THE IMPACT OF AN INFANT MASSAGE COURSE ON THE
COMMUNICATION RELATIONSHIP OF A MOTHER-INFANT DYAD

by

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ABSTRACT

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BETH ANN HEAVILIN

The communication relationship between infants and their caregivers is full of complexities built on a highly dependent social and emotional dyadic experience. Infant massage is thought to be a method of intervention that enhances relationship by regulating both the baby and the mother. Massage is thought to stimulate language development, relieve physiological issues, provide relaxation, and promote interactions within the dyad. This research utilizes an infant massage course as the mode of intervention implemented to discover its effect on the unique communication relationship between a mother and her infant.

Three mothers were recruited to participate in a two month study in which they were given a series of home visits. The home visits included assessment procedures for the study, learning a series of massage strokes, and psycho-educational materials on infant growth and development. The mothers were asked to log their massage interactions with their infants for a total of nine weeks.

The mothers in this study indicated that the infant massage course benefited their relationship with their infants in ways that contribute to a healthy foundation for the communication relationship. The infants were noted to be more regulated in their sleep routines and colic symptoms were lessened or eliminated. The mothers set aside time to have one on one time with their infants and learned more about their
individual needs and personality traits. The result of the cumulative effect of the mothers’ enhanced awareness of their infant and the positive changes in infant behavior lead to the dyads’ increased availability for healthy communication exchanges.
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CHAPTER ONE

INTRODUCTION

Developing a relationship with an infant is a job that most parents anticipate with great joy and little knowledge. After ten months of planning and preparing for child birth, a new human with unique capacities joins a family. Infants bring with them their own abilities to cope with sensory information, communicate their needs, and regulate their internal and external systems. Their family brings a range of their own sensory capacities, communication styles, and patterns of behavior. Many families wish they had a handbook that would teach them how to know their infants. However, such a handbook could not exist because of the unique relationship that is developed for each caregiver and each infant.

In my work as an Early Intervention Coordinator and as a Toddler Teacher, I saw how the misunderstandings between infant and parent set the stage for a disrupted relationship. Parents seemed have a general lack of understanding about what infants are capable of and how valuable the primary caregiving relationship is to the long term health and well-being of the infants’ development. The consequences of this disrupted relationship seemed to impact the social, emotional, and cognitive capacities of the children. I began a search to find an intervention tool that could bring about increased knowledge of infant growth and development that
was cost effective and long lasting. In this search I began exploring the research on infant massage as an intervention.

As will be explored in Chapter Two of this thesis, touch is a powerful communication tool in the infant-caregiver dyad. Touch, in the form of infant massage has been found to impact the infants’ physiology with positive changes in the brain structure, better digestion, and improved ability to manage their stress. Moderate pressure massage has been found to assist both caregiver and infant in their feelings of well-being. Infants who are massaged cry less and are available to pay more attention to the world around them. These skills lead to both the caregiver and the infant having more positive interactions with each other which optimizes the infant’s ability to learn within the communication relationship of the dyad.

The International Association of Infant Massage has a curriculum that includes educational materials that provide parents with information about infant development and a routine of massage strokes that are taught over a period of three to five weeks. This information led me to a review of the literature (Chapter Two) on the development of infant communication, the co-regulatory process of the caregiver-infant dyad, and infant massage. In this research, I found that there was a limited amount of information on the impact of infant massage on typically developing children. The question that continued to arise for me was: What is the impact of an infant massage course on the communication relationship of a mother-infant dyad? In order to answer this question I developed a mixed-methods research project which is described in Chapter Three. Chapter Four details the results of this
research, and the subsequent two chapters offer an analysis of those results as well as conclusions and implications for future research.
CHAPTER TWO

LITERATURE REVIEW

Introduction

This review of the literature begins with the construct of parent-infant communication and the factors that affect its development. Within this section developmental phases and sequencing of infant’s language development will be illustrated. Physiological and behavioral modes of communication between parent and infant are included to further the comprehension of the complexity of the relationships and the language acquisition processes. This section will end with information regarding the impact of individual dyadic differences and the effect that they have on the dynamic communication relationship.

Touch, in the form of infant massage, is detailed more methodically in the review as a tool for intervention. The tactile system and biochemical changes that occur during massage are discussed. The review concludes with a description of the International Association of Infant Massage’s training which support parents in learning to massage their infants within their homes.

Infant-Caregiver Communication

Communication is the transmission of information from one person to another through a common series of signs, symbols or behavior (Merriam-Webster, 2008). These signs, symbols and behaviors create meaning that is expressed by one and are intended to be received by the other participant of the communication.
relationship. The creation of meaning-making in a relationship can progress smoothly or it can become disjointed contributing to the quality of the communication (Tronick, 2007). Meaning can be conveyed through different channels including: language, facial expressions, moods, and gestures (Tronick, 2007). To create meaning with others one brings to the interaction his or her intent to relate, physiological state, experiential state, culture, and somatic meanings (Tronick, 2007).

All behavior is communicative to the social partner, even the lack of desire to communicate (Adamson, 1995). The word infant was derived from a Latin word that means without speech (Adamson, 1995). This concept of infancy being marked by a lack of communication led people to believe that infants were incapable and disengaged (Adamson, 1995). In the 1960s, researchers began studying infants and infant behavior (Adamson, 1995; Brazelton, 2010). In their research, they found that infants are competent, predictable, engaged, and active participants in their social world (Adamson, 1995; Brazelton, 2010; Tronick, 2010).

Infants, born ready to elicit social engagement through communication, turn to the already familiar voice of their mothers and make visual contact (Adamson, 1995, Bowlby, 1982; Murray & Andrews, 2001). The first language, expressed through physical and behavioral cues, indicates the infants desire to form a communion with their caregivers and becomes the foundation of the relationship (Bowlby, 1982; Lillas & Turnbull, 2009). How parents react, respond, and reciprocate with their infants’ communications affects the development of the
bonding and attachment between them (National Research Council and Institute of Medicine, 2000). These interactions facilitate the attachments that sustain infants’ emotional and physical lives (Field, 2003). "Although we tend to speak less loudly with our first language as we mature, it continues to speak for life and often remains an amazingly accurate, powerful, and meaningful form of expression" (Lillas & Turnbull, 2009, p. 132).

Infants are born into homes that contain unique relationships, cultural ideas, and traditions that impact their developmental trajectory (Tronick, 2010). Interactions in the relationship between infant and caregiver have culturally specific goals influenced by each caregiver in the home (Tronick, 2010). Each family is encased in a community that overlays expectations on to that family in regard to values and outcomes (Tronick, 2010). When assessing the communication relationship, one must seek to understand the societal norms and cultural expectations of those relationships (Tronick, 2010). For example Western culture, in general, has explicit and implicit rules in regard to eye contact. Western culture values eye contact as a sign of attention and respect (Tronick, 2010). In contrast, the Gusi tribe of Kenya, eye contact is discouraged (Tronick, 2007). It is seen as a threatening act and is not encouraged in their infants (Tronick, 2007). Gusi infants will develop their communication relationship with heightened awareness in other sensory capacities because they will not see reactions of others in their facial expressions (Tronick, 2007). The lack of visual contact by Gusi caretakers is thought to be mediated by touch communication (Tronick, 2007). Looking through a
specific cultural lens will inform the trajectory of the language acquisition process and developmental outcomes of the infant (Tronick, 2010). Since goals for development of the infant are culturally and environmentally driven, the following information about typical development is driven from a construct of reality that may not account for the diversity of cultural expectations and environmental goals, but accounts for research that is generalized within Western Culture infant-caregiver dyadic relationships.

*Infant communication and the progression of typical development.*

Development is a concept that there is a standard succession of skills that fit into a sequence of growth (Adamson, 1995; Furuno, 1994). This sequence of growth follows the same trends from individual to individual (Adamson, 1995). The skills build on one another and normally progress with a person's chronological age (Adamson, 1995). In differing cultures, the sequence of communication development remains fairly consistent with some variation with cultural expectations (Adamson, 1995). Most individuals follow the same sequence of growth but have differences in their rate of skill achievement (Adamson, 1995; Furuno, 1994). Development occurs based not only on individual skill achievement in a series, but on the timing that sequences of skills are retained, and the abstract pattern between two skills when they are combined (Adamson, 1995). For example, an infant learns the motor skill that enables them to grasp an object and are capable of visually attending to an object, then the combination visual attention and grasping skills give
the infant the ability to reach for an object, creating a developmental schema (Adamson, 1995).

When discussing the developmental patterns of infants and young children, it is important to differentiate between their chronological age and their gestational age (Adamson, 1995). The sequencing of development begins when a baby is conceived (Adamson, 1995). Therefore, an infant born prematurely at 28 weeks will most likely be working on a different developmental schema than a full term infant born at 40 weeks (Adamson, 1995).

Although most infants follow a similar trajectory of development, individual differences play a role in the rate and quality of the development (Lillas & Turnbull, 2009). Infants can undergo delays in the typical course of development if they are born prematurely, exposed to terratogens, or live in chaotic home environment (Tronick, 2007). Genetic abnormalities and lack of nutrition may also alter the trajectory of the typical developmental patterns (Tronick, 2007). The development of language acquisition can be impacted if there is a disrupted relationship between caregiver and child (Lillas, 2010). This relational disconnect can impede the acquisition of skills and the expected developmental sequence (Lillas, 2010).

The communication relationship, entrenched in the social-emotional functioning of the caregiver and the infant dyad, relies on repeated and reciprocal acts of transmission to lay the foundation of language development (Greenspan, n.d.). Communion between infants and caregivers evolve through a succession of stages (Greenspan, n.d.). Developmental growth is dependent on the quality of the
mastery of each stage (Greenspan, n.d.). Relationships with primary caregivers can facilitate mastery or impede progress depending on relationship dynamics (Greenspan, n.d.).

Communication development begins with the primary tasks of attention and regulation that typically emerge between birth and three months (Greenspan, n.d.). Infants notably attend to the human face and seem to become regulated by positive social interactions with their primary caregivers (Greenspan, n.d.). Infants and caregivers who are able to attain regulation and attention will share interpersonal engagement (Adamson, 1995; Greenspan, n.d.). In the first two to three months of infant development there is an emergence of the following skills: active alert state, gaze modulation, social smile, and coo vocalizations (Adamson, 1995; Furuno, 1994). Gaze modulation happens when infants have the ability to share a mutual gaze with their caregivers (Adamson, 1995). Infants can now track objects smoothly because of the combination of their advancing visual development and the range of motion in their heads due to the strength in their necks (Adamson, 1995). Infants have pre-speech lip and tongue movements that are coordinated with hand and body movements (Adamson, 1995; Murray & Andrews, 2001). Cooing and other verbal communications such as laughing, raspberries, squeals, growls, yells, whispers, and whines emerge in this time period (Adamson, 1995; Furuno, 1994).

Joint object involvement emerges at approximately 6 months of age; this phase is noted by a shift of attention from the caregiver to an object (Adamson, 1995). During this phase of development, infants turn their attention to objects in
their environment and begin to learn how to share their interest in those objects with their caregiver (Adamson, 1995). They develop the skills to identify that their laugh will encourage their caregiver to continue to engage them with their favorite toy (Adamson, 1995). By 9 to 10 months, the ability to make a request from their parents to meet their nonsocial goals emerges (e.g., asking for a toy that is out of reach) (Adamson, 1995). They learn during this phase of development to look beyond the pointing finger itself to where the finger is pointing when the parent gestures for them to look at an object (Adamson, 1995). Caregivers share in this communication phase by expressing interest in and joining with their infant in regard to the infants’ interests, interpreting meaning to their infants’ actions, and scaffolding the current interest in an object into a more complex task (Adamson, 1995).

Infants who have mastered these skills are able to attend to the external world and regulate their physiological world. They are ready to participate in intentional two-way communication (usually between four and ten months) (Greenspan, n.d.). Infants and their caregivers engage in shared mutual attention at first through simple gestures and later on through words (Greenspan, n.d.). Complex gestures and problem solving skills emerge between ten and eighteen months as infants begin to use their verbal and gestural communication skills to express a need or label an object (Greenspan).

