), and 2) the PCI verbal prenatal scores ($r = -.75$, $p < .05$). Total of husband's visitation was significantly negatively correlated with 1) the prenatal PCI total scores ($r = -.72$, $p < .05$) and with 2) nonverbal prenatal scores ($r = -.74$, $p < .05$). The number of prenatal husband's visitation was also significantly negatively correlated with 1) the PCI total prenatal scores ($r = -.74$, $p < .05$), and 2) with the PCI verbal prenatal scores ($r = -.75$, $p < .05$). When correlations were run by gender, a significant negative relationship was

found between the PCI scores and the amount of VMC in husbands (r = -.97- -1.0, p < .05), while a significant relationship was found between the PCI scores and 1) the frequency of VMC (r = .95-1.0, p < .05), 2) total of husband's visitation (r = -.95- -.98, p < .05), and 3) the number of support systems (r = .96, p < .05) in wives (Table 10).

Table 8. Summary of Video-Mediated Communication Sessions during *Satogaeri Bunben*

Couple	Prenatal			Postpartum			Total		
	Length (days)	Amount (minutes)	Frequency	Length (days)	Amount (minutes)	Frequency	Length (days)	Amount (minutes)	Frequency
1	29	240	6	30	168	5	59	408	11
2	20	448	14	31	175	10	51	623	24
3	12	260	4	30	225	4	42	485	8
4	14	170	5	26	115	3	40	285	8

Table 9. Summary of Husband's Visitation (Frequency) during *Satogaeri Bunben*

Couple	Prenatal (Frequency)	Postpartum (Frequency)	Total (Frequency)
1	3	4	7
2	1	1	2
3	3	3	6
4	1	3	4

Table 10. Correlations between PCI Scores and Other Variables

Variables	Husbands Only (n = 4)						Wives Only (n = 4)					
	1	2	3	4	5	6	1	2	3	4	5	6
1. PCI Total prenatal	—	.93	.95	.43	1.0††	.95*	—	.99†	.85	.99†	.99*	.99*
2. PCI Total postpartum	.93	—	.77	.65	.96*	1.0††	.99†	—	.90	.98*	.96*	1.0††
3. PCI Nonverbal prenatal	.95	.77	—	.18	.92	.81	.85	.90	—	.84	.75	.91
4. PCI Nonverbal postpartum	.43	.65	.18	—	.48	.57	.99†	.98*	.84	—	.84	.97*
5. PCI Verbal prenatal	1.0††	.96*	.92	.48	—	.97*	.99*	.96*	.75	.84	—	.95*
6. PCI Verbal postpartum	.95*	1.0††	.81	.57	.97*	—	.99*	1.0††	.91	.97*	.95*	—
Amount of VMC total	-.85	-.64	-.94	-.23	-.82	-.66	-.64	-.63	-.34	-.56	-.70	-.64
Amount of VMC prenatal	-.51	-.75	-.24	-.98*	-.57	-.69	.61	.62	.73	.69	.54	.60
Amount of VMC postpartum	-.99†	-.97*	-.90	-.48	-1.0††	-.98†	-.17	-.21	-.13	-.05	-.18	-.25
Frequency of VMC total	.22	-.14	.52	-.52	.15	-.09	.99*	.96*	.75	.99*	1.0††	.95
Frequency of VMC prenatal	.20	-.16	.49	-.70	.12	-.09	.99*	.99†	.91	.99*	.95*	.99*
Frequency of VMC postpartum	.19	-.16	.47	-.36	.11	-.12	.91	.86	.56	.92	.96*	.84
Husband's visitation total	-.55	-.21	-.78	.32	-.48	-.27	-.95*	-.95	-.74	-.91	-.96*	-.95
Husband's visitation prenatal	-.93	-.76	-.98*	-.32	-.91	-.78	-.53	-.53	-.29	-.43	-.58	-.56
Husband's visitation postpartum	.02	.38	-.30	.73	.10	.31	-.95*	-.94	-.81	-.98*	-.94	-.92
Number of support systems	-.73	-.50	-.86	.30	-.69	-.58	.70	.76	.96*	.71	.57	.77

Note. *$p < .05$, †$p < .01$, ††$p < .005$.

Table 10. Continued

Variables	Total ($N = 8$)					
	1	2	3	4	5	6
1. PCI Total prenatal	—	.86†	.90††	.69	.99††	.87††
2. PCI Total postpartum	.86†	—	.74*	.88††	.86†	.99††
3. PCI Nonverbal prenatal	.90††	.74*	—	.58	.84†	.75*
4. PCI Nonverbal postpartum	.69	.88††	.58	—	.70	.82*
5. PCI Verbal prenatal	.99††	.86†	.84†	.70	—	.87 ††
6. PCI Verbal postpartum	.87††	.99††	.75 *	.82*	.87 ††	—
Amount of VMC total	-.74*	-.60	-.62	-.42	-.75*	-.62
Amount of VMC prenatal	.01	.07	.25	.23	-.06	.02
Amount of VMC postpartum	-.60	-.49	-.49	-.15	-.61	-.56
Frequency of VMC total	.56	.49	.62	.53	.53	.47
Frequency of VMC prenatal	.55	.50	.69	.49	.49	.49
Frequency of VMC postpartum	.51	.43	.50	.53	.49	.39
Husband's visitation total	-.72*	-.62	-.74*	-.53	-.69	-.62
Husband's visitation prenatal	-.74*	-.60	-.61	-.36	-.75*	-.63
Husband's visitation postpartum	-.42	-.39	-.55	-.48	-.37	-.36
Number of support systems	.16	.54	.33	.64	.11	.50

Note. *$p < .05$, $^{\dagger}p < .01$, $^{\dagger\dagger}p < .005$.

Across-Method [QUAL+quan] Analysis

The across-method [QUAL + quan] analysis is the final analysis phase. In across-method analysis, the within-method data are compared and contrasted, looking for convergence and/or divergence of data. It can also illuminate the emergence of new insights into the data, not seen in the individual within method analyses. This study used a triangulation-convergence model that was qualitatively driven. Therefore, the analysis of the qualitative data from the

Participant Diary, which revealed that the data fell into two groups, will provide the organizing structure for this section. The discussion begins with the presentation of the combined qualitative and quantitative data (Table 11) to provide a visual overview, and then proceeds with an overall interpretation by groups: 1) the engaged group (Couples 1,2, and 4), and 2) the detached group (Couple 3).

Table 11. Across-Method [QUAL + quan] Data

	Three Engaged Couples		One Detached Couple	
	*QUAL*itative	*quan*titative	*QUAL*itative	*quan*titative
Father-Infant Attachment	<u>Prenatal</u> • Husband shared about fetus' growth against the wife's growing tummy • Husband talked to fetus during VMC • Couples discussed about fetus, such as sex, name, weight, the prenatal check up results, and upcoming birth • Couples showed each other's purchases for baby and baby presents	<u>Prenatal</u> • One couple had the highest TKHS scores between husbands or wives	<u>Prenatal</u> • Couple did not talk about fetus' growth although husband discussed about baby's name with wife	<u>Prenatal</u> • Couple had the lowest scores of TKHS between husbands or wives
	<u>Birth</u> • Two husbands attended childbirth, one husband met babies twenty minutes after a CS delivery • Husbands were relieved at baby's safely born • Husbands stated how sweet baby was • Husbands expressed their determinations to grow up as a proud father and human being		<u>Birth</u> • Husband attended childbirth • Husband were relieved at baby's safely born • Husband expressed an ambivalence feeling toward birth, "I cannot believe that baby was born" • Wife focused on myself in baby "that baby's crying face is ugly, but look just like me"	

Table 11. Continued

	Three Engaged Couples		One Detached Couple	
	*QUAL*itative	*quan*titative	*QUAL*itative	*quan*titative
Father-Infant Attachment	<u>Postpartum</u> • Couples enjoyed sharing various baby's face and daily events • Husbands were excited and eager to see baby • Husbands noticed and talked about baby's growth and changes • Husbands tried to seek a good idea for doing VMC longer to see baby more	<u>Postpartum</u> • TKHS scores of two couples increased in postpartum • TKHS scores of one couple decreased in postpartum and was the lowest between husbands or wives	<u>Postpartum</u> • Couples enjoyed sharing various baby's face and daily events • Husband was excited and eager to see baby • Husband felt fun and glad with just watching the baby • Husbands stated baby's crying was noisy because of clear sounds of VMC	<u>Postpartum</u> • TKHS scores were decreased in postpartum • TKHS score of wife was the lowest between wives
The Marital Relationship	<u>Prenatal</u> • Couples observed each other and expressed the concerns about each other • Couples shared the same experience of not only pregnancy but also normal life	<u>Prenatal</u> • Dysfunctional intimacy was seen in one wife with IBM care score	<u>Prenatal</u> • Couple focused on own feelings instead of spouse' feelings • Husband noticed that wife talked more happily and longer using VMC, but did not reflect about her feelings and conditions at all	<u>Prenatal</u> • Dysfunctional intimacy was seen in couple with IBM care scores and in husband with IBM control score
	<u>Birth</u> • Couples expressed thankfulness each other		<u>Birth</u> • Couple expressed thankfulness each other	

Table 11. Continued

	Three Engaged Couples		One Detached Couple	
	*QUAL*itative	*quan*titative	*QUAL*itative	*quan*titative
The Marital Relationship	<u>Postpartum</u> • Wives understood husband's eagerness to see baby and tried to show baby to share baby's growth and changes at the real time • Wives felt sorry if they can't show baby • Husband understood wife's efforts to show baby and encouraged her to take care of baby, "*ganbare*" and "*otsukaresan*" • Husband knew about wife accustomed to baby care with her parent's support • Couples observed each other and expressed the concerns about each other	<u>Postpartum</u> • Dysfunctional intimacy was seen in two wives with IBM care scores • IBM care scores of all husbands were decreased in postpartum, while IBM control scores of all wives were increased in postpartum	<u>Postpartum</u> • Couple did not talk about each other's condition at all	<u>Postpartum</u> • Dysfunctional intimacy was seen in couple with IBM care scores and in husband with IBM control score • IBM control scores of couple were decreased in postpartum

