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RISK FOR MATERNAL INFANT BONDING REDUCTION IN HIGH RISK  
DELIVERIES AND THE RECOVERY PHASES

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## Abstract

Bonding is one of the first developmental tasks for infants and is imperative for successful growth. The bonding phase begins in the periods immediately following birth. Complications that inhibit bonding postpartum may delay this process. Breastfeeding barriers, maternal substance abuse, and poor maternal mental health are among the contributing factors to delayed bonding. The purpose of this research study was to answer the question, “What best practiced nursing interventions assist mothers to promote bonding with the newborn after high risk deliveries?” This research review included a sample size of 10 articles which provided a variety of interventions to promote bonding in the high risk delivery. The interventions that targeted the issues included skin-to-skin, ulterior breastfeeding strategies, in-rooming with infant and mother, maternal voice, and infant massage. The implications attest to the need of nurses’ education to clients during this phase, as well as further research. Results provided evidence based interventions to enhance the bonding process in the postpartum recovery phases.

*Keywords:* maternal, infant, bonding, maternal substance abuse, maternal mental health, skin-to-skin, attachment, development, connection, barriers.

## Introduction

Childbirth is often said to be one of the most bonding and miraculous moments in a woman's life with her newborn. Bonding begins mere moments after delivery in a significant period. A strong reliance is formed towards one who has been dependable and warm in their caregiving to an infant at birth; individuals will be affected by this process throughout their life from this point onward (Young, 2013). The level of bonding in infancy is directly related to children's development. Bowlby's Attachment Theory proposes that the connection formed between parents and their children as infants will determine the outcome of social, emotional, and developmental milestones--this process begins in even the very first moments of life (Young, 2013). The emotional connection between mother and child are imperative for the basis infant survival and a healthy psychosocial development (Wan et al., 2014). This is a milestone of development for the infant--forming a bond (Helin, 2015).

Ineffective maternal-infant bonding resulting from physical separation or psychosocial barriers between mother and infant may impact the infant in the following years. If a mother is unable to attend to the needs of her infant, the maternal-infant bond may be impaired (Young, 2013). Infants are completely dependent upon their mother for nurturing, protection and daily needs such as feeding, toileting, and washing. When caregiving is interrupted or impaired, attachment is likely to be impaired between the infant and the caregiver as well (Schein et al., 2017). Therefore, the primary caregiver to infant bond is imperative--this is the gateway for their survival and one of the most important tasks to be done during infancy (Schein et al., 2017)

When the birthing process is pre-term, meaning labor that begins before 37 weeks gestation, the bonding period is often impaired (Howsen et al., 2013). Preterm infants are medically challenged, and parents often grieve the role of the primary caregiver responding to the infants' needs. Preterm infants are primarily looked after in a Neonatal Intensive Care Unit by nurses rather than by parents (Helin, 2015). Maternal mental and physical health, and the infant's health status are links to reduced bonding. These health problems between the baby and/or mother can result in insecure maternal newborn attachment.

An experience related to a high risk delivery is prevalent for most people in their life, either directly with their own children, or indirectly through a family member or friends' situation (Howsen et al., 2013). Infants are completely reliant upon a caregiver, and proper parental investment is imperative in their growth. High risk delivery babies will demand additional care for their proper development. The affectionate bond need is the same preterm or term, however with at risk babies the opportunity may be hindered causing a greater need to promote bonding.

Maternal substance abuse, prolonged separation between baby and mom, and post-partum depression are delays in the bonding process. All affect the mind, body, and spirit of a person. When there is a deviation in one of these areas, then an influence of a disruption in the wholeness, or the health, of an individual may occur (Jezek, 2018).

Deviation of health can occur as early as delivery.

## **Background**

Knowing prior to labor that a delivery will be high risk can create a large amount of anxiety for the mother, which can be more detrimental to the baby---that may already have multiple social, mental, emotional, and social problems in the child's lifetime (Burke, 2018). The mother may be at a higher risk for poor maternal attachment due to anxiety. The stress from having a high risk baby may be detrimental for mothers as it may be a hindrance to successful bonding with her infant. Often times premie babies require extensive care in the Neonatal Intensive Care Unit (Ionio et al., 2016). The NICU can become a barrier for the parents to foster proper connection with their infant. Tasks that promote attachment like breastfeeding are lowered as the newborn is under meticulous medical attention. Abusing substances during pregnancy will affect the emotional attachment from mom to newborn as well as related to the negative substance. If the overall mental health of the mother during pregnancy is that of low quality, then the postpartum phase of bonding with her infant has a chance of being delayed or absent.