For most infants the first year of life is dependent on their ability to attract the attention of their caregiver and to accurately express their needs with this non-verbal language (Lillas & Turnbull, 2009). This first language is a complex make-up of
behavioral and physiological indicators, unique to each infant (Lillas & Turnbull, 2009). Caregivers play the role of detective, observing and responding to these cues, attempting to discover this complex communication system (Lillas & Turnbull, 2009). The infants’ developmental trajectory is highly dependent on the caregivers’ ability to engage in the relationship and identify the level of stimulation appropriate for the unique needs of their infant (Lillas & Turnbull, 2009). Caregivers need to be able to successfully comfort their infant, maintain affective flow in the communication relationship, and be aware of the infants’ developmental needs (Lillas & Turnbull, 2009). Ideally, the caregiver does a good enough job at these tasks and the infant is able to maintain the feeling of safety in the relationship (Lillas & Turnbull, 2009). Safety in the relationship allows the infant to reach their personal potential (Lillas & Turnbull, 2009).

Behavior Strategies and Physiological Modalities that Contribute to Infant Communication

The organization of the infants’ physiological and neurological system is influenced in utero by environmental and biological factors (Schore, 2003). Upon birth, infants enter into relationships that influence their ability to regulate these systems (Schore, 2003). In the first two years of life, this system develops in response to the environment by rapidly organizing, disorganizing, and reorganizing the brain growth (Schore, 2003). The caregiver-infant dyads mutually influence each other and form a unique relationship (Schore, 2003). The members of the dyad bring their own capacity to enhance or disrupt the communication relationship (Lillas &
Turnbull, 2009). The infants bring to the dyad behavioral and physiological attributes which include the infants’ differences in state behavior, capacity to habituate, expression of cues, and ability to self regulate, and sensory processing modalities that contribute to the relationship (Nugent et. al., 2007).

Behavioral states.

Infants’ responses and reactions to their internal needs, external environment and caregiver are influenced by the infants’ state of consciousness (Adamson, 1995; Murray & Andrew, 2001; Nugent et. al., 2007). Identified states of consciousness called behavioral states in infants include: deep sleep, light sleep, active alert, alert, and crying (Nugent et. al., 2007). Infants’ ability to maintain functioning in a state and have fluid transitions between states reflects the infants emerging ability to self-regulate (Nugent et. al., 2007). Regulation and organization of behavior provides clarity of communication to the caregiver (Nugent et. al., 2007). The ability to regulate states must be attained before the infant can maintain mutual gaze and develop ability for shared mutual engagement (Greenspan, n.d.).

Infants are open for quality interpersonal communication during the quiet alert state (Nugent et. al., 2007). The quiet alert state is noted by the infants’ ability to focus and have smooth motor movements (Adamson, 1995; Lillas & Turnbull, 2009). Preservation of this state is attained when caregivers accurately read and respond to the infants’ engagement and disengagement cues (Lillas & Turnbull, 2009). Infants who develop the safeguards to maintain regulation during the quiet alert state are in an optimal state for learning and communicating (Lillas & Turnbull,
Understanding behavioral states is key to helping parents understand their infant, recognize and modify their handling techniques, and determine the level of stimulation their infant needs (Nugent et al., 2007).

_Habituation._

A critical adaptation for an infant is the ability to habituate (Nugent et al., 2007). Habituation occurs when the infant chooses not to respond to a stimulus that is frequent or repeated (Nugent et al., 2007). This is thought to be an elementary form of learning (Nugent et al., 2007; Tronick, 2010). When this happens smoothly, infants have the capacity to block out distracting, irrelevant information in order to maintain their current behavioral state (Nugent et al., 2007). When habituation is difficult, infants are challenged to self-regulate, are less adaptable to new situations, and cannot protect their sleep, leading to excessive crying and withdrawal (Nugent et al., 2007).

Parents who understand their infant’s unique strengths and challenges to habituate can alter their caregiving strategies to provide their infant with optimal environmental stimulus (Nugent et al., 2007). For instance, an infant who has a harder time regulating to noise in its environment may need to sleep in a quiet environment (Nugent et al., 2007). Parental modification of external stimulus will assist infants in longer periods of regulation (Nugent et al., 2007). These external modifications support the infants’ regulation capacities which in turn reserve the infants’ energy to maintain the active alert state (Nugent et al., 2007).

_Cueing signals._
Infants communicate with behavioral and physiological signals called cues (Sumner & Spietz, 1994). Cueing information is indicated through affect, facial expressions, and vocalizations (Sumner & Spietz, 1994). Caregivers may also consider physiological cues of the infant through their motor movements, skin color changes, and muscle tone (Sumner & Spietz, 1994). Eye contact or removal of eye contact can be clear cues in infant communication. Infants also use touch and gestures as part of their cueing repertoire (Sumner & Spietz, 1994).

It is the infants’ role in the communication relationship to provide accurate cues to indicate their needs (Sumner & Spietz, 1994). If infants provide their caregivers with weak cues which are disjointed, delayed, or hyper-reactive the caregivers will not respond appropriately to the infants’ needs (Sumner & Spietz, 1994). Poor cueing by infants can disrupt the communication relationship (Sumner & Spietz, 1994).

Infants’ communication efforts are impacted by their caregivers’ ability to respond to engagement and disengagement cues (Lillas & Turnbull, 2009; Nugent et al., 2007; Sumner & Spietz, 1994; Tronick, 2007). Understanding infants’ disengagement cues can help parents to change their rhythm, back off, or provide a different activity (Lillas, 2010). Accurate reading of infant cues allows caregivers to support with the infants’ unique developmental trajectory (Lillas & Turnbull, 2009). When infants are appropriately supported they build the capacity to modulate their arousal levels (Lillas & Turnbull, 2009). This contributes to the infants’ ability to
maintain an alert processing state, thus, optimizing the period of optimal social engagement and learning (Lillas & Turnbull, 2009).

In order to respond to many cues, the positioning of the infant is important (Sumner & Spietz, 1994). Proximity impacts parents’ ability to accurately respond to more subtle physiological and verbal cues (Sumner & Spietz, 1994). When caregivers recognize and respond promptly to subtle engagement and disengagement cues infants can maintain state regulation (Lillas & Turnbull, 2009). When infants are placed in the face to face position they learn the rules of joint regulation and social responsiveness to their own behavior (Tronick, 2007). Speech, conversation, and many cognitive developmental skills are thought to be enhanced by face to face communication (Tronick, 2007). Proximity and face to face interaction facilitate an intimate connection between infants and caregivers that enhance the communication relationship (Tronick, 2007).

*Responsiveness.*

As with any communion, responsiveness is essential in a relationship (Sumner & Spietz, 1994). Infants can be responsive to feeding attempts, game play, social play, and social cues (Sumner & Spietz, 1994). The manner and timeliness in which infants respond to the caregivers attempts to engage impact the interpretation the caregiver attributes to the interaction (Sumner & Spietz, 1994).

As with infants, parents utilize behavioral and physiological cues, to communicate information to their babies (Sumner & Spietz, 1994). Caregivers are responsive to infants by attempting to support them in regulation, by changing the
infants’ position, or altering the parental behavior (Sumner & Spietz, 1994). Parental behavior can be altered verbally and non-verbally or by introducing a novel toy, game, or facial expression (Sumner & Spietz, 1994). Caregivers’ aptitude for responsiveness will influence the infants’ social-emotional growth (Sumner & Spietz, 1994). In order to scaffold children’s cognitive growth, parents will provide opportunities for exploration, engage in conversation, and respond to children’s verbal and nonverbal communication (Sumner & Spietz, 1994).

Affect is the emotional behavior in the communication relationship (Schore, 2003). When infants accomplish the ability to sustain a mutual gaze they begin to visually recognize affect in their communication partner (Schore, 2003). Infants seek to partake in intense interpersonal communications with their caregiver (Schore, 2003). Optimally, the caregivers also seek to engage in this intense personal communication and respond appropriately to the infant’s cueing signals for engagement and disengagement (Schore, 2003). In these moment to moment points of visual contact, positive affect is expressed (Schore, 2003). These synchronous social engagements are impacted individually by the infant’s and the caregiver’s ability for self-regulation and jointly for mutual engagement (Schore, 2003). Caregivers who continually misread their infants’ signals create high levels of negative affect in the relationship (Schore, 2003). Repeated negative cycles of affect in the relationship impacts the trajectory of the brain’s development (Schore, 2003).

Modes of Communication

Visual communication.
The visual modality imparts information to the infant and parent in the communication relationship (Bowlby, 1982; Murray & Andrews, 2001). Newborn babies establish eye contact and are drawn to faces, especially their mothers’ (Bowlby, 1982; Murray & Andrews, 2001). Their clearest sight is about a 12 inch range, the distance between the faces of mother and infant when the infant is held in a cradled nursing position (Field, 2003). At birth, infants can seek visual contact by turning their head in response to their mothers’ voice (Bowlby, 1982; Murray & Andrews, 2001). Infants begin to smile, a visual signaling behavior, at around 4 weeks of age (Bowlby, 1982; Furuno, 1994). The smile functions as an encouragement for caregivers to continue to attend and meet the infants’ needs as development progresses (Adamson, 1995). Between 4 and 8 months of age, infants can recognize their parents visually and begin to have anxiety when a stranger is present (Furuno, 1994).

Mirroring is another visual communication tool infants use to engage with and learn about the world around them (Murray & Andrews, 2001). Young infants can mimic facial expressions; for example, when infants see their caregivers protruding their tongues, they will do the same in response (Murray & Andrews, 2001). Infants move their mouths and tongues in speaking patterns and utilize a variety of facial expressions (Adamson, 1995; Murray & Andrews, 2001). Infants can manifest distress through subtle cues such as averting their gaze, yawning, frowning, squirming, and clenching their fists (Murray & Andrews, 2001). More
outright signals of distress and disengagement may be arching of the body, spitting up, and crying (Murray & Andrews, 2001).

*Vocal communication.*

Infants provide information through their vocalization cues (Murray & Andrews, 2001). Gurgling and babbling can indicate signs of pleasure and contentment (Murray & Andrews, 2001). Short grunts may indicate the first requests for food (Murray & Andrews, 2001). Crying with the purpose of hunger may build up slowly, becoming increasingly louder and more rhythmical (Bowlby, 1982). Crying due to pain or sudden discomfort may be loud, long, and strong at the onset, followed by silence (Bowlby, 1982). Infants respond to caregivers’ vocal communications by moving their arms and legs in rhythm with the caregivers’ pattern of speech (Murray & Andrews, 2001).

*Tactile communication.*

Touch is communicative when it alters infants’ thoughts, feelings, or perceptions (Hertenstein, 2002). Infants also use touch to influence the actions of their caregivers (Hertenstein, 2002). “Touch is an important channel through which infants convey their underlying affective states. By modifying their tactile behaviour with changes in maternal availability, infants seem to impart information to their social partners about their needs, desires, and goals” (Moszkowski & Stack, 2007, p. 315). Infants use touch as communication and gain information from their caregiver through touch, another method of social engagement (Moszkowski & Stack, 2007).
(More information regarding the impact of touch on the infant-parent relationship will be discussed in the section on massage.)

*The sensory system.*

The sensory system is responsible for integrating internal and external stimulation in the form of sight, sound, and touch (Lillas & Tunbull, 2009). This system takes sensory messages and relays information about the world to the brain (Lillas & Tunbull, 2009). All individuals have their own unique sensory profile, meaning that infants and caregivers have their own unique composition of sensory preferences and triggers (Lillas & Tunbull, 2009).

Sensory preferences and triggers impact the infants’ behavioral regulation through affect, arousal, attention, and action (Lillas & Tunbull, 2009; Williamson & Anzalone, 2001). The infants’ appropriate emotional behavioral response, affect, signals the caregiver to the sensory likes and dislikes (Williamson & Anzalone, 2001). For example, infants who dislike loud noises or bright lights will modify their emotional behavior by sending the caregivers a disengagement cue of crying (Williamson & Anzalone, 2001). Infants’ ability to accurately reflect their sensory triggers and preferences is co-regulated by the caregivers’ ability to read and respond appropriately to the infant preferences in a timely manner (Lillas & Tunbull, 2009; Williamson & Anzalone, 2001).

The ability to modulate the sensory system is also impacted by the infants’ ability to modify their arousal (Williamson & Anzalone, 2001). Infants who have the capacity to maintain an alert processing state and to regulate their transitions through
different behavioral states (moving from an active alert state to an alert state) are more predictable, therefore, easier to parent. (Williamson & Anzalone, 2001). When infants have unpredictable transitions, caregivers may be challenged to assist them in the regulation process (Williamson & Anzalone, 2001).