Table 11. Continued

	Three Engaged Couples		One Detached Couple	
	*QUAL*itative	*quan*titative	*QUAL*itative	*quan*titative
VMC Experience	<u>Positive Experience</u> • Couples described VMC experience as great and fun • Couple talked about visual images and sharing the real time experience together • Couples exchanged their information with visual images and understood spouses' conditions • Visual images made husbands see fetuses/babies • Couple utilized visual images to see and show baby presents and preparation for hospital admission • Couple integrated VMC as a daily event such as saying "good night"	<u>PCI Scores</u> • One wife had the lower score of PCI nonverbal than the average PCI nonverbal score of unhappy married couple • One wife and one husband had the higher scores than the average PCI scores of happy married couples in PCI total and verbal • PCI total and verbal scores of all husbands were decreased in postpartum • Two couple showed the opposite direction between husbands and wives in PCI total and verbal; husbands decreased, but wives increased	<u>Positive Experience</u> • Couple described VMC experience as great and fun • Wife stated that the empty-handed function made her easy to hold and cradle during VMC	<u>PCI Scores</u> • Husband had the lower scores than the average PCI total score of unhappy married couple in all PCI scores (total, nonverbal, and verbal) • Husband had the lowest scores in all PCI scores between husbands

Table 11. Continued

	Three Engaged Couples		One Detached Couple	
	*QUAL*itative	*quan*titative	*QUAL*itative	*quan*titative
VMC Experience	<u>Negative Experience</u> • One couple complained about a technical issue • One couple stated about autonomy and obligation of VMC • One couple stated about glances slipping off • Husband stated about inconvenience of VMC • One couple who had prior VMC experience did not state the negative comments at all	<u>Amount and Frequency of VMC</u> • One couple had the most VMC experience in both the amount and the frequency during *Satogaeri Bunben*, while another couple had the least VMC experience in both the amount and the frequency; the difference between two couples was about twice in both amount and frequency • All couples decreased VMC amount and frequency in postpartum	<u>Negative Experience</u> • Couple complained about a technical issue in almost a half of all sessions • Couple stated about autonomy and obligation of VMC, “VMC makes me keep in front of screen. Therefore, it is inconvenience in some cases”	<u>Amount and Frequency of VMC</u> • Couple had the longest average time of each VMC • Couple decreased VMC amount and frequency in postpartum

Table 11. Continued

	Three Engaged Couples		One Detached Couple	
	*QUAL*itative	*quan*titative	*QUAL*itative	*quan*titative
VMC Experience	<u>Other Participants</u> • Wife's parents and husband's parents attended • Other attendance enjoyed VMC with couples • Husband saw wife's parents in postpartum and understood how important their support is for wife	<u>Husband's Visitation</u> • One husband visited the most during *Satogaeri Bunben*, while another visited the least • Two husbands visited more in postpartum	<u>Other Participants</u> • Wife's parents and siblings attended • Wife noted the additional VMC experience between her family and sister living apart • Wife and her family enjoyed VMC and wife would like to use VMC after *Satogaeri Bunben* as especially her parents enjoyed VMC	<u>Husband's Visitation</u> • Husband visited the most in prenatal, but not in postpartum although he lived the closest to wife's parents' house

The Engaged Group (Couples 1, 2, & 4)

The three couples in the engaged group were attentive and responsive to each other. From the qualitative data, they appeared to be attuned to each other's verbal and nonverbal cues, noting them in their diary entries, and responding to them. The infant and pregnancy were very central to their conversations and diary entries, but the conversations also extended to other parts of their lives. While it was very 'easy' to see how these three couples were grouped using the qualitative data, the quantitative data was not as consistent.

First, the TKHS scores were mixed for this group. The TKHS was used as a measure of parent-infant/fetus attachment or close feelings toward the infant/fetus. Two couples (Couple 1 and 2) of the engaged couples group increased the TKHS scores in postpartum although only Couple 2 husband could not be in the delivery room because of the C-Section and twin birth. Couple 4 was a little different. While their baseline scores were similar to Couple 2, their scores decreased by postpartum. This was the first insight gained that maybe couples who appear to be engaged, attentive and responsive, may still have attachment problems that need attention. Even though both Couple 2 and 4 husbands go to a business trip, Couple 4 husband travelled the most of all the husbands. Both he and his wife talked about their frustrations with being unable to use VMC when he was away as the husband could use VMC only at home. Their husband's diary entries at the same time were very endearing to his pregnant wife, developing fetus, and new infant, so the TKHS scores may be reflecting more frustration about attachment opportunities than a lack of attachment. The TKHS scores may also be a cue that there are sub-groups within the 'engaged' couple group or that a third grouping category may

be emerging.

Second, the IBM scores, which are reflected measures of the couple's relationship and/or feelings of intimacy or closeness with each other, were very interesting. There are two IBM scores, IBM *care* and IBM *control*. All IBM care scores decreased in postpartum for the husbands, despite group placement. In this group, Couple 1 wife's IBM care score increased just one point, Couple 2 wife's stayed the same as the highest scores of the IBM care, while Couple 4 wife decreased. Of note was that Couple 2 had the highest overall IBM care scores of all participants at baseline and postpartum. While the IBM care scores indicated an overall trend down for husbands, the IBM control scores indicated an overall trend upward for the wives. All three wives' IBM control scores in this group increased at postpartum, although the scores were relatively low to begin at baseline and did not increase too high by postpartum. These results from the IBM scores showed that all husbands of the engaged couples felt less cared by wives in postpartum and that all wives of the engaged couples felt more controlled by husbands in postpartum. The reason may be that husbands knew wives' busyness, exhaustion, and focuses to infant and that wives knew husbands' feelings about too much care about infant as well as themselves in postpartum.

Finally, the PCI scores also reflected some differences, especially for Couple 4, further supporting the insight that there may be a third couple group, or two sub-groups within the engaged couple group. The PCI scores are the reflected measure of couple communication with each other and included three PCI scores, the total score, the nonverbal, and the verbal score. Couple 4 husband and Couple 2 wife had the highest total scores prenatally, however, Couple 4 husband's score decreased by postpartum, but

still high, and Couple 2 wife's score increased by postpartum, to the highest of all scores across groups. The nonverbal scores for all three couples were relatively stable throughout, while all three husbands' verbal and total scores fell by postpartum. The wives' PCI scores varied. Although Couple 2 wife increased all PCI scores, nonverbal, verbal, and total in postpartum, Couple 1 wife decreased the PCI verbal and total scores and Couple 4 decreased the PCI nonverbal scores in postpartum. The results from the PCI scores described that all husbands decreased communication satisfaction in postpartum as the amount and frequency of VMC were also decreased because husbands had to rely on communication to see and understand wives and infants. On the other hand, wives showed various reflections regardless of the amount of VMC at the same as similar and different reflections about VMC in their diary.

The Detached Group (Couple 3)

The one detached couple in this group was quite different from the other three couples in that their diary entries were not attentive or responsive to each other. They seemed to be communicating in parallel conversations that were more centered on themselves than on each other. Of particular note was that, other than in their birth entries, the pre- and post-natal comments about the infant were very distant and, at times, even negative. It was very easy to see how this couple differed from the other three, but because this was the only couple in this group, so further within group comparisons could not be made.

The TKHS scores, the measure of parent-infant attachment, for this couple were the lowest overall of all the study couples at baseline. Of note is that they remained low, dropping only one point by postpartum, as if unchanged. These low scores were

consistent with their detached grouping. Further, this couple's comments in their diary entries were also concerning in terms of parent-infant attachment. The wife called her baby's face ugly, saying "looks like me", while the husband seemed untouched after his infant was born, saying "it is as if the baby has not been born". In this group, the TKHS scores and the diary comments seemed to go together and be of concern.

The IBM scores for this couple, which are reflected measures of the couple's relationship and/or feelings of intimacy or closeness with each other, were very interesting. There are two IBM scores, IBM *care* and IBM *control.* Like the husbands in the other group, the husband in the detached couple group also experienced a decrease in his IBM care score. The wife remained the same from prenatal to postpartum. What is interesting is that this couple had the lowest overall IBM care scores and they were the lowest scores at postpartum. The IBM care scores of both the husband and the wife from prenatal to postpartum were also considered dysfunctional intimacy. The IBM control scores provided some insights for this group. The wife's baseline IBM control score was the highest of all the wives in prenatal and decreased in postpartum, while the other group's control scores increased in postpartum. Also of interest was that the husband's IBM control scores which were also the highest of all the husbands' scores at baseline and at postpartum at the same as dysfunctional intimacy, although it decreased slightly. These scores appeared to be more aligned with the qualitative group assignments, with obvious differences in care and control scores for this couple.

Finally, the PCI scores also reflected some differences. The PCI scores are the reflected measure of couple communication with each other and include three PCI scores, the total score, the nonverbal, and the verbal score. Couple 3 had the lowest overall total

scores of all the couples and they remained mostly unchanged by postpartum. This pattern of little change in scores throughout data collection was also reflected in their diary entries, which other than during the birth entries were very steady and unengaged or touched by the other. Although the PCI total scores at postpartum were not the lowest for the wives in this study, the all PCI scores (total, nonverbal, and verbal) of the husband from prenatal to postpartum were the lowest for the husbands as well as the lower for the unhappy married couples of the former studies. Again, the detached couple reflected the low satisfaction of couple's communication and the marital relationship with both qualitative data from their diaries and quantitative data from the IBM and PCI scores.