### **Breastfeeding Interruption**

Breastfeeding is the quintessential time that an infant and the mother have to secure a bond. The first feeding should ideally take place uninterrupted and immediately after birth, the baby will innately search for and latch onto the nipple for feeding (Bouchet-Horwitz, 2015). As the infant's needs are being met during skin to skin contact--a connection is occurring for bonding. This includes fostering eye contact, another anchor for a connection. The quality of maternal-newborn relationship is marked by the method of feeding, and the mother is more aware of the infant's interaction (Schwarze et al., 2015). When the needs of the infant demand specialized medical care in a NICU, it is

often synonymous with separation from the mother; NICU-related infant-maternal detachment is a worry in delaying bonding (Provenzi, Broso, & Montirosso, 2018). If physical contact is available, mothers may tend to be uneasy about touching their own infant due to their frail appearance and condition (Provenzi, Broso, & Montirosso, 2018).

### **Maternal Substance Abuse**

Maternal substance abuse is not only a public health concern, but it can have a detrimental affect on the emotional and relation aspect of the maternal-infant bond (Parolin & Simonelli, 2016). In the United States there are 400,000 infants born to drug-dependent mothers annually (Parolin & Simonelli, 2016). Drug abusing mothers are at risk of discounting the emotional needs and cues of their infant by way of being under the influence of a substance. According to research, “nothing is as important for a child's positive developmental trajectory as an early and secure attachment to his/her mother (Kumpfer & Fowler, 2007, p. 136). In the case of maternal substance abuse this trajectory is impaired. The mother’s attachment to the infant is as important as the infants’ attachment to the mother.

### **Maternal Mental Health**

A women’s emotional structure can determine her entire response to labor. Anxiety levels, and symptoms of antepartum depression are common variables in determining a preterm birth occurrence. Anxiety and stress increase pregnancy and birth complications, leading to low birth weight, pre-term labor and intrauterine growth deficiency (Kartal & Oskay, 2017). One study proposes that the cause of post partum depression is unknown; yet risk factors include poor social support systems, stressful life events in pregnancy, preterm birth, and traumatic birth experiences (Ko et al., 2017). The



same study revealed a link to lower rates of breastfeeding initiative and shorter durations in breastfeeding that led to poor mother infant bonding, and even infant developmental disorders (Ko et al., 2017). Women with depressive symptoms and anxiety during pregnancy have poor maternal quality of life --which is measured by the degree of enjoyment and satisfaction experienced during various activities of daily functioning (Kao et al., 2017). A lack of proper healthcare attention in addition to psychiatric distress of the mother are preemptive risk factors in early birth and delayed newborn health. During pregnancy women often go through numerous normal hormonal changes, therefore dealing with stress properly is imperative (Kartal & Oskay, 2017). Proper coping skills can be preemptive to depressive symptoms and anxiety during pregnancy. A study revealed that low birth weight babies were increased 15% in women who were depressed compared to mothers that were not depressed (Kartal & Oskay 2017).

Maternal nurturing begins when the mother meets her baby; however, biopsychosocial changes that occur during pregnancy may pre-dispose women for higher levels of stress and anxiety in the postpartum phase (Kartal & Oskay, 2017). Depressive symptoms and anxiety in pregnancy must be targeted early on in gestation so that proper interventions may be planned for the benefit of the wellness of the mother and neonate in postpartum (Kartal & Oskay, 2017). A study revealed a mother's anxiety, defined as compulsive temperament, related to problems in feeding, comforting the infant, and putting the infant to sleep as sources for effecting the process of bonding (Ohoka et al., 2014). If maternal mental health is not treated, then the risk is a negative effect on mother-child bonding which may become more prominent (Ohoka et al., 2014).