Attention is impacted by the infants’ sensory preferences and triggers (Williamson & Anzalone, 2001). Infants who are attracted to visual stimuli will react and respond differently than infants who are over-stimulated by the same visual stimuli (Williamson & Anzalone, 2001). For example, infants who are attracted to the face will attend longer to it than infants who are become over-stimulated by visual contact (Williamson & Anzalone, 2001). Infants who experience too much information when they try to maintain a mutual gaze become overwhelmed, advert their gaze, and disrupt communication efforts (Williamson & Anzalone, 2001).

For infants, action is indicated through body movements that indicate their goal (Williamson & Anzalone, 2001). Physical cues such as muscle tone, body orientation, and muscle movement can indicate sensory likes and dislikes (Williamson & Anzalone, 2001). If the infants’ muscle movement is impaired, they will not accurately signal caregivers to the appropriate response (Williamson & Anzalone, 2001). If caregivers in effect do not respond appropriately to infants’ motor indicators, their needs will go unmet, upsetting the communication relationship (Williamson & Anzalone, 2001).

The caregiving relationship provides the greatest source of sensory information to infants (Lillas & Tunbull, 2009). In a healthy relationship, caregivers
unconsciously develop an understanding of infants’ unique sensory preferences and triggers (Lillas & Turnbull, 2009). Caregivers optimally modify their behavior in response to the infant’s cues and alter their behavior to conform to meet the infants’ needs (Lillas & Tunbull, 2009). These appropriate responses provide infants with the feeling of safety, calm, and comfort, enabling them to more successfully self-regulate (Lillas & Tunbull, 2009). When parents lack awareness of their infants’ unique sensory profile, the infant receives a lack of positive sensory information (Lillas & Turnbull, 2009). When positive information is scarce, sensory triggers are amplified, and infants are challenged to maintain a self-regulated state (Lillas & Turnbull, 2009). The capacity to process and integrate sensory information lays the foundation for speech and language development (Lillas & Tunbull, 2009).

Sensory information and the brain.

The brain processes internal and external sensory information. Infants receive sensory information, and if they perceive the information as a need, they signal their caregiver for support in regulation (Perry, 2006). When the caregiver relieves the infant’s need, the infant experiences pleasure (Perry, 2006). Pleasure is associated with the relief of stress when the request for assistance from caregivers is responsive and timely (Perry, 2006). The neurological system is constructed so that the stress-response part of the human brain is interconnected with the pleasure part of the human brain (Perry, 2006). This region of the brain also manages pain, discomfort, and anxiety (Perry, 2006). Therefore, when infants have a sensory need that is left unfulfilled, they experience stress (Perry, 2006). Caregivers’ interactions
with their infants can become the major stress-modulating system and one of the primary forces shaping brain development (Tronick, 2007).

The role of the nervous system.

Infants’ nervous systems are regulated in part through vagal tone (Lillas & Turnbull, 2009). Vagal tone assists the infants’ ability to regulate their physiology which impacts their capacity for social engagement (Lillas & Turnbull, 2009). Vagal tone comes from the vagus nerve (Lillas & Turnbull, 2009). The vagus nerve is essential in regulating stress responses in the human body. It is thought of as the break and gas pedal of arousal states (Lillas & Turnbull, 2009). The vagal nerve is responsible for slowing or speeding the energy needed to sustain a conversation or engage in a learning event (Lillas & Turnbull, 2009). The impact is noted in the coordination of vocalizations, rhythm, and intonation imperative for speech and language skills (Lillas & Turnbull, 2009). Vagal tone supports the alert processing state which is also an essential condition in the emergence of oral-motor capacities, speech and language capacities, affect expression, regulation, and arousal regulation (Lillas & Turnbull, 2009).

Vagus nerve functioning depends on the quality of vagal tone which is present at birth and matures over the next two years in an experience-driven manner (Lillas & Turnbull, 2009; Schore, 2003). As with neural development, the performance of the vagus nerve is dependent on the infants’ perception of safety, challenge, or threat (Lillas & Turnbull, 2009). The interactive and responsive nature of the relationship between infants and their primary caregivers influences reactivity.
of the vagal nerve which impacts the stress responses in the infants (Lillas & Turnbull, 2009). Therefore, the vagal nerve functioning is developed by the quality of the infant-caregiver relationship in turn affecting the communication relationship (Lillas & Turnbull, 2009; Schore, 2003).

Affect regulation.

The emotional component of behavior is called affect (Williamson & Anzalone, 2001). Affect is elicited from sensory experiences and communicates individuals’ unique reaction to a sensory event (Williamson & Anzalone, 2001). Infants are typically motivated by positive affect in their caregiver which encourages them to thrive (Greenspan, n.d). Lack of positive affect can compromise the ability to develop language skills and complex social engagement (Greenspan, n.d.).

Mutual regulation.

Infants’ individual profile includes their unique neurology, nervous system, sensory system, and affective behavior. This unique profile impacts their physical and social goals (Tronick, 2007). Infants have a variety of strategies to maintain their goals including, self-comforting, orientation, alertness, facial expression, vocalizations, and gestures (Tronick, 2007). Infants communicate their regulatory status to their caregivers through affective expressions, action, arousal, and attention, and the caregivers respond to these cues, making meaning of the interaction (Tronick, 2007; Williamson & Anzalone, 2001). This communication is bidirectional where infants or parents initiate contact and respond to turn-taking signals (typically after 3 months of age) (Tronick, 2007). Regulation is also
bidirectional (mutual regulation) (Lillas & Turnbull, 2009; Tronick, 2007). Each partner in the relationship impacts the interaction and availability for co-regulation (Tronick, 2007). When caregivers interact with infants who are disregulated, their own regulation becomes challenged, and mutual regulation is more difficult to maintain (Tonick, 2007). For example, infants who cry and move in an uncoordinated fashion receive different caregiving than infants who are alert and move in a smooth and coordinated manner (Lillas & Turnbull, 2009).

Co-regulation between infant and caregiver is enhanced by the infants’ ability to accurately indicate their needs through cues (behavioral and emotional) and the ability of the parents to read the infants’ signals and respond appropriately, thus, helping the infants to maintain regulation (Lillas & Turnbull, 2009; Tronick, 2007). Infants who have their needs met consistently by their caregivers build the capacity to self-regulate (Lillas & Turnbull, 2009). When presented with discomfort (like needing to eat), they are able to maintain a regulated state and can tolerate their discomfort for a period of time when distracted with a toy (Lillas & Turnbull, 2009). In contrast, infants living in chaotic or neglectful environment can experience chronic dysregulation due to a lack of co-regulation with their primary caregiver (Lillas & Turnbull, 2009). Due to the dependency in the infant-caregiver relationship, mutual regulation happens in moment to moment interactions with both partners bringing to the communion their unique sensory profile and abilities to maintain regulation and move smoothly within the relationship (Lillas & Turnbull, 2009; Tronick, 2007).
When infants and parents regulate together, their rhythms and states fluctuate either complementing or opposing one another (Tronick, 2007). When conflicting states emerge, the resilience of the infants is built when the parents attempt to repair the mismatch of the dyad and seek to attain attunement with them (Tronick, 2007). When infants experience the repair, then they experience the pleasure and associate that interaction with pleasure in the brain (Tronick, 2007). Each time caregivers experience success in the repair process; they increase their sense of usefulness and joy in the relationship and optimize the infants’ capacity for regulation (Tronick, 2007). When this process is successful, the parents can more successfully regulate their infants who then experience less stress (Lillas & Turnbull, 2009). When mutual regulation and repair happen smoothly in a relationship, the infant and parent are both more capable of maintain independent regulatory status. When individuals are feeling regulated, they are able to have more complexity in their state behavior, and their learning is enhanced (Tronick, 2007). When the process of mutual regulation is compromised, the process of attaining self-regulation is disturbed (Lillas & Turnbull, 2009) When the dyad is unsuccessful in mutually regulating, and the repair process is unsuccessful, both partners are impacted, and the complexity of the relationship is limited. Infants who experience chronic dysregulation are limited in their affect, become sad, angry and tend to withdraw and disconnect from the world (Tronick, 2007). These unhealthy regulatory and communication patterns challenge the foundations for learning and developing (Tronick, 2007).
Early intervention is the infants’ greatest ally (Lillas and Turnbull, 2009). When parents understand their infants’ unique sensory profile, they are able to maximize the potential in the relationship, attain healthy regulation patterns, and promote feelings of safety and comfort both internally and externally to the infants (Lillas & Turnbull, 2009). A feeling of safety enhances the development of the brain (Perry, 2006), strengthens the vagal nerve functioning, and allows infants to maintain an alert processing state that enhances learning opportunity (Lillas & Turnbull, 2009). Well-regulated infants are easier to care for and allow caregivers to find more joy in the relationship. Identifying early the vulnerabilities and challenges in the relationship provides the opportunity for relational and communication patterns to be established in a more effective trajectory (Lillas & Turnbull, 2009; Tronick, 2007).

Infant massage can be an optimal tool for early intervention (Field, 2003). In a typical course, as taught by the International Association of Infant Massage, caregivers are taught how to read their infants’ cues, respond to their emotional and behavioral communication, identify behavioral states and develop a routine of positive touch through massage. Each of these aspects of the curriculum is identified as aspect of the dyadic relationship and has an impact on the infants’ communication development.

In the next section, a history of massage as a healing modality will be discussed. The sensory system that communicates touch will be explored, and an overview of the biochemical impact of massage on other physiological systems will be provided. This section will continue with a review of relevant research in the
field of infant massage. Finally, an overview of the curriculum as proposed by the International Association of Infant Massage will be covered.

**Massage**

The description of touch as healing extends throughout history and across cultures. Massage is an age-old tradition documented as far back as 2700 B.C. in China (Westman, 2008). In 400 B.C., Kheirourgos (surgeons) used the palms of their hands and their fingers to heal people from illness (Field, 2003). Throughout the ages, touch has been used for medicinal and healing purposes by royalty, medicinal healers, and spiritual leaders (Field, 2003).

In 1930, the popularity of touch research grew, and the first published projects were documented (Field, 2003). Researchers began by examining the blood flow and muscle atrophy of humans and animals (Field, 2003). As research techniques have advanced, a greater understanding of the underlying mechanisms impacting human subjects has emerged (Field, 2003). Currently, touch research is looking at the impact of massage on conditions such as depression, prematurity in infants, autism, eating disorders, attention deficit hyperactivity disorder, migraine headaches, fibromyalgia, diabetes, breast cancer, and AIDS (Field, 2008). Touch, in the form of moderate pressure massage, benefits cognitive functioning and reduces stress which leads to healthier outcomes for adults and children alike (Field, 2008).

**The tactile system.**

The tactile system, integrated into our skin, communicates the sense of touch to our brain (Montagu, 1986). This sensory organ is responsible for sending
messages to the brain regarding temperature, texture, pressure, pain, and muscle movement (Field, 2003). Communication of these messages is vital to understanding when the body is injured (Montagu, 1986). The sense of touch is imperative for safety; without these messages, humans risk death (Montagu, 1986). The human embryo begins to develop the tactile system within six weeks after conception (Montagu, 1986), becoming the first sense to be developed (Field, 2003). The protective function of the tactile system is most active during the newborn period and thereafter in periods of extreme stress or threat (Williamson & Anzalone, 2001). The tactile system is not only imperative to survival, it is vital to growth, development, communication, and relationships (Field, 2008). Touch is the primary way of experiencing the world (Field, 2003).

*Touch and the brain.*

The brain is constructed of many neural pathways that are instrumental in the human body’s message delivery system (McClure, 2000). The nervous system transmits messages to and from the brain and the body (McClure, 2000). At birth, the brain is not fully developed (McClure, 2000). As the brain continues to develop, the nerves becomes sheathed with a fatty covering called myelin which insulates the nerve, protects the nervous system, and expedites the flow of messages through the neural pathways (McClure, 2000). Massage and sensory stimulation enhance the process of myelinization of the neural pathways, therefore, improving the speed of information transmission enhancing the brain-body connection (Blackwell, 2000; McClure, 2000).
The biochemistry of massage.