Summary

The across-method analysis provided some areas of convergence between the qualitative and quantitative data. It also highlighted areas of divergence, suggesting that there may be more sub-groups or number of groups if more couples had participated in the study. The analysis also provided some new insights, such as just being engaged with or attentive to each other may not mean that father-infant attachment or the marital relationship may not still be at risk.

Overall, this data provides a *preliminary* look at how the different approaches to data collection provide different types of insights into couples' communication, intimacy, and developing parent-infant attachment behaviors. The data is considered preliminary, because only four couples were involved in this comparative case study and having only one couple in the second group, limited the exploration of further sub-groups. However, the use of VMC, which was specifically being piloted because it provided visual images and the real time, or virtual synchronized experience, was a success for all couples, as

evidenced by their recordings of satisfaction and desire to continue.

CHAPTER V

DISCUSSION

This study began as an exploration of individual experiences at the intersection of an emerging technology, VMC, and a long-standing cultural tradition, *Satogaeri Bunben,* in a country steeped in both. The discussion of findings will center on these experiences, especially in relation to father-infant attachment and the marital relationship. The chapter begins with a brief introduction and ends with limitations of the study and implications for nursing research and practice.

Introduction

Pregnancy and childbirth are considered universal and biological events as well as cultural products, infused with meaning and rich tradition (Matsuoka, 1991). In Japan, *Satogaeri Bunben* is one cultural tradition surrounding pregnancy and childbirth that has endured for more than 300 years. In 'classic' *Satogaeri Bunben*, the married, pregnant couple is separated geographically, living apart during the late prenatal to postpartum period. The wife returns to her parent's house for support, while the husband stays in the couple's house to continue his work. While there are many positive aspects for Japanese couples who honor *Satogaeri Bunben*, there are also some unique challenges, especially in relation to developing father-infant attachment and maintaining the marital relationship.

Satogaeri Bunben provided the local context for this study, but it was not the focus of the study. In this study, the primary focus was on the exploration of an intervention to address these challenges, so couples can continue to keep a tradition that has not only survived the test of time, but also continues to provide support to new

mothers and their newborns. The broader context informing this study was a social one – rising reports of domestic and child abuse rates in Japan, heightening the emphasis on supporting new families. Two risk factors for child abuse are decreased father-infant attachment and poor marital relations and/or corresponding domestic abuse.

The intervention explored was VMC, which was piloted for use by four couples during their *Satogaeri Bunben* experience with a special focus on father-infant attachment and the marital relationship. VMC was specifically selected because it provides both visual and audio cues during communication exchanges, creating virtual co-presence for a couple who is unable to experience physical co-presence. The addition of visual cues is particularly important in Japan because Japanese communication is highly contextual and more often non-verbal than verbal. Further, Japan has one of the best broadband systems worldwide, an internet penetration rate of 78% and with 87.2% of the PC ownership although people who are older or the lower economic status less likely to use PC (JMIAC, 2010a; 2010b).

This study described how visual images supported Japanese couple's nonverbal communication. Japanese communication is highly contextual, relying extensively on the use of ambiguity and/or lack of explanation, silence, hesitation, and pauses. Facial expression has more to do with communicating one's total feeling than verbal communication of feeling (Mehrabian, 2007). The Japanese focus more on nonverbal behavior than most other cultures. For example, the Japanese complicated nonverbal communication, such as *enryo-sasshi* communication, is difficult to use without understanding Japanese culture and communication style (Ishii, 1984; Lebra & Lebra, 1986; Ramsey, 1984). "*Enryo"* refers to the Japanese reserve, restraint and deference, and

"*sasshi*" means to surmise, to guess and to consider (Ramsey, 1984). *Enryo-sasshi* communication was often seen in the Participant Diary in this study. One example of *enryo*, was when one husband recorded that he would like to see his infant more often in the postpartum period, but he did not say this to his wife, recording instead that he should be patient not to say his will, which was seeing infant more, as he understood that his wife was too busy to do VMC more. An example of *sasshi*, was when one husband did not talk about his exhaustion from a long business trip, but his wife noticed in her entries that she could see his face was pale and looked tired. Conversely, the wife did not talk about the high stress she was feeling because of the due date approaching or chilcare, but her husband recorded in his entries that he noticed that he could 'see' she was very nervous.

Four married couples who expected their first child and chose *Satogaeri Bunben* participated in this study. The latest statistics regarding marriage and childbirth in Japan showed that the average ages of the first marriage in women and in husbands were 28.6 years old and 30.4 years old respectively, the average age of women having the first child was 29.7 years old in 2009 and the average age of men was 31.6 years old in 2008, and the average length from marriage to the first childbirth was 2.19 years (JMHLW, 2009a; 2010a; 2010e). One wife was younger than the average and the couple she was part of was younger than the average and had a shorter marriage period. But, the average age of husbands (31.0 years old) and wives (29.5 years old) and the average length of marriage (2.25 years) of this study's participants were similar to the average Japanese married couple who expected the first child.

The statistics related to employment changes before and after birth in 2003 and

2005 is little old, but it presented the facts of women's employment and education levels of parents before and after childbirth in Japan. The rate of housewives in women of under five-year marriage and with no child was decreased in 2005 (11.8%) from in 1992 (15.7%), while the rate of employment in those women was increased in 2005 (26.8%) from 1992 (23.3%). The turnover rate in women after childbirth was increased (41.3%) in 2000-2004 than in 1985-11989 (35.7%), however, the employment rate in women after childbirth was almost stable (about 25%) (Japan National Institute of Population and Social Security Research [JNIPSSR], 2006). Regarding a relationship between education level and employment after childbirth, the higher education the wives have, the more wives continue to work after childbirth. In contrast, the higher education the husbands have, the more their wives are housewives (JMHLW, 2003). In this study, two wives were employed full-time and other two were housewives and all wives had more than high school degrees and all husbands had at least college degrees. Compared to the statistics above, the numbers of employment and wives were equal in this study and the husband's education level was equal, but one husband with a graduate degree did not prevent wife's full-time employment in this study.

The specific aims of the study were: 1) to explore video-mediated communication (VMC) during *Satogaeri Bunben* in relation to father-infant attachment and the marital relationship and 2) to describe the VMC experiences of Japanese couples separated during *Satogaeri Bunben*. Both qualitative and quantitative approaches were used to explore and describe a cross-section of couple's reflections about VMC experience during *Satogaeri Bunben*. The qualitative data was collected by the Participant's Diary to know how the participants felt and reacted at the time to VMC. The

quantitative data was collected by the participant's diary and a web survey including three assessment tools regarding parent-infant attachment (the TKHS Closeness scores), intimacy in a couple's relationship (the IBM Care and Control scores), and satisfaction with a couple's communication (the PCI Nonverbal, Verbal, and Total scores) to compare the existing normative data and see changes of those scores between prenatal and postpartum.

This study was qualitatively driven with a triangulation-convergence model. The qualitative data from the Participant Diary created two groups, the engaged group (3 couples) who were attentive and responsive to each other, and the detached group (1 couple) who was not attentive or responsive to each other. The quantitative data was then woven in, during the across-method analysis. The discussion that follows is organized by specific aims, focusing first on data as it relates to father-infant attachment, followed by the marital relationship and overall VMC experience.

Father-Infant Attachment

Father-infant attachment is one of the most concerned issues for *Satogaeri Bunben* because the husband (father) stays behind in the couple's house and loses the opportunity to see his wife during her last prenatal months and take care of their infant after birth, to understand what an infant is like, and to continue the process of attachment. Prior to this study, there have not been many studies about father's feelings or experiences or about father-infant attachment during *Satogaeri Bunben* (Ohga, 2009). Some scholars (Kobayashi & Chen, 2008) have insisted that father-infant attachment is not influenced by separation during *Satogaeri Bunben*. Most scholars (Higuchi, 2001; Kimura et al, 2003; Ohga et al, 2005) felt the separation does effect on father-infant

attachment. This study stood in the middle and focused on describing father's feelings toward fetus/infant during *Satogaeri Bunben* as they were experienced using VMC.

Of particular note, was that the four couples appeared to be divided into two groups, based on the couples' interactions throughout VMC. Looking at their interactions alongside their TKHS scores, the engaged group and the detached group were different in prenatal, but similar in childbirth and postpartum. All three husbands of the engaged group shared discussions about the fetus' growth and movement with their wives and the couples' TKHS scores were close each other. However, the husband of the detached group did not mention about fetus at all and his TKHS scores were lower than one *S.D.* of the TKHS scores of husbands in this study. Moreover, the wife of the detached group had the lowest TKHS scores among all participants. All of the husbands in both groups were present attended the childbirth, although one husband in the engaged group could not physically be in the delivery room because it was a C-Section. All of them discussed how they were relieved that their infants were safely born. However, both the husband and the wife of the detached group were somewhat different from the engaged group, such as a husband's unrealistic comment about childbirth and a wife's self-focused comment about infant's look. All of the husbands enjoyed when their wives shared the baby's face and daily events and they all wrote that they were excited to see their infants. Two husbands in the engaged group increased their TKHS scores in postpartum, while the third husband in this group, as well as the husband in the detached group decreased their TKHS scores in postpartum. The difference of the TKHS scores in postpartum raised a concern about a subgroup in the engaged group, or maybe that even though the couples were engaged with each other about the baby, it did not mean that the husband was attaching to the baby.