## Significance

Giving birth is one of the most significant events in a woman's life. The biological connection between a mother and a baby is a remarkable phenomenon to watch or experience. The relationship is powerful, telling, and deep. However, when risks pose to threaten the bond from occurring, mothers may experience a sense of hopelessness, and the infant's attachment may be more directed towards the caregiving team who responds to the infant's care. Annually 2-9% of newborns require extra attention in the NICU, presenting a risk to alter the parental bonding and attachment process (Wang, He, & Fei, 2016). Medical staff are encouraged to teach parents of their new infants cues and integrate attachment into care as much as possible (Helin, 2015). Mothers that have depressive symptoms post birth are recorded to have impaired bonding with their infants due to a lack of physical contact with the infant (Kerstis et al., 2016). Allowing the mother a chance to bond with her infant during the recovery phases of labor is important for the healthcare professional, the nurse, especially if a complication occurs. Lack of maternal involvement in infant care can result in negative emotions during attachment and in the recovery phase.

Infants depend on their mothers for nourishment for their bodies through their milk as well as the connection that occurs as they lay skin-to-skin on her. This is a mother's decision, but it is also to be a priority in the health care promotion for mothers and infants (Kornides, & Kitsantas, 2013). When the task is completed, it will benefit both mother and baby. Healthcare providers and mainly nurses who work closely with this population may have a great positive impact on mother's opinion of breastfeeding; her initiation may be impacted by her family's encouragement, as well as the healthcare

team's encouragement--family should be educated as the mother is on breastfeeding benefits (Kornides, & Kitsantas, 2013).

### **Problem Statement**

The mother infant bond will set the stage for physical, psychosocial, and emotional development in neonates (Young, 2013). Nurses play a critical role in facilitating a positive bonding experience for mothers and their newborns. Mothers must be empowered and motivated to practically meet the needs of infant bonding even in the midst of medical complications for the sake of positive neonatal development.

### **Purpose Statement**

The purpose of this research paper is to answer the question, "What best practiced nursing interventions assist mothers to promote bonding with the newborn after high risk deliveries?". Nurses are valuable resources in providing education and facilitating quality patient care for the family. The benefits of the interventions are promoting maternal infant bonding during breastfeeding, maternal substance abuse, and maternal mental health interruptions.

### **Definition of Variables**

The research includes variables that require definition. The study is looking at the independent variable of best practiced nursing interventions. The dependent variable is to promote bonding. Together, the study is looking at interventions to assist mothers and their infants foster attachment after high risk delivery.

An intervention is defined as, "any treatment based upon clinical judgment and knowledge that a nurse performs to enhance patient/client outcomes" (Butcher, Bulechek, Docterman, & Wagner, 2013, p. XV). Interventions may be utilized in all settings and

reveals the nurse's competence. Nursing interventions are the third portion of the 5- part nursing process (assessment, diagnosis, planning, intervention, and evaluation) that draws from clinical reasoning, then applies required activities for improvement (Butcher, Bulechek, Docterman, & Wagner, 2013). Interventions are imperative for systemic reviews of knowledge which are done scientifically.

For this study the definition of newborn includes the period of birth through 28 days; it is also in this period that the newborn is placed at their greatest risk of death (Infant, Newborn, 2018). A greater risk is evident when there is an abrupt separation in the dyad from traumatic labor, delivery, and antepartum resulting in delayed bonding (Helin, 2015). High risk deliveries is defined by the newborn receiving meticulous medical attention in the NICU. This poses a risk to the mother newborn relationship.

### **Methodology**

Search methods for the research review included studies from the following databases: Sage Medical, Med Line, Google Scholar, and EBSCO Host dating from years 2013-2018. Keywords used to initiate findings included “pregnancy”, “bonding”, “attachment”, “developmental care”, “needs”, “touch”, “depressive symptoms”, “psychology”, “postpartum”, “skin-to-skin”, “maternal substance abuse”, “neonatal abstinence syndrome”, and “NICU”. Multiple searches were conducted to accumulate an adequate amount of scholarly articles. The combination of searches yielded over 10,000 hits. Article titles that appeared to offer information that supported the research were scanned in full. The “related articles” feature was used as well to find similar data. Limiters were articles that were more than 5 years old, full text, available in English, and from a peer reviewed journal. Inclusion criteria were the population of mothers with

high-risk delivery infants. Those that did not appear to directly relate to answering the research question were excluded based on title and abstracts. Those that sounded promising to answering the research question were saved and the full text article was reviewed. Saved articles were critiqued for quality and ability to answer the research question. Once critiqued, the sample size became 10. The search outcomes detail how variables relate to the aim of the the research question.