Humans’ biochemistry is altered significantly immediately after moderate pressure massage therapy and as the course of the therapy continues (Field, Hernandez-Reif, Diego, Schanberg, & Kuhn, 2005). People react differently to massage therapy, but the consistent results are the reduction of the stress hormone cortisol and the increase of the neurotransmitters (chemicals produced by nerve cells) serotonin and dopamine (Field et al., 2005). Serotonin activation is noted by an increase in dopamine and a decrease in cortisol (Field et al., 2005). Dopamine is a neurotransmitter that has been noted to reduce the stress effects of depression (Field et al., 2005). Levels of cortisol consistently increase when people are under stress and consistently decrease when people receive massage therapy (Field et al., 2005).

Cortisol has a myriad of negative consequences to the human body including suppressing the immune system, affecting the brain function (such as, memory and emotions), suppressing physical growth, and inhibiting reproductive hormones (Committee on Integrating the Science of Early Childhood Development, 2000). Although the body needs cortisol in the event of a crisis, the on-going and repeated release of cortisol changes the brain function to resort more quickly to fear-stress based reactions (National Research Council and Institute of Medicine, 2000).

When massage stimulates the pressure receptors under the skin, it leads to a stimulation of the vagal nerve which increases vagal tone (Field, Diego, & Hernandez-Reif, 2007). This activates the smart vagus which is responsible for a decrease in heart rate and an increase of intonation in the voice and animation of
facial expressions in depressed individuals (Field, et al., 2007). The vegetative vagus is also stimulated, increasing food absorption hormones gastric motility in preemies (Field, et al., 2007).

Massage, skin to skin contact, and breastfeeding release a hormone called oxytocin (Westman, 2008). The short term effects of oxytocin release include lower blood pressure, decrease in cortisol level, increase in vagal nerve tone, and increase in feelings of relaxation and calm (Westman, 2008). Long term affects of repeated oxytocin release show a sustained decrease in blood pressure and cortisol level, as well as a sustained increase in vagal tone (Westman, 2008). Lower levels of anxiety and increased social behavior are also attributed to the regular release of this hormone (Westman, 2008). When a breastfeeding mother releases oxytocin into her blood stream, she becomes more socially competent and has an increased ability to read the communication messages of her infant (Westman, 2008).

The human body has mechanisms to moderate the impact of the stress hormone cortisol in the release of serotonin, dopamine, and oxytocin. These chemicals are more readily released when a person receives moderate pressure massage. The impact of too much cortisol can impact people’s health and development. The following section explores the effects of massage on the health and well-being of infants and their caregivers.

*Touch and the infant.*

Disruptions to the caregiving environment that produce stress in the mother appear to alter the offspring's developing reactivity to stress, as seen behaviorally in
high levels of fearfulness and neurologically in how the brain releases and modulates stress hormones. Alternatively, supportive and nurturant caregiving can protect offspring from these consequences. (National Research Council and Institute of Medicine, 2000, p. 215).

The resilience of the human brain and the assistance of medical technology both benefit infants when born prematurely (National Research Council and Institute of Medicine, 2000). The human brain develops in sequences that are related to our chronological age, and newborn infants function at a level that is consistent with their age of conception, not their age of birth (National Research Council and Institute of Medicine, 2000). Prematurely born infants may be at risk for neurological insult from the environment outside of the womb (National Research Council and Institute of Medicine, 2000). Moderate pressure massage, touch, and skin to skin contact can mediate some of the negative effects of premature birth (Field, Schanberg, Scafidi, Bauer, Vera-Lahr, Garcia, Nystrom & Kuhn, 1986; Field, et al., 2005; Field, et al., 2007). For example, when massage is implemented 15 minutes per day during a 10 day period, it produces a 47% increase in weight gain (Field et al., 1986). Massage increases the infants’ vagal activity which enhances the infants’ gastric mobility by releasing food absorption hormones (insulin and glucose) potentially leading to increased food absorption (Field, et al., 2007). Not only do infants gain more weight, they also show more adaptability to external stimuli, increased orientation (awareness of their environment), increased motor activity, and increased range of behavioral states (Field et al., 1986). Infants who receive
massage not only gain weight but spend more time in an alert state, and therefore interact more with their environment (Field et al., 2007). Premature infants who receive massage gain weight more quickly and as a result spend fewer days in the hospital (Field et al., 1986).

As with premature infants, typically developing infants also have an increase in weight gain when they receive moderate pressure massage (Field, Hernandez-Reif, Diego, Feijo, Vera, & Gil, 2004). The ability to visually attend to and habituate to external stimulation is enhanced for infants by receiving a brief period of massage before a visual attention task (Cigales, Field, Lundy, Cuadra, & Hart, 1997; Field et al., 2007; Field et al., 2004) Massaged infants spend more time in active alert states (Field et al., 2004), allowing the infant more time to connect with their environment. These infants cry less and have lower levels of salivary cortisol and a decrease of stress hormones in their urine (Field et al., 2004) They show improvements in their ability to express emotions and are more easily soothed (Field, et al., 2004). Due to the effect of cortisol on growth suppression, frequent and ongoing stress may negatively affect developmental progress in children (National Research Council and Institute of Medicine, 2000).

Depression impacts ten to fifteen percent of women post-partum (Nugent et al., 2007). Post-partum depression impacts the mother’s affect expression, feelings of joy, and sense of competence in their mothering behavior (Nugent et al., 2007). When depressed mothers were taught infant massage, in order to lower the mother’s depressive symptoms, the results were lower levels of stress behavior and less sleep
disturbances in their infant (Field, 2003). After the mother massaged her infant for 2
weeks the infant fell asleep faster, slept longer, was less fussy and played with the
mother more easily (Field, 2003). Touch mediated the lack of facial affect in the
depressed mothers and enhanced the positive affect and attention in the infant
(Pelaez-Nogueras, Field, Hoossain, & Pickens, 1996).

The following section describes the philosophy and curriculum of the
International Association of Infant Massage’s Curriculum. It has been designed
specifically to target the infant-caregiver relationship including in its curriculum
information regarding massage strokes, infant behavior, and infant communication.

*International Association of Infant Massage.*

The International Association of Infant Massage was founded in the early
1980s by Vimala McClure. The organization’s mission is to rekindle the ancient art
of infant massage by “promoting nurturing touch and communication through
training, education, and research so that globally parents, caregivers, and children are
loved, valued, and respected through the world community” (International
Association of Infant Massage, 2008). The Association works toward this mission
by providing training for individuals who are interested in teaching infant massage to
parents in their community (International Association of Infant Massage, 2008). The
certified infant massage trainer attends a four day workshop outlining the
philosophy, goals, and research regarding infant massage, as well as, works with the
trainer on workshop facilitation skills (McClure & International Associations Infant
Massage Circle of Trainers, 2005). Upon completion of the workshop, students must
complete a series of follow-up activities including a test on the workshop information, a series of essays illustrating their knowledge of the information, and provision of the workshop to a number of parents who evaluate them on the course content (McClure & International Associations Infant Massage Circle of Trainers, 2005). Upon successful completion of these tasks, a student becomes a Certified Infant Massage Instructor. Over thirty countries have certified trainers (McClure & International Associations Infant Massage Circle of Trainers, 2005).

Infant massage is not seen as a therapy but as a tool for parents to learn more about their infant (Westman, 2008). An emphasis is made on respect, communication, relaxation, touch, and moderate pressure massage (McClure & International Associations Infant Massage Circle of Trainers, 2005; Westman, 2008). The strokes are taught in a series over the course of three to five sessions (McClure & International Associations Infant Massage Circle of Trainers, 2005). The massage strokes are traditional massage techniques from Sweden and India (McClure & International Associations Infant Massage Circle of Trainers, 2005). During the classes, the trainer uses a doll as an example, and parents massage their own infants (McClure, 2000; McClure & International Associations Infant Massage Circle of Trainers, 2005). Along with the teaching of the act of massage, the core curriculum addresses infant crying, infant cues, reflexes, behavioral states and bonding, attachment, and the benefits of massage for the parent and the child (McClure & International Associations Infant Massage Circle of Trainers, 2005). The following section offers an overview of the curriculum designed by the International
Association of Infant Massage for certified Infant Massage Instructors to carry out in the series of workshops

*Curriculum from the International Association of Infant Massage Trainers Guide.*

The following information is derived from the curriculum in the Manual for Infant Massage Trainers (McClure & International Associations Infant Massage Circle of Trainers, 2005). Each class for the parents is a combination of hands on learning of the strokes of infant massage and an educational component on parenting an infant. The strokes are taught beginning with the legs and feet in the first session. The consecutive sessions cover instruction on the massage routine to the stomach, chest, arms, face, and back. Special attention is given to the strokes to assist when a baby has colic. When all of the strokes are taught, parents are instructed to do some gentle movements with their babies at the end of the massage routine.

Respect is the cornerstone of the International Association of Infant Massage’s Curriculum. Caregiver’s practice this concept by asking the infant’s permission to start the massage. They are taught about cueing behavior and observing for their infants unique method of engaging and disengaging communication. The concepts of the infants state behavior is an educational component that aids caregivers in understanding when the ideal time is to massage their infant. Instruction on infant reflexes is incorporated to assist caregivers in understanding the difference between behavior that is communicative and behavior
that is purely reflexive movements. Caregivers are informed on current research regarding infant massage its benefits.

Summary

Infant massage is a preventative intervention that is implemented early in the developing relationship. In this early period of growth the foundation for the relationship is built, infants’ neural pathways are being created, and the communication relationship is being formed. Infant and caregiver are intimately intertwined in a relationship that is co-regulated; each participant is actively impacting the world of the other. Anything that happens in the infants’ experiential world that is regularly repeated influences emotional memories and leads to adaptive behavior or maladaptive behavior.

The social, emotional, and physiological implications of a positive communication relationship facilitate a feeling of safety and security for the infant and a greater feeling of competency to the caregivers. Massage lowers stress levels, increases oxytocin levels, and decreases postpartum depression. These factors contribute to caregivers’ feelings of personal regulation. Caregivers who are more personally regulated are more apt to enjoy their infants and have the energy to co-regulate. Co-regulation is an essential element in the communication relationship.

Biochemically, the impact of the massage for the infant is seen in decreased stress hormones and an increase in relaxation hormones (oxytocin) giving the infant the feelings of comfort and safety. The feeling of safety allows the infant more energy to maintain their state behavior, communicate cues more efficiently, maintain
visual attention and habituate unnecessary stimuli. Infants have increased levels of oxytocin when they receive a massage. Oxytocin contributes to infants’ vagal tone. The quality of the vagal tone impacts infants’ ability to manage their arousal states. The ability to maintain these states is thought to be a foundational element of the communication relationship.

Physiologically, moderate pressure massage modulates the nervous system. Healthy nervous system functioning impacts the infants by improved visual attention, increased habituation, increased time in active alert, decreased fluctuations to the cry state, heightened expression of emotional affect, and greater regulation. The nervous system impacts the infants’ ability to respond to stress in their environment leading to healthy or challenging regulation patterns. Healthy regulation patterns allow for increased responsiveness in the alert processing state, the state in which infants are most available for social engagement. This indicates that massage is a tool that works to regulate infants’ physiology and improves opportunities for the communication relationship to be enhanced.

The developing brain is impacted by massage. An increase in the mylenization process is a result of infant massage. Mylinization of the neural pathways increases the speed to which information travels in the brain. The more quickly infants are able to process and transmit information the more timely and efficient their cueing behavior will be. Infants whose cues are easily read are easier to care for. Parents and infant communication is impacted by the mylinization process.
Massage provides the brain with a positive association between touch and pleasure. When the infants’ need for touch is not satisfied, the experience of touch and pleasure is not made in the development of neural pathways to brain. Lack of tactile activity can make touching behavior unpleasant to the infant. This indicates that parents who massage their infants and accurately respond to engagement and disengagement cues during the massage create neural connections that associate touch with the experience of pleasure. Touch then can become a regulating form of communication in the communication relationship.

Parents who learn to massage their infants develop better relationships with their infants and have more distinct feelings of closeness with them. Parents who massage their infant are, by definition, in close proximity to them. Close proximity allows for face to face contact in which the reading of more subtle communication cues and social engagement can occur. As noted previously, the caregivers’ ability to read and respond appropriately to infants’ communication cues promotes increased success in mutual regulation. Mutual regulation enhances the joy and positive exchanges within the dyad.