The husband in the detached group shared positive comments, but also stated that the baby's crying is noisy because of clear sounds of VMC. This comment about irritation combined with low TKHS scores might be an indicator of dysfunctional attachment with his infant after *Satogaeri Bunben*.

The Participant Diary provided rich data about the husband's feelings toward their fetus/infant and, along with the TKHS closeness feelings scores toward fetus/infant, provided some suggestions of husband's feelings at the time. The TKHS had not been used with husbands in the prenatal period before, only as a post partum assessment of father-infant attachment. Adding this time period in this study provided some insight into change over time, which may be important for identification of at-risk fathers, in terms of child abuse/neglect. Putting the assessment early, allows for earlier intervention. However, as noted earlier, father-infant attachment starts a little later, and the postpartum assessment may have come too early, especially since not all families had been reunited. It might be better to repeat the assessment after the family is reunited and the father has had time to experience both virtual and physical co-presence, or just place the assessment later.

Like former studies of Furuya (1997) and Schachman (2010), this study found how important it appears to be for a husband, living apart from his wife and infant, to share the same experience, even though the experience is virtual. The VMC virtual experiences prompted husbands to see and communicate with their infant (fetus), who cannot talk, and to understand their growth and changes, despite geographically living apart during *Satogaeri Bunben*. The data in this study suggest that the use of VMC does not guarantee positive father-infant attachment, but it may help some husbands/fathers

maintain or improve their connections with their infants. However, the numbers are too small and many other variables influencing father-infant attachment were not controlled for (e.g. a father's childbirth experience and experience with his own father). It was particularly encouraging to read the fathers' entries about their infants.

The Marital Relationship

In common sense, it is easily imagined that couples will have difficulty understanding one another if they live apart from each other geographically. For couples separated before, during, and after childbirth, it might be a harder time to understand and share with each other because the transition to parenthood is stressful in and of itself.

In this study, the marital relationship was described by reflections from each husband and wife. Of note was that the two groups, in terms of their relationship comments and scores, were quite different from each other during the prenatal and postpartum period, but similar during childbirth. All of the husbands were at the hospital when their wives were in labor and for the childbirth and all of the couples entries showed the same reflections of thankfulness to their spouses' support and presence in childbirth. However, there was an obvious difference between these two groups in prenatal and postpartum. The engaged group's comments described couples that were concerned for and about each other, while two wives in the engaged group had dysfunctional intimacy scores on their IBM care or control assessment and their scores were improved in postpartum. The most interesting results of the IBM scores in the engaged group were that all of the husbands felt less cared by wives in the postpartum period and that all of the wives felt more controlled by husbands in the postpartum period. There are many reasons for this, such as the wives are exhausted from childbirth and need

to focus their attention and energy on caring for their new baby, who is totally dependent on them. However, in contrast, the one couple in the detached group continued to comment only about themselves and not each other and their IBM care and control scores remained low and indicative of dysfunctional intimacy.

In summary, both the Participant Diary and the IBM scores revealed the engaged group utilized VMC to keep or improve mutual understanding, while the detached group utilized VMC to talk own feelings to a spouse rather than to listen to a spouse. These differences and similarities may support the idea that the prenatal and postpartum periods are better times to find characteristics of couples and identify a future risk of dysfunctional marriage and/or DV. The delivery, or childbirth period, may not be the best time to detect problems. This is probably because the couple has something that they both are focused on and it redirects attention away from the couple like the wonder and miracle of childbirth, which can do this.

Video-Mediated Communication Experience

The maintenance of communication influences a couple's satisfaction and relationship because ongoing self-disclosure requires openness with and to each other, and in turn, is associated with increased marital satisfaction (Yelsma & Marrow, 2003). So, a positive marital relationship, or' happy' marriage, is correlated with ongoing and open communication with each other (Beach & Arias, 1983; Navran, 1967; Yelsma, 1986).

The couples' satisfaction with their communication with each other was reflected by the PCI scores. Overall, the three couples in the engaged group had higher PCI scores than the one detached group couple. However, the PCI scores of wives of the engaged

group showed some variation, while all of the husbands were similar. Further, there were differences in the amount and the frequency of VMC in couples of the engaged group. One couple had the least VMC experience in both the amount and the frequency while another couple in this group, who was the only couple with prior VMC experience, had the most VMC experience in both the amount and the frequency during *Satogeri Bunben.* The difference of the amount and frequency of VMC between these couples was approximately twofold. Also of note was that all couples decreased the VMC amount and frequency in postpartum. The results from the PCI scores indicated that all of the husbands in the engaged group decreased their PCI scores, in the postpartum, along with the amount and frequency of VMC. On the other hand, the PCI scores of wives varied, regardless of the amount and frequency of VMC. In contrast, the detached group couple PCI scores in both prenatal and postpartum remained low. Especially, all PCI scores (total, nonverbal, and verbal) of the husband from prenatal to postpartum were the lowest for all of the husbands in the study as well as being lower than scores for unhappy married couples in former studies.

One interesting finding in this study, was the significant positive correlation found between the IBM Care scores and the PCI scores, so that the results of both quantitative (the low PCI scores and the low IBM scores) and qualitative (self-focused and parallel attitudes in the Participant Diary) of the detached group are highly concerned about a risk of unhealthy marriage.

The positive experiences of VMC were similar across groups. Both of the groups described VMC experience as great and fun and commented that they enjoyed communication with multiple people, such as maternal/paternal grandparents and siblings.

The couples in the engaged group emphasized how positive the visual images and the real time experiences were to understand spouses' conditions and feelings, as well as to see infant (fetus) for husbands. The couples in the engaged group used VMC as one of their daily events such as saying good night or telling what s/he bought for their infant. The wife in the detached couple group commented that the empty-handed function was also a positive aspect of VMC and the ability for VMC to accommodate multiple people to communicate on a screen together was also particularly enjoyed by maternal grandparents, siblings, and the wife in the detached couple group. One positive comment about VMC experiences was that it was helpful for grandparents to know and practice VMC with their daughters, so they can use VMC as a communication method to support family relationship after *Satogaeri Bunben.* This is because the older people are often more hesitant to use a new technology by themselves. In addition, one husband in the engaged group also commented that VMC was positive because he realized, or could see, that there was adequate postpartum support from maternal grandparents.

The negative experiences related to VMC were similar, but slightly different between the couples in the engaged group and the detached group. A technical problem, such as a connection issue was described in both groups; however, the one detached group complained about it in almost a half of all sessions. Autonomy and obligation were also pointed as a negative aspect of VMC by both groups. Yet, in contrast of the detached couple, the engaged group described negative VMC experience as sadness for lower VMC quality rather than just complaints about the VMC function.

In closing, the couple's communication satisfaction data are very interesting, especially since this study was the first study to use the newly translated Japanese version

of the PCI. However, this also meant that there was a lack of comparison or normative data for the PCI data of this study as all prior studies used the English version with English-speaking people. It was still interesting that the PCI scores of husbands tended to be decreased in postpartum and both the amount and the frequency of VMC were decreased in postpartum, even though husbands enjoyed VMC and were eager to do VMC more. The PCI Japanese version also left a question as to whether the nonverbal communication satisfaction scores in Japanese couples will be different from normative data from other cultures, as Japanese communication is highly centered on nonverbal communication.

Limitations

Every study becomes vulnerable to criticism because of data collection decisions and trade-offs made along the way. While this study is not exempt from limitations, the limitations that are present definitely provide insight into changes in design and recruitment going forward.

The primary limitation in this study is the small sample size. While small numbers are not by themselves a limitation, especially in qualitatively driven studies, the enrollment of these four couples did not provide enough data to ensure qualitative data saturation. As stated earlier, the engaged group may with more participant couples contain two sub-groups, while clearly separate from the engaged couple group, may not stand alone. Moreover, there was only one couple in the detached group, Therefore, the small numbers and approach to sampling also impacts the interpretation and generalizability of the quantitative data.

There were a few challenges to recruitment that affected the final sample size.

First, the PI may have had too strict inclusion criteria, that each couple should have two computers, one at couple's house and another at wife's parents' house. This may have prevented more couples from participating in this study, especially because of low computer utilization in the population derived from hospitals and clinics supporting this study, as they were located in the country side and maternal grandparents were more than 50 years old are less likely to have a computer. Another challenge affecting recruitment was the lack of recruitment support for the PI. This was primarily because the PI studied in the U.S. and did not have local support network in Japan.

The second limitation was the lack of an existing Japanese measure to use for assessing couple communication. This necessitated the translation of the PCI into Japanese for use in this study. While the translation process was informative, the low numbers are not enough to begin psychometric evaluation. In addition, another measure, the TKHS, had not been used with husbands as a prenatal measure of parent-infant attachment, only during childbirth and postpartum, so no normative data existed to compare this study's findings with, which affected interpretation.

The third limitation was lack of variability in sample characteristics. All of the couples had planned this pregnancy and all of the husbands were able to attend childbirth. Having a planned pregnancy and fathers in attendance at childbirth is considered one of the positive factors related to father-infant attachment and the marital relationship. Therefore, the sample was a little biased.

The last limitation of this study concerned the time frame. This study only looked at father-infant attachment and the marital relationship during the perinatal period to one month postpartum surrounding *Satogaeri Bunben*. It did not look at the couple

early in the pregnancy or later, after the wife had returned home and rejoined her husband for awhile. In other words, this study provides a focused glimpse of the perinatal period and cannot infer long-term effects. Of note was that the immediate postpartum period was assessed primarily while the wife was still at her parents' house, before *Satogaeri Bunben* was terminated. The final data collection point was at one month and that may not be far enough out to get the best assessment data. At the very least, an additional assessment may be needed after the couple is reunited because the time after *Satogaeri Bunben* is very critical for a couple to adapt the new life and role without direct support from maternal grandparents. Also, father-infant attachment timelines are delayed from mother-infant attachment, often becoming more subject to variation after the new infant becomes more interactive. So, not assessing the marital relationship and father-infant attachment later is a limitation for this study.