### **Findings**

The sample was compromised of articles published in ten different journals. The date range for the studies were 2013- 2018. The articles within this time frame reflected information most relevant to the topic. The dates represented the most current research evidence available in the literature. There was one qualitative study (Hahn et al., 2016), and nine quantitative (Dumas et al., 2013; Kao et al., 2017; Kartal & Oskay, 2017; MacMullen, Dulski & Bloam, 2016; Nyqvist et al., 2013; Perisco et al., 2016; Provenzi et al., 2018; Rossen et al., 2016; Shoghi, Sohrabi, & Rasouli, 2018). The level of evidence presented represented in the table include levels II, III and IV. The following table summarizes the pertinent information from the sample of research studies.

Table 1

*Summarized Findings for Bonding Interventions*

<b>Author/ Year</b>	<b>Type of Study/ Level of Evidence</b>	<b>Sample Size</b>	<b>Results/ Findings</b>
Dumas et al., (2013)	Quantitative, (IV)	151	Influence of birth routines of mother and infant at day 4 of hospitalization were analyzed via video recording Immediate skin-to-skin after birth is the first step in initiating early mother-infant bonding. Tight swaddling and separation post partum disturb normal expected maternal behavior at day 4
Hahn et al., (2016)	Qualitative, (IV)	8 mom/infant	Infant massage alleviates withdrawal symptoms (crying, difficulty sleeping, tremors, poor feeding, emesis, loose stools, sneezing, yawning, fever, respiratory distress) and strengthens mother baby connection Empowerment, enjoyment and bonding, and calm and comfort were common maternal themes post massage
Kao, et al., (2017)	Quantitative, (II)	243 Preterm Labor Patients	Support therapy (relaxation exercises, distraction techniques, providing assistance with ADLs) reduced anxiety and depression for Taiwanese women hospitalized with pre-term labor after 2 weeks
Kartal & Oskay(2017)	Quantitative (III)	255	Planned pregnancy increased the maternal-infant connection and was a positive factor in coping with stress Unplanned pregnancies showed decreased confidence and passive approach when caring for infant
MacMullen, Dulski, & Bloaum (2016)	Quantitative, (IV)	24 articles, 3 expert guidelines	In-rooming, swaddling, and cradle hold for infants with NAS may decrease the severity of neonate withdrawal and promote mother-baby relationship.
Perisco et al., (2017)	Quantitative, (III)	168, Antepartum & Postpartum	Mothers in the singing group emphasized strong emotions and feelings they experienced while singing Reported significantly fewer crying episodes during first month postpartum, moms found it easier to calm babies.
Provenzi et al., (2018)	Quantitative, (II)	392	Exposure to maternal voice improved infants' feeding behaviors, improved weight gain in NICU
Rossen, Hutchinson, et al (2016)	Quantitative, (III)	372	Maternal voice helped facilitate intimacy between mothers and infants in the NICU 4 questionnaire scales were used to show

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Nyqvist et al, (2013)	Quantitative, (III)	Review	decrease in bonding with maternal substance abuse. Mothers self-reported NICU breastfeeding initiation rates increased from 35% to 74% after implementation of a breastfeeding program Massage given to premature neonates by their mothers in a daily basis can promote and maintain emotional attachment between the mother and her infant.
Shoghi, Sohrabi, & Rasouli, (2018)	Quantitative, (II)	40	

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Initiating physical contact with the mother and baby in skin-to-skin or breastfeeding allows opportunity for attachment (Dumas et al., 2013). Allowing the mother to sing lullabies, or just speak to her infant in the NICU when physical interaction is not available (Provenzi et al., 2018) enables interaction. Abstaining from alcohol, caffeine, tobacco, and pharmacologic agents will assist mothers to adequately connect to their infant (Rossen, Hutchinson, et al., 2016). Mothers can swaddle and cradle the infant in neonatal abstinence withdrawal to meet their needs and illicit a bond (MacMullen, Dulski, & Blobaum, 2014). Mothers who were educated by nurses to facilitate infant massage on their baby in neonatal abstinence syndrome felt included in their child's health care and allotted quality time to spend with the infant (Hahn et al., 2016). Infant massage performed by mothers on a daily basis promoted maternal-infant emotional attachment (Shoghi, Sohrabi, & Rasouli, 2018). The most common recommendations for the nurse to facilitate mother-infant bonding in order to eradicate the barrier of mental health disturbance in the mother was to provide relaxation techniques (Kao et al., 2017). This information and other results are included in the discussions section.