The act of massaging the infant leads to a lessening of depressive symptoms of the mother. When the mother experiences a lessening of depressive symptoms she has more affect in her communications with her infant. The infant thus becomes more responsive to the mother providing the dyad with greater opportunity for co-regulation.
The International Association of Infant Massage’s curriculum includes information for caregivers on infant arousal states and cueing behavior. Caregivers are instructed to listen to and respect the communications of their infant provides. Caregivers practice the skills over a five week period giving them opportunity to talk with a professional about their unique communication of their infant. Exposure to this curriculum has resulted in caregivers expressing that their infants sleep better, bond better, and relax with the massage intervention. Caregivers also feel the benefit of massaging their infant with increased attachment and bonding.

The following chapter will explore the methodology I used in order to answer the question: What is the impact of an infant massage course on the communication relationship of the infant-caregiver dyad.
CHAPTER THREE
METHODOLOGY

Introduction

This chapter provides an overview of the study, including the rationale for the study, the selection of the participants, and the methodology used in the research. It includes the methods for data collection and the procedures for analysis.

Rationale for the Study

The purpose of this mixed-methods study was to investigate the impact an infant massage course on the communication relationship of the infant/mother dyad.

Methodology

Development of questionnaire.

I compiled a questionnaire to seek answers to my questions in regard to the impact of an infant massage course on the communication relationship of a selected group of infant/mother dyads, in particular in the areas of infant communication strategies and massage benefits. The questionnaire contained three sections. The formatting included a combination of Likert scales, yes/ no questions, and open ended responses. The online survey-creating site, SurveyMonkey, was used for the design. Initially, the plan was to have mothers complete the questionnaire on their own before the first group class. Ultimately, I decided to modify my procedure to meet with the families in their home, and at that point I also modified the delivery method of the questionnaire. The intimate nature of the home visit made me
conscious of the need to gain the mothers’ trust. Gathering information with an interview seemed like a relationship building strategy and an opportunity to gather more qualitative data. As the mothers responded to the interview questions, I wrote down their answers on a printed version of the questionnaire developed on SurveyMonkey. During the course of the interview, I realized that two of the questions were not written in a way that the mothers felt comfortable answering. Having changed the questionnaire to an interview, I was able to easily modify this to meet the needs of the mothers.

Section one was designed to gather relevant family information and quickly identify issues that could prohibit the participation of the mother-infant dyad. The basic information gathered included: names of the participants; birth date of the infant; the mothers’ education level, pregnancy health, and birth history; and the health of the infants and mothers after birth. The health history questions were designed to identify prematurity and/or health issues that could prohibit the dyad’s interaction in the rest of the research project or identify factors that could impact the communication relationship. I included additional questions in regard to the family structure, primary caregiving status, and present use of infant massage in the home. These questions were intended to provide me with a base line of information about the babies’ home life. Knowing from the start if the parents already massaged their infants would be a factor in my results.
Section two looked more closely at the mother’s perceptions of her infant’s communication and how confident she felt in understanding her infant’s cues. Questions were generated to gather an understanding of the mother’s feelings about crying, her own infant’s cries, and the cries of other mother’s infants. Participants were asked to describe a typical feeding event in order to identify consistencies between the mothers’ description and the video of the feeding events. Questions were generated about temperament to compare the mother’s perception of herself to her perception of her infant. Additionally, a series of Likert Scale questions were asked to elicit preconceived ideas about infant massage. It was my hope to see if the experience altered the answers to these questions. The last question in this section was an open-ended question about what the mother hoped to gain out of the infant massage course.

Section three was designed in the middle of the data gathering process because of the decision to have a smaller sample size and to gather more qualitative data. This segment of the questionnaire was intended for use as follow-up interview questions. This grouping of questions was designed as open-ended inquiries. During the course of the intervention, I realized that the curriculum, according to my literature review, was missing an important educational piece. I introduced new materials to the curriculum which were not originally in the International Association of Infant Massage’s Curriculum. I wanted to ask pointed questions about this enrichment to see if the outcomes supported the literature. This contributed to my
motivation in creating section three. (See Appendix A for the content of the questionnaire.)

Selection of the participants.

Participants found out about this study from flyers I distributed at local children’s centers as well as through word of mouth. The flyer offered an explanation of the opportunity and described the requirements for participation. Included with the flier, I distributed a copy of the lay summary and informed consent.

The first participant was identified through network sampling: she became aware of my research through a mutual friend. I had five families from the Humboldt State University Children’s Center express an interest. One infant did not meet the age requirement. Two other families felt like the time commitment was too much for them with a new baby. One family was not interested in a group class but became interested when I changed my procedure to do home visits. She became the second participant. I personally contacted the final participant who joined the group through Facebook.

I sought a purposeful sample in order to create a homogeneous population limiting the variation in age of the infant to birth to three months at the onset of the study. Infants develop rapidly in their communication strategies, and relationships are shaped quickly between the mother and the infant. In order to minimize the variables in my data gathering, I had difficulty finding participants. There were three
infant-mother dyads that completed the study. The infants were 55, 62, and 66 days old at the onset of the study.

The adult participants had many commonalities in addition to their infants being born around the same time. Each infant was born into a two-parent household. They all had older sisters (one was a step-sister). Each of the mothers had a cesarean birth. Two of the mothers were planned cesarean, and one was an emergency cesarean after a long labor. All of the mothers had completed a four-year college degree. Two of them had gone on for specialized education and certification. At the onset of the study, none of them had gone back to work yet, although each of them was anticipating the return to work. Only one of them was going to return to work full time.

Procedure for research.

Participants were contacted by phone after they had the opportunity to review the initial paperwork describing the study. On the phone, I discussed what we would do at the initial meeting. I let them know that I would bring the video camera and attempt to tape a feeding event if one occurred during our time together. We agreed to an initial meeting time in their home.

When I arrived in each family’s home, the mothers were all ready to feed their infant. I videotaped the feeding. They signed an informed consent release, and we went over the paperwork together. (Please see Appendix B for a copy of the informed consent, flyer announcing the study, and lay summary.) I started with the
informed consent paperwork and asked if they had any questions. I went over my background and education that related to this research as described in the lay summary. Next, I shared the packet of information about infant massage with them. I told the mothers about the educational component of the curriculum and the historical background of the International Association of Infant Massage’s development of the strokes. I reviewed time commitment expectations and shared the Massage Log with them that I had created as a tool for them to document incorporating massage into their routine on a daily basis. (See appendix C for a copy of a massage log.) I talked to them about what to expect in the next visit. In that discussion, I let them know that I would be massaging a doll and showing them the strokes and that they would massage their baby. We set up a time for concurrent visits.

The mother and infant then participated in a five week course in infant massage utilizing curriculum from the International Association of Infant Massage. This curriculum was chosen not only for the series of strokes that are included in the course but also for the additional curriculum included in the course that targets the communication relationship. Early in the data gathering process, I realized from my research the course was lacking valuable information so I supplemented the curriculum. I developed two handouts that introduced the concept of the infant’s unique sensory profile. My goal was to give the mothers permission to modify the stroke series, pressure of massage, time of day, temperature of the room, and amount of visual stimuli to meet the individual needs of their infant. (This curriculum
enrichment can be seen in Appendix D.) This addition of the curriculum deviated from the International Association of Infant Massage’s standard curriculum which emphasizes eye contact with the infant which may for some infants become too much sensory information. Therefore, I wanted to empower parents to understand that that their infants may have their own sensory preferences within the massage. I encouraged them to try different modifications and observe the reaction of their infants for cues of pleasure in the massage.

As a participant researcher, I maintained a narrative to enrich the qualitative data. I focused on the interactions between the mother and the baby and the questions and concerns that the mothers raised during the session. I observed and reflected on the progress of the massage within the relationship as well. The intimate nature of the material and one-on-one meeting with the mothers led to topics and discussions outside the planned curriculum. These topics were noted to gain a richer understanding of the development of the relationship.

At the end of the nine week period, I arranged a home visit to complete the post-intervention survey and to videotape a feeding event. Section one of the survey was not repeated. Sections two and three were implemented in an interview format. I asked the mothers if they would like another visit to review the results of the research and collected the Massage Log for analysis.

I used the video tapes of the mothers and infants taken during a feeding event pre and post intervention in a test-retest manner. The videotapes were copied and distributed to four assistant researchers who have been trained in The Nursing Child
Assessment Satellite Training Feeding Scale (NCAST Feeding Scale). All of them achieved research-level reliability for this assessment. Each of them signed confidentiality statements, documented their professional credentials, and copied the certificate from NCAST showing their research reliability status. They assessed the video tapes as individuals trained in the NCAST Program utilizing the scoring sheet provided by the NCAST Program. Multiple scores were collected on each feeding event to validate the results.

*Instruments.*

I utilized a survey as a pre and post information gathering and distributed a massage log to the participants. Additionally, I took a video tape of the mother-infant dyads during a feeding pre and post intervention to assess the infant-parent communication strategies utilizing the NCAST Programs Feeding Scale, a validated tool. In order to perform the NCAST, I attended three day training for the NCAST and was tested on the accuracy of my interpretation of the video for reliability in utilizing the Feeding Scales. I was granted a research level reliability. The assistant researchers who scored the videos also attended this training and were granted research level reliability. These four additional researchers scored the videos in order to validate the results of the assessment.

The NCAST Feeding Scale was chosen as the assessment to use for this research because its underlying principles are fundamental principles found in the research on infant-parent communication. The core belief that the social-emotional factors that are reflected in the caregiver-child interaction impact the health and
development of the child. The dyad can be observed through a commonly practiced interaction, feeding, to assess the strengths and challenges that both members of the dyad bring to the interaction. The assessment is designed to look at the responsiveness of the dyad to each other and their ability to have a contingent relationship.

This assessment tool was designed to methodically examine the mother-infant communication relationship during a feeding event. It is intended for use on infants’ birth to one year old. The tool was designed to look at a specific repertoire of behaviors within the dyadic relationship and the contingency of the responses to one another. The tool is made up of 76 binary items, divided into six sub-scales. The six sub-scales are: caregiver sensitivity to cues, caregiver’s response to the child’s distress, caregiver’s social-emotional growth fostering, child’s clarity of cues, and child’s responsiveness to caregiver. Each member of the dyad is viewed for the unique characteristics that they bring to the interaction.

Observing the video recording of a feeding event gives the researcher the opportunity to view within the sub-scales the following core concepts: contingency of the communication relationship, positioning of the child, verbal exchanges, sensitivity to cues, affect, and engagement/disengagement. Scores are generated for each subscale, and an overall score is generated for the caregiver, the infant, the caregiver/parent-child total, and the contingency items.

The contingency items are items on the scale that reflect the reciprocal nature of the healthy communication relationship. The concept is similar to the ideas
presented in the literature review on co-regulation in the communication relationship. When the caregiver reads and responds appropriately and in a timely manner to the infant’s communication the caregiver is responding contingently. The infant learns behavioral patterns from positive contingent responses which build security in the relationship.

Positioning of the child is a valuable consideration in the feeding relationship. Caregivers are observed for their sensitivity to the child’s developmental stage and needs. The items in the scale look to see that the caregiver is providing a safe position for the child to be in that still allows for freedom of arm and leg movement. The positioning of the child for optimal social and emotional engagement so that the caregiver and child can have face to face contact. Close body contact in a bottle feed or nursing baby is important for the caregiver to assess the non-verbal cues of the infant.

Verbalness is assessed throughout the sub-scales. The view of the NCAST organization is that the caregiver vocalizes to their child. Children who engage with caregivers who are verbally descriptive, constructive and encouraging have positive developmental outcomes. Verbalness can include singing, humming and talking and is considered one of the most important recommendations when counseling a caregiver on strategies to improve their relationship.

The ability to be sensitive to the child is observed within the sub-scales. Caregivers are sensitive when they are aware of their child’s cues and respond appropriately with their physical and psychological responses. Sensitivity is of high
value in the early months for the child when they rely on the caregiver to assist them in regulation. As the child is more capable of self-regulation the sensitivity of the caregiver is not as important.

Another observed behavior in the sub-scales is affect. Affect, being the expression of emotion, feeling or mood of the caregiver has positive or negative results on the communication relationship. Throughout the scales observations seek to identify smiles, frowns, laughs, frustration, anger or sadness. From the prospective of the NCAST Scales, positive affect is thought to be correlated with secure relationships and healthy future outcomes for the child.

The final concept that is woven through the sub-scales of the NCAST Scales is engagement and disengagement behaviors. These behaviors can also be thought of as a pattern of attention and withdrawal. These strategies are the basis of interaction and communication. It is part of our regulatory process. When a child is well regulated they are able to attend. When something happens to fast or powerfully the natural reaction is to disengage and regulate ourselves before we return to attend. Understanding the signs of engagement and disengagement cues will assist caregivers in understanding and responding to their child’s communication.