Implications for Nursing Research and Practice

This study provided an initial glimpse into the use of VMC in couples separated geographically for *Satogaeri Bunben*. The Participant Diary in the Japanese couples was successful and provided rich data for analysis. The use of a diary with Japanese individuals was familiar format during pregnancy to childhood. This may not be true for other cultures or with other phenomenon. The selected measures, the TKHS, PCI, and IBM, were also completed without incident. However, the newly translated PCI needs further study. While there were no translation issues raised by the participant couples, their scores, especially in the nonverbal communication subscale, suggest that new norms may be needed for interpretation. This is especially true for individuals in Japan, whose communication is often more nonverbal than verbal. Future studies continuing the

psychometric evaluation of the PCI is needed.

The insights gained in this study about the use of VMC as a supportive system for families separated geographically may have other implications and applications in nursing. For example, this study may guide other studies with family members separated, such as was suggested by the participants in this study, who looked forward to continued use of VMC with grandparents and their developing infant.

Most of the studies related to pregnancy, childbirth, and postpartum tend to focus on mothers, rather than father. This study may provide encouragement for others researching father's experiences as well as some suggestions about what husbands/fathers think and want during having large life changes and high stresses.

The next step following this study will be to study *Satogaeri Bunben* and VMC as a support system over a longer time span, especially as it relates to not only father-infant attachment and the marital relationship but also dysfunctional attachment with infants and dysfunctional marriage tending to cause the incidence of domestic and/or child abuse. In addition, as mentioned earlier under limitations, additional psychometric evaluation is needed for the PCI for it to be used in Japan.

At last, I hope that this study will be used as valuable findings to support any couple living apart. One such couple may be a couple who has a sick infant or child hospitalized far away, while one parent has to stay home and work or even to take care of another older child. Another couple could be separated because of work. One couple in this study referred to their wish for VMC to be able to be done when the husband took long business trips.

Conclusion

This study successfully explored the use of VMC to support couples choosing classic *Satogaeri Bunben* for their first pregnancy and childbirth, focusing on decreasing the impact of the separation of the couple and later the separation of the husband from his new infant. The literature supported the need for support for both wives and husbands from the perinatal period and the need for ongoing presence of both wives and husbands in their children's lives, whether it is physical or virtual. The qualitative and quantitative data provided a first glimpse into four couples' feelings and VMC experiences, especially in relation to father-infant attachment and the marital relationship. While the sample size was small, the broad cross-section of data provided valuable insights and direction for future study.

APPENDIX A – 1. VIDEO-MEDIATED COMMUNICATION DIARY – ENGLISH VERSION

Front Page

Video-Mediated Communication Diary During *Satogaeri Bunben*

Participation Number:

Starting Date: Year, Month, Day

Completed Date: Year, Month, Day

Page 1 **DIRECTIONS**

As part of my research, I am interested in learning about your experiences and reflections using video-mediated communication with your spouse and infant while you are apart during *Satogaeri Bunben*. I would like you to record your thoughts and feelings in this diary. There are three (3) different entry forms. Each is listed below.

1. **DIARY ENTRY** (page 2-38): Complete one (1) diary entry each time your video-mediated communication. I have provided 36 blank diary sheets for you, but if you need more, I can provide them or you can feel free to make copies yourself.
2. **HUSBAND VISITATION ENTRY** (page 39): [**Husband only**] Complete one (1) visitation entry each time you are able to visit your wife and/or new baby in person.
3. **FIRST ENCOUNTER ENTRY** (page 40): Complete the first encounter entry after you meet your new baby for the first time. [**Husband only**] Complete the childbirth attendance information.

DIARY ENTRY – Example

No. 1

Date：July, 10 (Saturday)	Time: (AM)・PM 10：30 ～11 ： 30
Who participated today? Check all people. ☒ Spouse ☐Infant ☐ Maternal g-Father ☒Maternal g-Mother ☐ Paternal g-Father ☐ Maternal g-Mother ☐ Siblings of wife ☐ Siblings of husband ☐Others (please specify relationship, **no names**)	
Please describe your feeling via video-mediated communication about ● Your spouse (Husband or Wife) ● Your infant ● Video-mediated communication: ➢ What went well ➢ What did not go well ● Anything else	

Page 2-38 **DIARY ENTRY**

No.

Date : Month, Day (day of the week)	Time: AM・PM : ～ :
Who participated today? Check all people. ☐ Spouse ☐Infant ☐ Maternal g-Father ☒Maternal g-Mother ☐ Paternal g-Father ☐ Paternal g-Mother ☐ Siblings of wife ☐ Siblings of husband ☐Others ( )	

Page 39 **HUSBAND VISITATION ENTRY**

Husband Only: Please record you visit your wife and baby.

Before Childbirth

	Date of Visitation	Time of Visitation
1	Month Day（day of the week）	: ～ :
2	Month Day（day of the week）	: ～ :
3	Month Day（day of the week）	: ～ :
4	Month Day（day of the week）	: ～ :
5	Month Day（day of the week）	: ～ :
6	Month Day（day of the week）	: ～ :
7	Month Day（day of the week）	: ～ :
8	Month Day（day of the week）	: ～ :
9	Month Day（day of the week）	: ～ :
10	Month Day（day of the week）	: ～ :

After Childbirth

	Date of Visitation	Time of Visitation
1	Month Day（day of the week）	: ～ :
2	Month Day（day of the week）	: ～ :
3	Month Day（day of the week）	: ～ :
4	Month Day（day of the week）	: ～ :
5	Month Day（day of the week）	: ～ :
6	Month Day（day of the week）	: ～ :
7	Month Day（day of the week）	: ～ :
8	Month Day（day of the week）	: ～ :
9	Month Day（day of the week）	: ～ :
10	Month Day（day of the week）	: ～ :

Page 40 **FIRST ENCOUNTER ENTRY**

Please note how you felt when you saw your new baby for the first time.

Feelings toward your baby

Feelings toward your spouse (Husband or Wife)

Feelings about yourself

Other comments

Husband Only:

Did you attend childbirth?

☐ Yes
☐ No

If "No", when did you see this baby for the first time?

( ) hours after childbirth or ( ) days after childbirth

APPENDIX A – 2. VIDEO-MEDIATED COMMUNICATION DIARY – JAPANESE VERSION

表紙

里帰り分娩中のビデオ会話日記

対象者番号:

開始日: 年 月 日

終了日: 年 月 日

ページ 1

記入の仕方

このビデオ会話日記には、里帰り分娩中のビデオ会話の経験を通して、あなたが赤ちゃんや配偶者の方について感じた事をお書きください。この日記には、以下の３つの形式が含まれています。

1. **日記** (２－３８ページ): ビデオ会話を行う毎にお書き下さい。日記は３６回分ありますが、もし余分に用紙が必要な場合は、研究者に連絡をしてください。
2. **夫の訪問記録** (３９ページ): **[ご主人のみ]** 里帰り分娩中に、妻と赤ちゃんを実際に訪れた記録をしてください。
3. **初めてあなたの赤ちゃんと会った時の気持ち** (４０ページ): あなたが初めて赤ちゃんと会った時の気持ちをお書き下さい。**[ご主人のみ]** お産の立ち会いについてお書き下さい。

記入例

No. 1

日付：7 月 10 日 (土)	時間: (午前)・午後 10 : 30 ～ 11 : 30
ビデオ会話に参加された方全員を下から選んでください。 ☒ 配偶者 ☐ 赤ちゃん ☐ 妻の父 ☒ 妻の母 ☐ 夫の父 ☐ 夫の母 ☐ 妻の兄弟・姉妹 ☐ 夫の兄弟・姉妹 ☐ その他 (名前ではなく続柄をお書きください)	
ビデオ会話中にあなたが感じた事をお書きください。 ● 配偶者について (夫または妻) ● 赤ちゃんについて ● ビデオ会話について ➢ 良かったと思う点 ➢ 悪かったと思う点 ● その他	

ページ 2-17

ビデオ会話記録

No.

日付：　　月　　日（　）	時間: 午前・午後　　：　　～　　：
ビデオ会話に参加された方全員を下から選んでください。 ☐ 配偶者　☐ 赤ちゃん　☐ 妻の父　☐ 妻の母　☐ 夫の父 ☐ 夫の母　☐ 妻の兄弟・姉妹　☐ 夫の兄弟・姉妹 ☐ その他 (　　)	
あなたの感想:	

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夫の訪問記録

御主人のみ：あなたの妻と赤ちゃんを訪れた記録をお書きください。

赤ちゃんが生まれる前

	訪問日	訪問時間
1	月　　日（　　）	:　　～　　:
2	月　　日（　　）	:　　～　　:
3	月　　日（　　）	:　　～　　:
4	月　　日（　　）	:　　～　　:
5	月　　日（　　）	:　　～　　:
6	月　　日（　　）	:　　～　　:
7	月　　日（　　）	:　　～　　:
8	月　　日（　　）	:　　～　　:
9	月　　日（　　）	:　　～　　:
10	月　　日（　　）	:　　～　　:

赤ちゃんが生まれた後

	訪問日	訪問時間
1	月　　日（　　）	:　　～　　:
2	月　　日（　　）	:　　～　　:
3	月　　日（　　）	:　　～　　:
4	月　　日（　　）	:　　～　　:
5	月　　日（　　）	:　　～　　:
6	月　　日（　　）	:　　～　　:
7	月　　日（　　）	:　　～　　:
8	月　　日（　　）	:　　～　　:
9	月　　日（　　）	:　　～　　:
10	月　　日（　　）	:　　～　　:

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初めてあなたの赤ちゃんと会った時の気持ち

あなたが初めてあなたの赤ちゃんと会った時の気持ちをお書き下さい。

赤ちゃんに対しての気持ち

配偶者に対しての気持ち

あなた自身に対しての気持ち

その他

<u>御主人のみ</u>:

あなたは立ち会い分娩をしましたか？

☐ はい
☐ いいえ

“いいえ”を選んだ方は、いつ赤ちゃんと初めて会いましたか？

生後(　　) 時間　または　生後(　　)日目

APPENDIX B – 1. BASELINE INFORMATION – ENGLISH VERSION

1. **Participant:** [Insert participant number]

2. **Today's date**: [Month, day] ( ) weeks pregnancy

3. **Due Date**: [Month, day]

4. **Age**: ( ) years old

5. **Final Educational Level**:
☐ Junior High School ☐ High school ☐ Technical school ☐ College ☐ Graduate College

6. **Occupation**:
☐ Independent businessman ☐ Employer ☐ Full-Time
☐ Temporary Employment ☐ Daily Employment ☐ No job

7. **Couple's Annual Income**
☐ Under 30,000 yen ☐ 30,000-49,999 yen ☐ 50,000-69,999 yen
☐ 70,000-99,999 yen ☐ Over 100,000 yen

8. **Family Structure in Couple's Home: Other than the married couple, is there someone else who lives in your house?**
☐ No
☐ Yes **If "Yes", please choose everyone who lives with your couple.**
☐ Father of husband ☐Mother of husband ☐ Father of wife
☐ Mother of wife ☐ Siblings of husband ☐Siblings of wife
☐Others (Please specify:)

9. **Marital Length: How long have you married?** ( ) years

10. **Planned Pregnancy: Is this pregnancy planned?** ☐ Yes ☐ No

11. **How far do you live from your house to the place of *Satogaeri Bunben*?**
( ) hours by car

12. **Who are the persons to decide *Satogaeri Bunben*? Please choose two persons which two had most influence.**
☐ Wife ☐Husband ☐ Maternal g-Father ☐Maternal g-Mother
☐ Paternal g-Father ☐ Maternal g-Mother ☐ Siblings of wife
☐ Siblings of husband
☐Others (specify relationship to you, do not give names:)

13. **Please share the reasons why you chose *Satogeri Bunben.***

Reasons

14. **Please choose all potential supports that you will be able to receive after childbirth.**

☐ Spouse ☐ Paternal g-Father ☐ Paternal g-Mother ☐ Maternal g-Father
☐ Maternal g-Mother ☐ Siblings of husband ☐ Siblings of wife ☐ Friends
☐ Hospitals・Clinics ☐ Health Center ☐ City Hall・Ward Office
☐ Others (Specify relationship. Do not give names:)

15. **From Question 14, choose the three most important supports after childbirth.**

☐ Spouse ☐ Paternal g-Father ☐ Paternal g-Mother ☐ Maternal g-Father
☐ Maternal g-Mother ☐ Siblings of husband ☐ Siblings of wife ☐ Friends
☐ Hospitals・Clinics ☐ Health Center ☐ City Hall・Ward Office
☐ Others (Specify relationship. Do not give names:)

16. **Do you have prior experience using VMC?**

☐ No
☐ Yes **If "Yes", please tell me about your experience such as how long you have used VMC and what the purpose to start using VMC was.**

☐ within the past 6 months
☐ between 6 months and 1 year
☐ between 1 and 5 years
☐ more than 5 years

Purpose to start using VMC

APPENDIX B – 2. BASELINE INFORMATION – JAPANESE VERSION

1. **対象者:** [対象者番号の記入]

2. **回答日**: [月, 日] 妊娠週数(　　)週目

3. **出産予定日** : [月, 日]

4. **年齢**: (　　) 歳

5. **最終学歴**:
☐ 中学卒　☐ 高校卒　☐ 専門学校卒　☐ 大学卒　☐ 大学院卒

6. **職業**:
☐ 自営業　☐ 経営者　☐ 正職員
☐ 臨時職員(アルバイト・パートを含む)　☐ 日雇い　☐ 無職

7. **年収**
☐ 300 万円以下　☐ 30,000-49,999 万円　☐ 50,000-69,999 万円
☐ 70,000-99,999 万円　☐ 1000 万円以上

8. **家族構成:結婚されているご夫婦以外で、同居されている方はいらっしゃいますか。**
☐ いいえ
☐ はい　“はい”と答えた方は、同居されている方を全てお選びください。

☐ 夫の父親　☐ 夫の母　☐ 妻の父親
☐ 妻の母親　☐ 夫の兄弟・姉妹　☐ 妻の兄弟・姉妹
☐ その他 (詳しくお書き下さい:　　)

9. **結婚期間:結婚して何年になりますか。**　(　　) 年

10. **計画妊娠: 今回の妊娠は、計画されたものですか。**　☐ はい　☐ いいえ

11. **あなたの家から里帰り分娩先までは、どのくらい離れていますか。**
車で（　　）時間

12. **里帰り分娩を選択されたのは、主にどなたですか。主な選択者を、以下から二人お選びください。**
☐ 妻　☐ 夫　☐ 妻の父　☐ 妻の母
☐ 夫の父　☐ 夫の母　☐ 妻の兄弟・姉妹　☐ 夫の兄弟・姉妹
☐ その他（詳しくお書き下さい:　　）

13. **里帰り分娩を選択された理由をお書きください。**

理由

14. **あなたがお産後に期待できるサポートを、以下から全てお選び下さい。**

☐ 夫　☐ 夫の父　☐ 夫の母　☐ 妻の父
☐ 妻の母　☐ 夫の兄弟・姉妹　☐ 妻の兄弟・姉妹　☐ 友人
☐ 病院・クリニック　☐ 保健センター　☐ 市役所・区役所
☐ その他 (詳しくお書き下さい:　　)

15. **質問 14 で選んだサポートから、産後の主なサポートとして以下から 3 つお選びください。**

☐ 夫　☐ 夫の父　☐ 夫の母　☐ 妻の父
☐ 妻の母　☐ 夫の兄弟・姉妹　☐ 妻の兄弟・姉妹　☐ 友人
☐ 病院・クリニック　☐ 保健センター　☐ 市役所・区役所
☐ その他 (詳しくお書き下さい:　　)

16. **今まで、ビデオ会話を行った経験はありますか。**

☐ いいえ

☐ はい “はい”と答えた方は、どのくらいの期間ビデオ会話を利用していますか。またビデオ会話を始めた目的は何ですか。

☐ 6 か月以内
☐ 6 か月から 1 年以内
☐ 1－5 年以内
☐ 5 年以上

ビデオ会話を始めた目的

APPENDIX C – 1. FOLLOW-UP DATA – ENGLISH VERSION

1. **Participant:** [Insert participant number]

2. **Today's date**: [Month, day] ( ) days after childbirth

3. **When will you have a plan to complete *Satogaeri Bunben*?**

[Month, day, year] ( ) months after childbirth

4. **How do you communicate with your spouse and infant during *Satogaeri Bunben*? Please select all methods you use for communication.**

☐ Land phone ☐ Cell phone ☐ E-mail ☐Text message ☐Fax
☐ Video-mediated (Skype etc.) ☐Letter/ Card
☐ Others (Specify)

5. **From answer 4, please select the three most used methods for your distant family communication.**

☐ Land phone ☐ Cell phone ☐ E-mail ☐Text message ☐Fax
☐ Video-mediated (Skype etc.) ☐Letter/ Card
☐ Others (Specify)

6. **What is your satisfaction level with using video-mediated communication during *Satogari Bunben*?**

☐ Strongly Satisfied
☐ Satisfied
☐ Neutral
☐ Dissatisfied
☐ Strongly dissatisfied

7. **Would you like to continue to use VMC for communication with your family after *Satogaeri Bunben*? Please explain the reason in the textbox below.**

☐ Yes
☐ No

Reasons

APPENDIX C – 2. FOLLOW-UP DATA – JAPANESE VERSION

1. **対象者:** [対象者番号の記入]

2. **回答日：**[月，日]　**生後　(　　) 日目**

3. **いつ里帰り分娩を終える予定ですか？**
[年，月，日]　**生後　(　　) カ月目**

4. **里帰り分娩中、あなたはあなたの配偶者と赤ちゃんと、どのように会話をしましたか。あなたが使用した会話方法を、下記から全て選んでください。**
☐ 固定電話 ☐ 携帯電話 ☐ 電子メール ☐ 携帯メール ☐ファックス
☐ ビデオ会話(Skype など)　☐ 手紙/カード
☐ その他 (詳しくお書きください　　)