### **Discussion**

The quality of mother infant bonding is paramount in the beginning stages of mothering. Secure bonds can begin to form post delivery, however, there may be barriers

that will interrupt the natural facilitation of connection. Because mother infant bonding or attachment is one of the first tasks to achieve in infancy, it is important for nursing interventions to be implemented when possible. Each intervention in the paper were chosen for the sake of promotion bonding in the events of maternal mental health interruptions, breastfeeding barriers, and substance abuse complications.

### **Breastfeeding Interruption Interventions**

A specific breastfeeding strategy will be needed for preterm and sick infants. The Baby-Friendly Hospital initiative expanded on the World Health Organization's Ten Steps for Successful Breastfeeding initiative adding three guiding principles to enhance the program's success. The expanded interventions are: Have a written breastfeeding policy that is routinely communicated to all health care staff, Educate and train all staff in the specific knowledge and skills necessary to implement policy, inform all hospitalized pregnant women at risk for preterm delivery or birth of a sick infant about the management of lactation and breastfeeding, encourage early, continuous and prolonged mother infant skin to skin contact, show mothers how to initiate and maintain lactation and establish early breastfeeding, give newborn infants no food or drink other than breast milk, enable mothers and infants to remain together 24 hours a day, encourage demand feeding, use alternative to bottle feeding until breastfeeding is well established, and prepare parents for continued breastfeeding and ensure access to support services after discharge (Nyqvist et al., 2013).

### **Substance Abuse Interventions**

Recognizing the infants needs and attachment will be impaired by maternal substance abuse. Tobacco and alcohol use are affiliated with poor maternal-infant



bonding (Rossen et al., 2016). When the mother utilizes pharmacologic agents during her pregnancy and the infant goes through neonatal abstinence syndrome, cuddling and swaddling is the greatest non-pharmacologic intervention to calm the infant and help the mother's meet the infant's current need (MacMullen, Dulski, & Blobaum, 2014). One study revealed that mothers who were taught by nurses how to facilitate infant massage on their infant in NAS reported the experience as positive (Hanh et al., 2016). Mothers who were taught and implemented massage reported common themes of empowerment in their child's care, bonding and enjoyment were a by-product, and the intervention provided an associated sense of calm and comfort for the infant in distress, and the mother as well (Hahn et al., 2016). Infant massage was a simple way for mothers to feel included in their child's health care and provide an avenue for bonding (Hahn et al., 2016). Infant massage was proven to maintain the maternal-infant emotional attachment when performed daily (Shoghi, Sohrabi, & Rasouli, 2018).

### **Maternal Mental Health Intervention**

Stress, anxiety, and poor maternal health quality of life are predispositions for high risk deliveries. Kao et al., (2017) offered relaxation techniques and support interventions provided by nurses to women predisposed with mental health disparities in Taiwan. The nurse began by utilizing active listening with the client about current stressors in their life, she then instructed the patient on psycho-physiological relaxation (decentralized attention of participants and expressing their feelings) to lower the effects of anxiety and depression (Kao et al., 2017). The distraction techniques included encouraging participants to prepare clothing for the unborn baby, teaching them to knit, recording fetal growth, and keeping a diary for talk with unborn baby (Kao et al., 2017).

These techniques were part one of the two-part intervention. The second phase of the intervention involved utilizing a second party, a hospital volunteer, who could communicate with, shop with, massage to facilitate relaxation, and assistance with daily living activities during patient hospitalization (Kao et al., 2017).