This tool has been assessed for test-retest reliability within the same dyadic relationship. The coefficient for the parent segment of the tool is (.75), and the infant segment of the tool is (.51). The parent tool provided for greater stability due to the infant’s rapid developmental changes during this period. (A copy of this tool is provided in Appendix E.)
Curriculum.

The International Association of Infant Massage is a world-wide organization that has developed a curriculum and training that instructs professionals to provide a curriculum for parents on infant massage. The curriculum for the parent encompasses a routine of massage strokes to utilize at home with their infant. The course includes information about the unique development of the infant. In order to have their curriculum consistent from trainer to trainer they have developed a Manual for Infant Massage Trainers.

The following information is derived from the curriculum in the Manual for Infant Massage Trainers. Each class for the parents is a combination of hands-on learning of the strokes of infant massage and an educational component on parenting an infant. The strokes are taught beginning with the legs and feet in the first session. The consecutive sessions cover instruction on the massage routine to the stomach, chest, arms, face, and back. Special attention is given to the strokes to assist when a baby has colic. When all of the strokes are taught, parents are instructed to do some gentle movements with their babies at the end of the massage routine.

During the first class session, parents are told that crying for infants is identified as a behavioral state. Infants cry to communicate their physical or emotional needs. When infants cry, they release hormones in the body. If infants’ cries are left unanswered, their bodies can become disorganized, the nervous system overreacts, and they can have a difficult time soothing themselves. The trainer notes that crying will happen during the class, and it is welcome; it is a method of
communication for infants. The trainer will remind parents that they are the experts on their own children and will react in a way that is right for their babies. Parents are guided through a technique on listening to their infants’ cries during a massage, first by relaxing themselves, then by listening to the infant, watching body language, and making eye contact. Parents are supported in their choices of interaction with their children.

Infant cues are another form of communication that may signal signs of engagement or disengagement. Parents are instructed to watch for behavioral cues in context to the situation. Cues are usually clustered together to send messages of engagement or disengagement. Engagement cues may present in the following ways: having their eyes wide open, looking away from parent then looking back and smiling, making eye contact, cooing, laughing, sucking contently, having a quiet and relaxed appearance, and making smooth movements of the arms and legs. Disengagement cues may present in the following ways: having their eyes closed in an awake state, yawning, looking away and frowning or having a wrinkled forehead, staring, grimacing, hiccupping, spitting up, being fussy, crying, crawling away, rolling over, arching the back, stiffening of the body, and pushing their parents away.

In consecutive sessions, parents are taught the differences between infants’ cues and infants’ natural reflexes that may be elicited by touch. Infants have newborn reflexes that may vary from baby to baby and will stop at various ages. The Moro reflex occurs when there is a sudden occurrence of any kind (e.g., change of lighting, movement, noise, etc.). Infants extend their arms, hands, fingers, and legs.
Then babies inhale and contract all appendages into an embracing position. The Rooting reflex is observed when infants’ cheeks are touched, or the edge of the mouth is stimulated. Infants turn their heads towards the stimulus and prepare for suckling. The Babkin reflex happens when pressure is applied to the palm of infants’ hands. The infants will open their mouths and bring their fist to their mouth, bending their head forward or to the side. The Palmar reflex makes the fingers close when light pressure is applied to infants’ hands. Similarly, the Plantar reflex makes the toes curl when light pressure is applied to the bottom of the foot. Babinski reflex makes the toes of the foot spread and the large toe curl up when the foot is gently stroked from heel to toe. The last reflex taught is the Asymetric Tonic Neck. In this reflex, infants turn their heads to one side extending the arm and leg on the side they are looking and bending the arm and leg on the opposite side (sometimes referred to as the fencing pose).

Parents’ knowledge of behavioral states can help them to identify the best time for a massage. There are six states include: light sleep, deep sleep, drowsy, quiet alert, active alert, and crying. Infants are usually most receptive to massage when they are in the quiet alert state. Infant cues to look for in the quiet alert state include minimal body activity, regular breathing, and attention to stimuli (observant). A handout is provided to parents identifying all of the states and a detailed description of them.

Infant massage is a tool to promote elements of bonding which include eye-to-eye contact, touch, smell, feeding/nursing, and the production of stress-relieving
hormones. Bonding is defined for the purposes of infant massage as the forming of interpersonal relationships between infant and parent with frequent and consistent contact. The trainer emphasizes that bonding is a process rather than an event. Attachment is a word often used interchangeably with bonding, but attachment is the emotional and physical connections between baby and parent. Teaching parents about bonding and attachment may help parents understand the benefits of massage for the parent and the child.

There are four main categories of benefits for the baby: interaction, stimulation, relief, and relaxation. Interactions encompasses bonding and attachment, verbal and nonverbal communication (pre-language communication skills), quality time together (undivided attention), respectful communication, sensory stimulation, nurturing touch, early contact with parents, empathy, and imitation. The systems stimulated during massage include the circulatory, digestive, hormonal, immune, lymphatic, nervous, respiratory, and vestibular systems. Stimulation affects the way the infant’s brain processes sensory input. Touch from massage enhances motor, cognitive skills and mind/body awareness. Infants can feel relief from conditions that may cause discomfort (e.g., gas and colic, constipation, growing pains, teething discomfort, and dry skin). The infant’s experience of relaxation might be demonstrated through improved sleep patterns, increased muscle tone, normalization of muscle tone, increased environmental coping mechanisms, regulation of state behaviors, and self-soothing mechanisms. The experience of relaxation is a reflection of the reduction of stress levels and stress
hormones such as cortisol and norepinephrin and an increase in the anti-stress hormones oxytocin, serotonin, and dopamine.

Parents who provide massage to their infant as a routine may experience its benefits including increased bonding and attachment, increased quality time between parent and child, increased understanding of their infant’s communication, decrease in stress hormones, increase in relaxing hormones (oxytocin and prolactin), increased relaxation, improved sleep, and decreased postnatal depression.

The entire family can benefit from infant massage. Siblings and extended family that have regular contact with infants can be taught the sequences and the benefits of the massage, and they can also benefit from giving the massage (e.g., increase in relaxation hormones and the decrease in stress hormones). A handout regarding modifications to the massage routine for the older child is given to the participants.

Upon completion of this course the parent has gained the practical skill of a massage routine that can be utilized at home with their infant. Educational materials presented over the weeks of the course may contribute to the parent’s knowledge of infant development and their unique modes of communication. (A copy of the handouts given to the participants can be found in Appendix F.)

The participants of the study began the process with a pre-intervention interview, videotaping of a feeding and a massage log. As the weeks passed they were introduced to the curriculum of the International Association of Infant Massage and their educational materials. At the end of the intervention the massage log was
collected, another video recording of a feeding event was taken and a post-intervention interview was facilitated. The next section will clarify the process of the data collection.

**Data Collection**

This study incorporated a mixed methodology. I utilized a questionnaire that included qualitative and quantitative questions in a test-retest format to interview the participant. I implemented the NCAST assessment to gather quantitative data, also using the test-retest format, and gathered qualitative narrative information through participant observation to provide more depth to the data. I used this triangulation of data gathering to enrich the data and to counteract the threats to validity within each method of research.

**Questionnaire analysis.**

The questionnaire was compiled at the initial meeting and then again at the last meeting. Using qualitative data gathering methodology, common themes were grouped together and compared against other participant answers. Each participant’s pre and post questionnaire was analyzed to see if their responses reflected any change due to the infant massage curriculum. Generally, each questionnaire was analyzed for data that supported or contradicted the thesis question.

**NCAST Feeding Scale analysis.**

Video tapes were shared with assistant researchers trained and certified at research-level reliability to score the assessment. Each researcher’s scores were analyzed in relationship to each other in order to validate their findings. When there
was a discrepancy in the results… The scores were tracked on an Excel spread sheet. Scores were then compared as pre and post results individually for each participant. Comparisons were also made between individual participants to reflect any common themes between one another.

*Observations analysis.*

The qualitative observational data were analyzed for common themes. These observations gathered from the home visits documented the individuality of the participants and their questions and concerns at each meeting. The notes were coded to indicate data that support the research results. A description of these results compared the progression of each participant on their journey through the infant massage course.

The methods suggested in this chapter were utilized to the gathering of results presented in the following chapter.
CHAPTER FOUR

RESULTS

*Daily Massage Log results*

The mother’s in the study were asked to document their infant massage activity on the massage log. For each day of the study they were asked to indicate if the massage attempt was: a successful attempt, an unsuccessful event or not attempted. On average, over a nine week period, the mothers successfully massaged their infants one time per day for at a rate of 70%, unsuccessful attempts comprised 17.5% of the time, and no attempt to massage 12%.

Table 4.1:

*Massage Log Results*

<table>
<thead>
<tr>
<th></th>
<th>Successful Attempt</th>
<th>Unsuccessful Attempt</th>
<th>NOT Attempted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother 1</td>
<td>68%</td>
<td>30%</td>
<td>2%</td>
</tr>
<tr>
<td>Mother 2</td>
<td>72%</td>
<td>7%</td>
<td>21%</td>
</tr>
<tr>
<td>Mother 3</td>
<td>71%</td>
<td>16%</td>
<td>13%</td>
</tr>
</tbody>
</table>
Survey Results

Participant demographics

The mothers participating in the study had completed their undergraduate degree at a university, and two of them had gone on for higher credentials. The infants were 55, 62, and 66 days old at the onset of the data gathering. The two younger participants were male, and the oldest was female. Each of the mothers had a healthy pregnancy and delivered full term infants with a cesarean surgery. Two of the cesarean births were planned, and one was an emergency cesarean after labor. All of the infants live in a two parent home, and all have older sisters, one of whom is a step-sister.

It was indicated by two of the three mothers that their goal for learning infant massage was to relieve issues of “colic” and digestive system challenges that their infant was presenting. Additionally, one of the three participants indicated that they had an interest in learning ways of “communicating, connecting and comforting” their infant.

Prior to the intervention two thirds of the mothers indicated that their infant communicated their needs in a variation of crying from fussing to inconsolable crying. One-third of the mothers gave more subtle forms of communication cues such as “long blinks and limp body when tired, turning head back and forth to indicate the need to be alone, and short bursts of a cry-like sound when she wants to
eat.” Following the intervention all of the mothers were more descriptive of their infants communication cues describing manners of expression as “talking”, “a specific whining sound”, “hand movements and kicking feet”, “buries his face in me,” and “squirming”.

All of the mothers tended to report that they were on the positive side of the confidence scale in understanding their infants’ communication of their needs prior to and following the intervention. One mother leaned to the negative side of the confidence scale in understanding her infants need to be diapered and be alone prior to the intervention but moved over to the positive rating of confidence following the intervention.

All of the mothers described that they felt “anxious”, “stressed”, or “frazzled” when their infant cried before the intervention. Following the intervention the mothers continued to feel stressed at the cry but were able to be more objective. For example, one mother said, “I feel anxious when he cries, but I am starting to feel more relaxed and controlled. I understand better now that sometimes he just needs to cry.” The mothers expressed that their reaction to the cry communication was dependent on the need of the infant.

When asked how parents should respond to their babies’ cry, two of the mothers mentioned prior to the intervention that the parent should check for basic needs and safety, and both mentioned diapering and feeding. All three of the mothers mentioned picking up and comforting the baby. The answers were similar
in the post-intervention interview. One mother mentioned that “it depended on the age of the child and the situation”.

The mothers’ consistent reaction before and after the intervention was to hold their infant if their infant cried. Additionally they stated that they would try to feed, rock, or burp the baby. At the final interview, one mother mentioned that she would talk to the baby and listen to the type of cry the baby was making to decide what to do to satisfy the baby’s need. The mothers responded differently to their infant fussing. Prior to the intervention their answers included jiggling, holding, feeding, and burping. After the intervention, the mothers said that they would respond by putting the baby in his booster chair, picking the baby up, talking to the baby in a calm voice, breastfeeding the baby, and making visual contact with the baby.