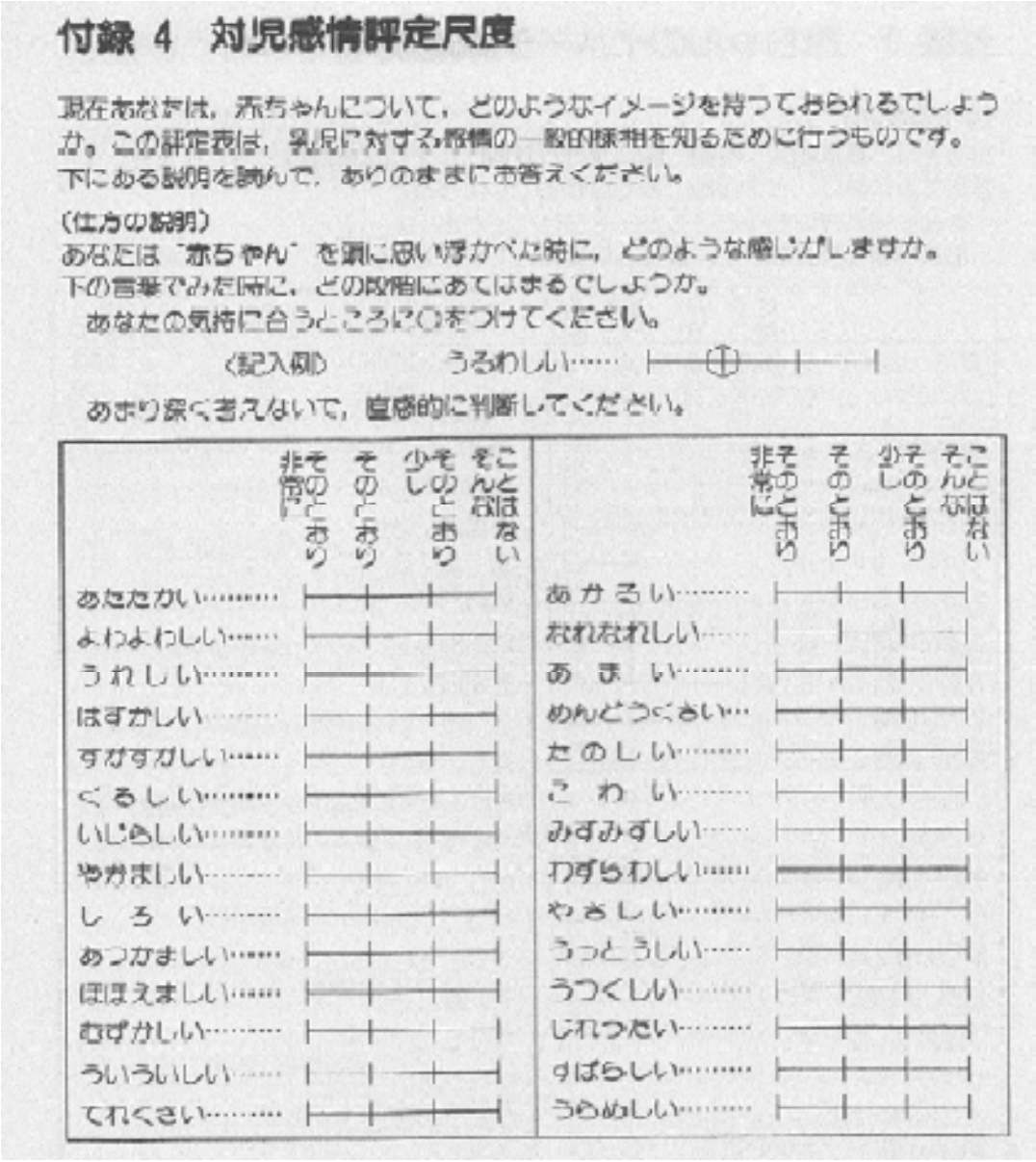
5. **4 で答えた中で、あなたが最も利用した会話方法を 3 つ選んでください。**
☐ 固定電話 ☐ 携帯電話 ☐ 電子メール ☐ 携帯メール ☐ファックス
☐ ビデオ会話(Skype など)　☐ 手紙/カード
☐ その他 (詳しくお書きください　　)

6. **あなたの里帰り分娩中に利用したビデオ会話の満足度は、以下のうちどれですか。**
☐ 非常に満足している
☐ 満足している
☐ どちらでもない
☐ 満足していない
☐ 非常に満足していない

7. **あなたは里帰り分娩後、あなたの家族とビデオ会話を続けたいと思いますか。その理由を下にお書きください。**
☐ はい
☐ いいえ

理由

APPENDIX D – 1. TAIJI KANJYO HYOTEI SYAKUDO – JAPANESE VERSION



付録 4　対児感情評定尺度

現在あなたは，赤ちゃんについて，どのようなイメージを持っておられるでしょうか。この評定表は，乳児に対する感情の一般的傾向を知るために行うものです。下にある説明を読んで，ありのままにお答えください。

（仕方の説明）

あなたは「赤ちゃん」を頭に思い浮かべた時に，どのような感じがしますか。下の言葉でみた時に，どの段階にあてはまるでしょうか。

あなたの気持に合うところに○をつけてください。

〈記入例〉　うるわしい……

あまり深く考えないで，直感的に判断してください。

	そんなことはない	少しそのとおり	そのとおり	非常にそのとおり
あたたかい……				
よわよわしい……				
うれしい……				
はずかしい……				
すがすがしい……				
くるしい……				
いじらしい……				
やかましい……				
しろい……				
あつかましい……				
ほほえましい……				
むずかしい……				
ういういしい……				
てれくさい……				

	そんなことはない	少しそのとおり	そのとおり	非常にそのとおり
あかるい……				
おれおれしい……				
あまい……				
めんどうくさい…				
たのしい……				
こわい……				
みずみずしい……				
わずらわしい……				
やさしい……				
うっとうしい……				
うつくしい……				
しれつだい……				
すばらしい……				
うらめしい……				

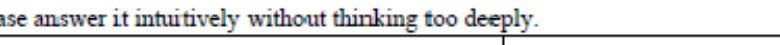
APPENDIX D – 1. TAIJI KANJYO HYOTEI SYAKUDO – ENGLISH VERSION

[No official translation/tool exists in English. This English translation completed by the PI for understanding content. Will be administered using Japanese version]

What kinds of images do you have toward a baby at present?
This rating form is implemented to understand the general aspect of feelings for a baby. After reading the explanation below, please answer naturally.

[Instructions]
When you see a picture in one's head of a baby, how do you feel?
When you see the words below, which stage do you apply to?
Please check “Circle” in the stage that matches your feeling.

<Example> Delightful



Please answer it intuitively without thinking too deeply.

	Definitely Yes	Yes	Not Really	No
Warm				
Feeble				
Happy				
Embarrassed				
Breezy				
Painful				
Touching				
Noisy				
White				
Bold				
Heartwarming				
Difficult				
Naïve				
Self-Conscious				

	Definitely Yes	Yes	Not Really	No
Bright				
Familiar				
Sweet				
Troublesome				
Fan				
Scary				
Fresh				
Annoying				
Kind				
Weary				
Beautiful				
Provoking				
Wonderful				
Grudge				

Scoring Protocol

• *Taiji Kanjyo Hyotei Syakudo* consists of 28 adjective words with 2 subscales: 14 words for feelings of closeness toward infants, and 14 for feeling of avoidance toward infants.
• All items have equivalent Likert scaling from 0 to 3 (4 options).
• The higher score of feelings of closeness toward infants indicates more closeness feelings toward infants.

Total Scores (This study focus on feelings of closeness toward infants):
❖ Feelings of closeness toward infants (14 shadowed words) = 0-42

APPENDIX E – 1. INTIMATE BOND MEASURE – ENGLISH VERSION

Code: ☐

This questionnaire lists some attitudes and behaviours which people reveal in their close relationships. Please judge your partner's attitudes and behaviour towards <u>you</u> in recent times and tick the most appropriate box for each item.

	Very True	Moderately True	Somewhat True	Not True At all
Is very considerate of me	☐	☐	☐	☐
Wants me to take his/her side in an argument	☐	☐	☐	☐
Wants to know exactly what I'm doing and where I am	☐	☐	☐	☐
Is a good companion	☐	☐	☐	☐
Is affectionate to me	☐	☐	☐	☐
Is clearly hurt if I don't accept his/her views	☐	☐	☐	☐
Tends to try and change me	☐	☐	☐	☐
Confides closely in me	☐	☐	☐	☐
Tends to criticise me over small issues	☐	☐	☐	☐
Understands my problems and worries	☐	☐	☐	☐
Tends to order me about	☐	☐	☐	☐
Insists that I do exactly as I'm told	☐	☐	☐	☐
Is physically gentle and considerate	☐	☐	☐	☐
Makes me feel needed	☐	☐	☐	☐
Wants me to change in small ways	☐	☐	☐	☐
Is very loving to me	☐	☐	☐	☐
Seeks to dominate me	☐	☐	☐	☐
Is fun to be with	☐	☐	☐	☐
Wants to change me in big ways	☐	☐	☐	☐
Tends to control everything I do	☐	☐	☐	☐
Shows his/her appreciation of everything I do	☐	☐	☐	☐
Is critical of me in private	☐	☐	☐	☐
Is gentle and kind to me	☐	☐	☐	☐
Speaks to me in a warm and friendly voice	☐	☐	☐	☐

SCORING SHEET Code: ☐

This questionnaire lists some attitudes and behaviours which people reveal in their close relationships. Please judge your partner's attitudes and behaviour towards you in recent times and tick the most appropriate box for each item.