Kartal and Oskay (2017) provided research specifically to analyze the incidence of depression and anxiety alongside stress coping mechanisms in women at risk for preterm birth in Istanbul, Turkey. Results revealed that 60.9 % of women's stress coping styles included chatting with relatives and friends, 36.9% listening to music, 29.3 % do embroidery and hand art, and 27.1% read books (Kartal & Oskay, 2017). Planned pregnancies increased the maternal infant connection and unplanned pregnancies showed a decrease in confidence and a passive approach when caring for the infant (Kartal & Oskay, 2017). Women with higher education levels reported to have lower depression level (Kartal & Oskay, 2017).

When the normal infant mother routine is impaired, an ulterior method must be discovered to help facilitate bonding. For instance, in the third trimester of pregnancy at about 25 to 29 weeks' gestational age the auditory system begins to develop as the cells of the cochlea connect to the brain stem and temporal lobe (Graven, Stanley & Browne, 2008). A physiologic response can be stimulated at this phase, and response to voice at a significant level can occur. If a high risk pregnancy where the infant will need to be placed under meticulous medical care is detected before birth, exercising maternal voice to promote bond during gestation and postpartum may increase bonding in the recovery phase. One study reported that mothers who sang to their infants emphasized strong

emotions and feelings towards child, and found it easier to calm their infant with their voice as well (Perisco et al., 2017).

## **Implications**

### **Education**

Healthy care of the infant by the mother postpartum is contingent upon successful bonding in the first phases of life. Caregiving builds the relationship. It is imperative for registered nurses who among the health care team work closely with mother-baby populations to be knowledgeable and provide effective evidence based interventions to help facilitate maternal caregiving in the midst of barriers. In order to do so, they must first recognize the importance of bonding and educate clients on the research. The altered parental role is proven to be most detrimental to the parent (Helin, 2015). Integrating lessons and lectures into nursing school for future registered nurses to be well-informed of interventions to practice would offer the greater patient outcomes.

### **Practice**

Nurses play a vital role in facilitating caregiving for the mother to her baby. Nursing interventions to increase bonding for mothers after a high risk delivery are to be implemented immediately after birth. This would effect nursing practice by benefiting mothers and infants with increased support measures and ensuring need-attunement. A list of interventions for the high risk delivery may be posted on a birthing unit for nurses to see easily. Mothers that have experience pro-longed separation from their baby and mental health disparities may require the additional cost of psychiatric counsel. Additional education to nurses may require cost-driven teaching such as hospital teaching

sessions open to mothers on education of bonding in high risk deliveries may be used in nursing practice.

### **Future Research**

Future research could contain nurses who have obtained higher degrees and certifications related to the population. Integrating culturally competent care would be beneficial for future research. Additional longitudinal and time series studies would add to the body of literature as well as more qualitative studies. Little research was available regarding a holistic approach of mind, body, and spirit care. More research should be conducted on culturally competent care to include mother's and families from various backgrounds in their approach to mothering. Utilizing new technology, telephone lactation counselling, and follow-up services may improve intervention outcomes.

### **Strengths**

The research contained both qualitative and quantitative studies for data points. My research mentor works with the mother baby population for a number of years and is experienced in research mentoring. This topic was of most interest to me which strengthened the active engagement. The Oral Roberts University research library and databases were able to be utilized and searched for recent evidence based literature on the topic which supported the study. There were two semesters given to complete the project.

### **Limitations**

Though the study was able to be conducted across two semesters, I was a full time student with other courses, clinical hours, and outside work to attend to as well. My inexperience to nursing research, inability to use all databases due to University accessibility, small sample sizes, full text English articles, and credibility of qualitative

studies were among the limiters. My personal interest in the study and work on mother-baby units in the hospital may all provide a bias in the study.

### **Recommendations**

There was a rich source of data regarding the study, however there are improvements that may be made to ensure optimal coverage of the topic. Increasing the sample size and research team when conducting future research would be useful to achieve higher levels of study. Peers should review analysis and conclusions in the data to identify and prevent bias.

### **Conclusion**

The purpose of this research was to discover the nursing interventions that may be implemented for mothers and their babies at risk for bonding impairment to still foster bonding. The evidence supports the importance of bonding for the sake of infant development. This is important as it is crucial to newborn survival and growth. Breastfeeding programs, skin-to-skin, maternal voice, infant massage, relaxation techniques, substance use questionnaires, are intervention the research found to facilitate bond between mothers and their infants which answered the research question. Specific applications of interventions are to be utilized for vulnerable populations to succeed at bonding.

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