When asked what the mothers would do when their baby turns away from them, their response at the onset of the study was to leave the baby alone, hold, or burp the baby. The responses were consistent following the intervention except that the mothers indicated that they would also attempt to reengage the baby in interaction. When the mothers were asked what they do when their baby turns to them, they responded similarly in the beginning and at the end of the study indicating that they would smile, talk, kiss and hug, or feed. At the end of the study, their responses also included: make eye contact and a feeling of happiness in response to their infant’s visual attention.
The mothers were asked how they responded when their baby coos and babbles. They responded with the same answers both pre and post intervention. They stated that they would talk, smile, laugh and touch their baby in response to their vocalizations. The only difference in responses was that one mother stated that her baby’s coo and babble would get her to look into his eyes. The mothers were asked how they responded to their baby’s smiles, and the unanimous comment was to smile back both in the first interview and the last. Other responses in the first interview included laughing, touching, and taking a photo. During the last interview, they said that they “would laugh”, “try to get the baby to laugh”, “initiate a cooing game”, and “feel giddy”.

The mothers at the onset of the intervention all agreed that the massage would provide relaxation, improve communication between infant and parent, support bonding and attachment, and improve sleep. Two of the mothers also felt that massage would support physical growth, mental growth, improve sleep, and improve colic, while one was less sure of the benefits. When the mothers were asked this same set of questions post-intervention, they all thought that infant massage provided relaxation, supported physical growth, supported mental growth, improved communication, supported bonding and attachment, helped with colic, and improved sleep.

Prior to the intervention, all three participants asserted that massage provides relaxation, improves communication, and supports bonding and attachment. Two of
the three affirmed that infant massage lessens post-partum depression. The post-intervention interview revealed the same pattern of responses.

The most frequently cited benefit of the infant massage class was learning the massage strokes, followed by assisting with colic and sleep issues then being able to calm and connecting with the baby. One mother stated, “It was nice to know that you could do a little bit to calm and connect and know what to do with my baby.” The two mothers who mentioned that their baby was colicky both said that the course helped with their baby’s colic. One mother stated, “I appreciated the way it can improve so many factors, sleep and colic for him, it was pretty amazing.”

The greatest challenge to participating in the infant massage course for the mothers was the development of a routine. All of the mothers expressed that it was difficult to find time every day to massage their baby. One of the mothers said, “It was challenging to try to make sure to get it in every day and having the opportunity to massage when the opportunity presented.”

The mothers all expressed that they had learned about their baby during the course of infant massage. One mother noted, “I learned about her attention span, more about her moods, when she wants to be touched and does not want to be touched. I learned about her likes and dislikes. I know more about what parts of her body she enjoys having massaged.” Other comments included, “I learned about his personality and how to connect with him,” and “I learned how important it is to bond
and be aware of his needs. I learned that I am able to meet all of his needs. I could help him with his colic. Most people believe that you cannot help with colic.”

All of the mothers agreed that the infant massage course helped them more deeply understand their baby’s communication strategies. A common theme in their responses was that they were more in tune with the different types of communication, and they paid more attention to their baby. One mother talked about understanding the communication cues her baby would display before he was colicy. She was able to relieve his symptoms before he would start to cry and be uncomfortable. She also said, “I understand his need for detaching and needing space. I also understand his engagement cues and wanting to communicate.”

When asked if they saw a change in their infants’ behavior that they thought was due to the practice of infant massage, they all noted that massage was responsible for calming and relaxing their babies. One mother mentioned that her baby seemed to be more focused. Another mother noted that her baby was going through developmental changes, and as a result she did not know what to attribute to the massage and what to attribute to typical development. The mother whose son was struggling with colic said, “YES! He has a definite colic hour from seven to eight where he will just cry. If I massage him before, he does not cry which is amazing!”

The mothers also felt that their behavior had changed because of the infant massage course. They stated that they were more relaxed and focused on their baby.
They forced themselves to put aside time just for the baby. One of the mothers stated, “I am more positive when I do this with him. His behavior changes so much that I am able to relax more. When he cries less, I have the ability to focus more on him.”

All of the mothers altered the International Association of Infant Massage’s curriculum to meet the needs of their infant. They each identified that their baby liked some strokes but not others. They noticed that the pace and timing were impacted by their baby’s participation. At times they moved more quickly through the routine or complete only segments of the routine in response to their infants’ communication cues.

The mothers stated that the routine did not feel good to them when the baby did not settle into it. Mostly, they felt that when the massage did not work, it was because their timing was wrong. One mother said, “I can tell from the beginning when he is not receptive to the massage. His face grimaces, and his body tenses.”

When asked to describe a time when massaging their baby felt really good, it was hard for them to narrow that down to one experience. One mother said, “It is hard to think of one time, I cannot narrow it down. He would coo, engage, enjoy the massage, and look at me while he had his little limbs massaged. We would laugh, have fun, it ended up more playful than serious.” Another mother responded, “Lots of times! One of the first couple times when she really started to relax with it. I started to see her calm and relax with it. It was a good feeling when I noticed that
she is her own person with her own likes and dislikes.” The third mom said, “In
general I enjoyed it because it was effective in eliminating colic. No crying for an
hour at night.”

Narrative results

Providing the mother’s with a home visit for the course led to the
individualization of the presentation of the material. One of the mother’s was always
prepared for the visit. She had made efforts to have her baby napped and fed when I
arrived. Her materials were laid out and she always attempted to massage her baby
while I modeled the strokes on the baby doll. The other two mothers were more
casual about our visits. One of them always had a reason not to massage her infant
while I was there. I would model the strokes on the baby doll and she would observe
and take notes on her materials. The third mother tried to massage her infant while I
was there but if he was sleeping we would both practice the strokes on our own baby
doll.

The content of the educational materials was presented in the same order to
each of the mothers. One of the mothers needed to double up on learning the strokes
and educational material contained in two of the visits because she needed to go back
to work full-time and she was afraid that she would not have the time to participate
when she was working full time. (She completed the same amount of days
massaging her infant as the other mothers in the study.) When the educational
materials were presented each of the mothers asked questions and engaged with the materials in different ways.

Throughout the entire course the mothers talked about common themes they were experiencing having a new baby. All of the mothers talked about going back to work. They were interested in their babies’ siblings and their adjustment to having a new family member. Each of them brought up the decision to immunize their infant and how their medical appointment went when they went for their immunization. All of the mothers discussed the decision to co-sleep with their infants. The mothers of both of the boys talked about their baby having colic. One of the mothers mentioned, “He cries, and I do not know how to console him.”

The mothers were all unsure that their infants were enjoying the massage for the first two weeks of the course. By the third visit, all of the mothers were certain that their babies were enjoying the massage and were able to note which parts of their bodies the babies most enjoyed being massaged and what cues the babies used to convey that enjoyment. They were able to pinpoint specific cues that their babies used to let them know that they liked a stroke or that they were finished with the massage. Two of them had developed a nighttime routine for the massage. By the end of the course, the mothers all expressed the ways in which they perceived that the massage was impacting their relationship with their baby.
Assessment results.

The NCAST tool was utilized to assess the mothers’ communication relationship before the intervention and following the intervention.

The first category assessed on the NCAST tool was the mothers’ sensitivity to the infant’s cues. On average, the mothers were observed to possess 91% of the “sensitivity to cues” indicators at the onset of the intervention and were again observed to possess them at the completion of the intervention. If an indicator was not observed at the onset of the study 2% of the time, the mother was not observed to practice the skill after the intervention. Averages of 7% of indicators were observed in the initial assessment and were not observed in the post-intervention assessment. There were no indicators in the “Sensitivity to cues” category that were not observed in the first assessment and then were present at the end of the intervention. The following is a chart that indicates the individual results of each mother-infant dyad in the sub-scale of “Sensitivity to Cues”.
Table 4.2:

NCAST Results, Caregiver’s Sensitivity to Cues

The next category observed the mother’s response to her child’s distress cues. An average of the three mothers’ responses was taken to indicate that 91% of the observable skills were present at the onset of the study and was still present at the end of the intervention. The mothers were not observed to have 3% of the indicators in this category pre or post intervention. In the category that looked at the mother’s response to the child’s distress cues, there were not indicators that were observed before the intervention that were not present post intervention. The mothers were observed to attain 6% of the desired skills post-intervention. The improvements in this area were in the indicator that observes for “Caregiver diverts child's attention by playing games, introducing toy, or making faces.” The following is a chart that
indicates the individual results of each mother-infant dyad in the sub-scale of “Response to Child’s Distress”.

Table 4.3:

*NCAST Results, Caregivers Response to Child’s Distress*

<table>
<thead>
<tr>
<th>Skill present pre and post</th>
<th>Skill gained</th>
<th>Skill never observed</th>
<th>Skill lost</th>
</tr>
</thead>
<tbody>
<tr>
<td>dyad 1</td>
<td>91</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>dyad 2</td>
<td>91</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>dyad 3</td>
<td>91</td>
<td>9</td>
<td>0</td>
</tr>
</tbody>
</table>

Under the category of social emotional growth fostering the mothers averaged 74% of the observable skills in the onset of the study and maintained those skills following the intervention. The assessment indicated that within this sample two percent of the skills were gained on average over the course of the study. Pre-intervention five percent of the skills were present that were not observed in the post-intervention results. Under the social and emotional growth fostering category this sample of mothers, on average, were not observed to display 19% of the desired skills following the intervention. The results were skewed by the results of one mother-infant dyad that were observed to have 43% of skills present at first assessment that were not present at the post-assessment. The following is a chart that
indicates the individual results of each mother-infant dyad in the sub-scale of “Social-Emotional Growth Fostering”.

Table 4.4:

*NCAST Results, Social-Emotional Growth Fostering*

<table>
<thead>
<tr>
<th></th>
<th>dyad 1</th>
<th>dyad 2</th>
<th>dyad 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill present</td>
<td>100</td>
<td>43</td>
<td>100</td>
</tr>
<tr>
<td>skill gained</td>
<td>79</td>
<td>79</td>
<td>0</td>
</tr>
<tr>
<td>Skill never</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>observed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill lost</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Averages of the participants were taken on the assessment under the assessment sub-heading of Cognitive Growth Fostering. Participants were observed to have 70% of the skills pre and post intervention. There was a gain of 10% of the desired skills. These mother-infant dyads never displayed 10% of the desired observable behaviors and 10% of the desired behaviors observed in the first assessment were not observed following the intervention. The following is a chart that indicates the individual results of each mother-infant dyad in the sub-scale of “Cognitive Growth Fostering”.

An average of the participants’ results was taken on the assessment under the assessment sub-heading of Clarity of Cues. Participants were observed to have 76% of the skills pre and post intervention. There was a gain of five percent of the desired skills. These mother-infant dyads never displayed 12% of the desired observable behaviors and 7% of the desired behaviors observed in the first assessment were not observed following the intervention. The following is a chart that indicates the individual results of each mother-infant dyad in the sub-scale of “Clarity of Cues”.

**NCAST Results, Cognitive Growth Fostering**
Table 4.6:  

**NCAST Results, Infant’s Clarity of Cues**

Under the sub-heading category of Responsiveness to Cues an average of the participants’ results were taken on the assessment. Participants were observed to have 70% of the skills pre and post intervention. There was a gain of nine percent of the desired skills. These mother-infant dyads never displayed 21% of the desired observable behaviors. There were not skills observed in the first assessment that were not observed in the second assessment. One mother-infant dyad skewed the results with a 21% gain in skills from the pre-intervention to the post-intervention. The following is a chart that indicates the individual results of each mother-infant dyad in the sub-scale of “Responsiveness to Caregiver”.

---

![Infant's Clarity of Cues](chart.png)
TABLE 4.6:

NCAST Results, Infant’s Responsiveness to Caregiver

The final category summarized on the assessment tool was categorized as Contingency skills. An average of these results maintained that 74% of the observable skills were present at the onset of the study and were maintained at the post-intervention assessment. A gain of eight percent of skills was indicated at the final assessment. On average, 10% of the desired skills were never observed and eight percent of the skills observed pre-intervention were not observed post-intervention. The following is a chart that indicates the individual results of each mother-infant dyad for the contingency items.
The next chapter will analyze the results presented above. The nature of this research project lends itself to the richness of the qualitative data analysis.
CHAPTER FIVE

ANALYSIS

Introduction

The aim of this research study was to look at the impact of an infant massage class on the communication relationship within infant-mother dyads. In this chapter, the qualitative results will be analyzed and then integrated with the quantitative data of the assessment results.