TOTAL SCORE: Care (clear) ☐ Control (shaded) ☐	3 Very True	2 Moderately True	1 Somewhat True	0 Not True At all
Is very considerate of me	☐	☐	☐	☐
Wants me to take his/her side in an argument	☐	☐	☐	☐
Wants to know exactly what I'm doing and where I am	☐	☐	☐	☐
Is a good companion	☐	☐	☐	☐
Is affectionate to me	☐	☐	☐	☐
Is clearly hurt if I don't accept his/her views	☐	☐	☐	☐
Tends to try and change me	☐	☐	☐	☐
Confides closely in me	☐	☐	☐	☐
Tends to criticise me over small issues	☐	☐	☐	☐
Understands my problems and worries	☐	☐	☐	☐
Tends to order me about	☐	☐	☐	☐
Insists that I do exactly as I'm told	☐	☐	☐	☐
Is physically gentle and considerate	☐	☐	☐	☐
Makes me feel needed	☐	☐	☐	☐
Wants me to change in small ways	☐	☐	☐	☐
Is very loving to me	☐	☐	☐	☐
Seeks to dominate me	☐	☐	☐	☐
Is fun to be with	☐	☐	☐	☐
Wants to change me in big ways	☐	☐	☐	☐
Tends to control everything I do	☐	☐	☐	☐
Shows his/her appreciation of everything I do	☐	☐	☐	☐
Is critical of me in private	☐	☐	☐	☐
Is gentle and kind to me	☐	☐	☐	☐
Speaks to me in a warm and friendly voice	☐	☐	☐	☐

Scoring Protocol

• The Intimate Bond Measure consists of 24 items with 2 subscales: 12 items for the care dimension, and 12 for the control dimension.
• All items have equivalent likert scaling from 0 to 3 (4 options).
• Higher scores on the dimensions indicate higher perceived care and control.
• Both subscales have a minimum score of 0 and a maximum score of 36.

Total Scores:

❖ Care (clear) = Total of all clear (unshaded) scores (12 items)
❖ Control (shaded) = Total of all shaded scores (12 items)

APPENDIX E – 2. INTIMATE BOND MEASURE – JAPANESE VERSION

付：IBM の日本語完訳と採点方法

次の質問には，親しい人間関係で見られる態度や行為が取り上げられています．最近，あなたのご主人/奥様があなたに取っている態度や行為を考えて，最もよくあてはまるところにX印をつけて下さい．

私の夫/妻は：

1．何かにつけて，私のことをとても気にかけてくれる．

（ ）非常にそう	3点
（ ）かなりそう	2点
（ ）いくらかそう	1点
（ ）全く違う	0点

＊以下の質問においても，同様に得点化する．

2．議論になれば，私に，自分の肩を持ってほしいと思っている．

3．私が何をしてどこにいるか，ということを，詳しく知りたがる．

4．私にとって，気楽に話したりくつろいだりできる相手だと思う．

5．私に愛情表現をしてくれる．

6．もし，夫/妻の意見を私が受け入れなければ，夫/妻は明らかに傷ついてしまう．

7．私のやり方，人柄などを変えようとしたがる．

8．私のことを信じてくれており，何でも打ち明けてくれる．

9．ささいなことで私を批判したがる．

10．私の問題や心配事を理解してくれる．

11．私に命令したがる．

12．言われたとおりにそのままのやり方で私がやるように，と言い張る．

13．私の身体をやさしくいたわってくれる．

14．私が，夫/妻にとって必要な人だ，と感じさせてくれる．

15．大したことのない小さいことについて，私のやり方を変えてほしいと思っている．

16．私のことをとても愛してくれる．

17．二人の関係で主導権をとりたがる．

18．一緒にいると楽しい人だ．

19．私のやり方や人柄などを，大きく変えてほしいと思っている．

20．私のすることをすべてコントロールしたがる．

21．私に感謝の気持ちを表現してくれる．

22．二人きりの時，私に批判的だ．

23．私にやさしくしてくれる．

24．やさしく親しみやすい声の調子で私に話をしてくれる．

＊CAREの項目：1，4，5，8，10，13，14，16，18，21，23，24

＊CONTROLの項目：2，3，6，7，9，11，12，15，17，19，20，22

以上，個々の質問について0点から3点で加算し，計36点をそれぞれCARE，CONTROLの最高得点とする．

APPENDIX F – 1. PRIMARY COMMUNICATION INVENTORY – ENGLISH VERSION

Primary Communication Inventory

Instructions: Below is a list of items on communication between you and your spouse. In the columns on the right are five possible answers. Opposite each item place a check in the column which best represents the extent to which you and your spouse behave in the specified way.

Item	Very Frequently	Frequently	Occasionally	Seldom	Never
1. How often do you and your spouse talk over pleasant things that happen during the day?					
2. How often do you and your spouse talk over unpleasant things that happen during the day?					
3. Do you and your spouse talk over things you disagree about or have difficulties over?					
4. Do you and your spouse talk about things in which you are both interested?					
5. Does your spouse adjust what he (she) says and how he (she) says it to the way you seem to feel at the moment?					
6. When you start to ask a question, does your spouse know what it is before you ask it?					
7. Do you know the feelings of your spouse from his (her) facial and bodily gestures?					
8. Do you and your spouse avoid certain subjects in conversation?					
9. Does your spouse explain or express himself (herself) to you through a glance or gestures?					
10. Do you and your spouse discuss things together before making an important decision?					
11. Can your spouse tell what kind of day you have had without asking?					
12. Your spouse wants to visit some close friends or relatives. You don't particularly enjoy their company. Would you tell him (her) this?					
13. Does your spouse discuss matters of sex with you?					
14. Do you and your spouse use words which have a special meaning not understood by outsiders?					
15. How often does your spouse sulk or pout?					
16. Can you and your spouse discuss your most sacred beliefs without feelings of restraint or embarrassment?					
17. Do you avoid telling your spouse things which put you in a bad light?					
18. You and your spouse are visiting friends. Something is said by the friends which causes you to glance at each other. Would you understand each other?					
19. How often can you tell as much from the tone of voice of your spouse as from what he (she) actually says?					
20. How often do you and your spouse talk with each other about personal problems?					
21. Do you feel that in most matters your spouse knows what you are trying to say?					
22. Would you rather talk about intimate matters with your spouse than with some other person?					
23. Do you understand the meaning of your spouse's facial expressions?					
24. If you and your spouse are visiting friends or relatives and one of you starts to say something, does the other take over the conversation without the feeling of interrupting?					
25. During marriage, have you and your spouse, in general, talked most things over together?					

Scoring Protocol

• The Primary Communication Inventory consists of 25 items with 2 subscales: 7 items for nonverbal communication, and 18 for verbal communication.
• All items have equivalent likert scaling from 1 to 5 (5 options).
• The higher score the higher the satisfaction of with couple's communication.
• The total range is 5-125.

Total Scores:

❖ Nonverbal communication (Question 6, 7, 9, 11, 15, 18, 23) = 7-35
❖ Verbal Communication (Question 1-5, 8, 10, 12-14, 16-17, 19-22, 24-25) = 18-90

APPENDIX F – 1. PRIMARY COMMUNICATION INVENTORY – JAPANESE VERSION
[*Translated English into Japanese through Committee translation approach by the PI on February 18, 2010*]

記入方法:あなたとあなたの配偶者の間のコミュニケーションの方法についてお伺いします。以下の項目について、もっともあてはまるものを、右の 5 つの選択肢から一つずつ選んでください。

項目	とてもよくある	よくある	時々ある	めったにない	全くない
１．あなたとあなたの配偶者は、その日にあった楽しかったことについてどのくらい頻繁に話をしますか。					
２．あなたとあなたの配偶者は、その日にあった嫌なことについてどのくらい頻繁に話をしますか。					
３.あなたとあなたの配偶者は、意見が違ったり、困ったことについて話し合いますか。					
４．あなたとあなたの配偶者は、共に興味があることについて話しますか。					
５．あなたの配偶者は、その時のあなたの感情に合わせて、話す内容や言い方を変えますか。					
６．あなたが質問をしようとした時、あなたの配偶者はあなたが言う前に、その内容を察しますか。					
７．あなたは、あなたの配偶者の表情や身ぶりから、配偶者の気持ちが分かりますか。					
８．あなたとあなたの配偶者の間で、避ける話題がありますか。					
９.あなたの配偶者は、目配せや身ぶりを通して、自分の気持ちをあなたに伝えますか。					
１０．あなたとあなたの配偶者は、何か大事な決断をする前に、一緒に話し合いますか。					
１１．あなたの配偶者は、あなたがどんな一日を過ごしたかを聞かなくても分かりますか。					
１２.あなたの配偶者が親しい友人や親せきを訪ねたいとします。あなたはその人たちと一緒に過ごすのがあまり好きではありません。あなたはそのことを、配偶者に言えますか。					
１３.あなたの配偶者は、性生活のことについて、あなたと話し合いますか。					

(continued)

項目	とてもよくある	よくある	時々ある	めったにない	全くない
１４．あなたとあなたの配偶者の間には、他の人には分からない特別な意味をもつ言葉がありますか。					
１５．あなたの配偶者は、どのくらい頻繁に不機嫌になったりすねたりしますか。					
１６．あなたとあなたの配偶者は、あなたが大切だと考えている信念について、遠慮したりきまり悪さを感じたりすることなく話し合うことができますか。					
１７．あなたは、自分の立場が悪くなるような事を、あなたの配偶者に言うのを避けますか。					
１８．あなたとあなたの配偶者は友人を訪ねているとします。友人が言ったことに対して、あなた達はお互いに視線を合わせました。あなた達は、お互いが考えたことが分かりますか。					
１９．あなたは、配偶者の声の調子から実際に言われる内容を、どのくらい分かりますか。					
２０．あなたとあなたの配偶者は、個々の問題についてお互いにどのくらい話し合いますか。					
２１．あなたは、ほとんどの場合、あなたの配偶者はあなたが言おうとしていることを分かってくれていると思いますか。					
２２．あなたは、親密な個人の事柄に関して、他人よりもあなたの配偶者と話しますか。					
２３．あなたは、あなたの配偶者の表情で、何を考えているのか分かりますか。					
２４．あなたとあなたの配偶者は、友人か親戚かを訪ねているとします。あなたかあなたの配偶者のどちらかが何かを話そうとした時、もう一方は悪気なしに会話の主導権をとることがありますか。					
２５．結婚してから、あなたとあなたの配偶者は、大抵の場合、ほとんどの事を話し合ってきましたか。					

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