Analysis

The qualitative data highlighted the social aspect of the communication relationship in the results of this research. The mothers engaged in this study reflected a positive shift in perspective and understanding of their infant communication behavior. In the onset of the study, the mothers were feeling anxious about their infants’ cries. Upon completion of the study, the mothers’ indicated that they had become more aware of their infants’ cries as communication cues and felt that they more accurately and consistently were able to meet their infants’ needs. The mothers indicated that they had developed strategies to assist their infants in regulation that were inclusive of verbal, auditory, affect, and visual communication. These strategies were in addition to their original manner of soothing their infants which was to hold them. The mothers’ positive view of their infants’ behavior combined with the mothers' increased capacity to attend to their infants’ cues and
their lower levels of anxiety allowed for more adaptive co-regulated states between the infant-parent dyad. When the mothers had more positive interactions with their infants, the babies were able to maintain their own regulation which allowed for increased availability in the alert processing state. The abilities to regulate and attend are foundational skills for interpersonal engagement.

Over the course of the intervention, the mothers learned more about their infants’ communication cues. They learned to appreciate the engagement cues as well as the disengagement cues by the end of the study. In the beginning, the mothers all chose to attempt to engage with their infant regardless of the communication cues of the infant. By the end of the intervention, the mothers seemed to recognize that their infants needed time to disengage and regain their personal regulation.

Through the massage routine, they were observant of their infants’ more subtle methods of communication and their individual sensory needs. Each of them individualized the massage routine to meet their infants’ sensory needs through observation of more subtle communication cues. Understanding the subtle communication and unique sensory needs allowed the mother a greater understanding of her infant as a separate individual with the ability to communicate his or her own preferences. The ability to understand more subtle communication cues impacts the mother’s ability to recognize and respond to more subtle engagement and disengagement cues. When a mother responds in a reciprocal and responsive manner, the infant is more able to maintain a state of alert processing for
longer periods of time. This contributes to a longer attention span and more available resources for positive communication.

The most obvious communication cue of a disregulated baby is crying. Two of the mothers in the study described their infant as having “colic.” Colic is noted by excessive crying for prolonged hours of the day over an extended period of time. When infants are in a cry state, they are not available for reciprocal communication. Their bodies are in a state of uncontrolled dysregulation. They need the supports of their caregiver to help them regulate. When infants are experiencing colic, the caregivers often feel helpless in finding tools that help to calm them. The colicky baby then dysregulates the caregiver. The experience of colic for the baby and the mother is a limitation to the time they available to participate in co-regulated behavior. This in turn impacts the perception of the relationship and the parent’s feelings of worthiness. The mothers participating in this study found that the intervention of the infant massage gave them a tool that helped them eliminate the colicky periods for the baby. The decreased time the dyad spent in dysregulation made the mothers feel like they capable of soothing their infants and allowed the infants more resources to maintain an alert processing state. The availability of the infant’s attention and the mother’s decrease in stress level allowed for more co-regulated behavior.

Through the process of learning the massage routine, the mothers indicated that they learned more about their infant as an individual. The mothers cited learning the massage strokes and developing a routine with their baby as the most beneficial
part of the intervention. As noted earlier, attention and regulation are the foundations of the communication relationship. The mothers in the study set aside time to attend to their baby. While the mother massages the infant, she is also participating in a regulating behavior for herself as noted by the mother’s feeling of relaxation and pleasure with the massage routine. Once again the mothers’ increased feeling of relaxation and pleasure in the relationship contributed to the communication relationship and connection.

Each of the mothers was dedicated in developing a routine of massage with their infants. The time spent in this routine was time set aside for face to face interaction. In face to face interactions, the infant has the opportunity to learn communication rules of joint attention and the social responsiveness of their communication partner. This connection allows for the enhancement of the communication relationship. By dedicating time for this one on one interaction focused on their infants, the mothers felt like the routine was a challenge to develop but committed themselves on a regular basis to make the time for the routine.

Improvement in the infants’ sleep was indicated by the mothers as a result of the infant massage intervention. Infants who are able to sleep well are more capable of self-regulation. Infants who are capable of regulation are more attentive and open for learning in the alert processing state. Mothers whose infants sleep well are also more capable of self-regulation because they are able to maintain their sleep. This allows for the mother to be more attentive and responsive to her infant’s communication. The most significant result of the qualitative data was the mothers’
and infants’ ability to co-regulate. From the mothers’ observations of her infant’s communication cues to the infant’s ability to maintain regulation in a sleep cycle, the mothers attributed the changes to the intervention.

The quantitative results of this research indicated that the sample of participants began the study with a significant portion of the desired skills already successfully integrated into their relationship with their infant. Each mother-infant dyad displayed their individualized patterns of results.

The first mother was the only one caring for her firstborn child (she had an older step-daughter). The results of this dyad’s quantitative assessment did not match the results of the qualitative data gathered. The observations done over the course of the home visits as well as the survey results indicated that this mother had grown in her understanding of her infant’s cues and had developed strategies to effectively respond to her infant’s requests. Her infant was engaged and interactive. This mother felt like the massage had helped the dyad through colic and assisted her infant in the ability to regulate and attend for longer periods of time. The quantitative results indicated that they were not observed to perform a significant portion of behaviors that they had displayed in the initial assessment. This could be due to the difference in scenario that surrounded the recording of the feeding that was observed. During the post-intervention video recording, the mother had a different goal for the feeding than in the initial video recording. It is my impression that the pattern of results indicates a lack of interaction between the mother and the baby due to the mother altering her approach to meet the needs of her infant who
needed to disengage to fall asleep. Although the results of the assessment look like the infant-mother dyad had lost skills, an analysis of the qualitative results combined with the quantitative results, the mother is being responsive to her infant’s need for disengagement.

The second mother had very little change in her behavior indicated on the assessment. The skills that she had in the onset that were not observed in the latter assessment can be explained in the qualitative observations of the feeding. In the first video recording of the mother feeding her infant, the father was attending to their older child. During the second recoding, the mother was trying to juggle both the feeding of her infant and the needs of her five year old who was actively seeking her attention. Her infant in the follow-up video-taping had entered a different developmental level and was very interested in her external environment. The infant was distracted by the video camera and the presence of the researcher.

The third mother-infant dyad showed significant improvements. The mother was more responsive, and the infant displayed significant growth in his ability to communicate with his cueing behavior. The infant also became more responsive to the mother’s attempts for engagement. This reflects the co-regulation process that contributes to a fruitful communication relationship. This mother was able to improve on her communication interactions in light of the external environmental changes that were present in the second video recording of the feeding. The initial feeding was videotaped with the infant and the mother alone. The post-intervention videotaping included her 3 year old child and their interactions during the feeding.
This mother not only improved her results on her assessment. She improved them under a more challenging feeding session where she was meeting the needs of both children.

As noted in this analysis, there were variable results with the assessment. The environment on a home visit is difficult to control and predict. This makes videotaping more challenging. The videotaping was done on a home video camera shot from an outsider’s perspective that did not always allow for the faces of both the mother and the infant to be witnessed. There were a few items on the assessment that the researcher had to disregard because the items were not able to be observed. When observing and recording interactions between two people, it is challenging to balance the control of the environment and the need for the infant and parent to act as naturally as they would under normal circumstances.

The ability to do a home visit allowed for a more comfortable and appropriate environment to view a natural feeding event between the dyad. The home visits led to richer qualitative data. The ability to be in the comfort of the family’s home and work directly with one dyad at a time allowed the intervention to cater to the needs of the mother and infant. The mother’s level of comfort with the researcher increased at each visit. This led a more significant communication relationship between the mother and the researcher. The mother was able to ask specific questions that related to her and her infant.
CHAPTER SIX
CONCLUSION

The communication relationship between the infant parent dyad is mediated through the infant’s sensory system. The use of touch, in the form of massage, as a tool to enhance the communication relationship can be an effective intervention. The educational material provided in conjunction with the teaching of the massage strokes allows for the mother to understand the growth and development of infants and the individuality of their baby’s temperament, sensory needs, communication cues and rhythms. Understanding more about their infant as an individual, the mother can more accurately perceive and predict her infant’s communication allowing the dyad to regulate in harmony. These times of connection and regulation of both members of the dyad allow for opportunities to engage and communicate in a manner that fosters the communication relationship and adds to the infant’s communication repertoire. Thus, the communication relationship is enhanced.

This study examines the question “What is the impact of an infant massage course on the communication relationship of a mother infant dyad?” Utilizing the wealth of research infant massage and infant communication as the foundation of the research found that these quite separate research topics are perfectly intertwined. Understanding that touch, for an infant, is a communication tool that is fundamental in the regulation of their physiological and psychological states makes this mode of
intervention deliver ideal. In addition, an infant who is well regulated impacts the caregiver’s ability to regulate. These benefits enhance the dyadic communication relationship.

Validation for the positive effects of an infant massage course on the communication relationship appears on paper in the research and is present in the results of this study. It seems apparent that the combination of the home visits, psycho-educational materials and the massage strokes had a healthy impact on the dyad’s communication relationship.

Limitations and implications for future research

This research was completed on mothers who all had achieved a high level of academics. These mothers are most likely to have a higher level of parenting skill. This was confirmed by the level of achievement they all attained on the initial assessment and through the interview process. The mother-infant dyads in this study began the study with many of the desired skills already in place. It would be interesting to further this research with a more diversified population. What would the impact of a massage class on the communication relationship be on mother’s who had any of the following life challenges: low socioeconomic status, prenatal depression, premature births, hospitalization of an infant, single mothers, adoptive mothers, or mothers in recovery from drug or alcohol addiction.

The sample size of this research study limits the results to generalize to the larger population. The sample was small and homogeneous. The selection of participants was selective. Although these factors limit the validity of the study, the
results of the qualitative research suggested that the course in infant massage even benefits mothers who already have many factors in place that contribute to a healthy dyadic relationship.

If this research was to be done again a control group would be an important factor to add to the methodology. In the analysis of the results it is hard to separate what was the result of the massage routine and psycho-educational information and what was the result of the typical developmental trajectory of a communication relationship between a mother and an infant. The mothers of this study attributed some behaviors that could have been a natural change in the infant’s development to the massage routine. For example, colic has a typical trajectory over the first six weeks of the infant’s life. The crying peaks at six weeks and usually weans off thereafter. The mothers in this study attributed the massage routine to the curbing of colic symptoms. These symptoms could have been alleviated merely over the course of the physiological development of the infant.

Another factor that could be explored in association of this research is the isolation of the psycho-educational aspect of this study. It would be interesting to see what the benefits of the home visits without the massage routine would look like. Over the course of the home visits the mothers all engaged in conversation with the researcher on similar topics concerning their infant. Common themes of a therapeutic nature that occurred were issues with sleeping arrangements, vaccinations, returning to work, isolation, and recovery from a cesarean surgery. It
would be interesting to know how much of the changes were attributed to adding an additional support system to the mother through the home visitation process.

Additionally, it would be interesting to teach an infant massage class to mothers prenatally rather than during the post partum period. It was a challenge to find a home visit time that worked around the mother and infant’s ever changing schedules. If the psycho-educational piece of the curriculum in coordination of the massage routine was taught with use of dolls the mother’s prenatally they might be more capable of learning the massage strokes and educational materials before they are trying to learn about the individual needs of their infants. This may also help with positive connections with their baby in utero. Mother’s might feel more capable from the first day of their infant’s life if they understand more about behavioral states, expectations for communication cueing behavior, unique sensory needs, habituation, and attachment. Mother’s who feel more capable are more regulated and will regulate their infant more effectively.

Alterations to the curriculum

At the onset of the study, after the first video recording was taken on the feeding, the researcher altered the curriculum for the psycho-educational component of the massage class. Research on the efficacy of a uniform treatment approach for every infant-parent dyad prompted the researcher to develop an additional component of the curriculum. The researcher added to the International Associations of Infant Massage’s base curriculum. (These additions are the handouts found in Appendix D.) This introduced flexibility to the massage routine that was not
present in the original curriculum. It also involved a discussion on differing sensory needs. The mothers were encouraged to be aware of their infant’s individual likes and dislikes and alter the routine to meet the infant’s needs for duration, intensity and rhythm. The altering of the curriculum was positively noted by the parents in their follow-up survey. They all indicated that they altered the massage routine to meet their infant’s needs. The researcher also utilized the infant cue cards developed by the NCAST organization to give the parents a visual to contribute to their knowledge of infant cues.

Due to the changes in the curriculum the results cannot be attributed to the International Association of Infant Massage’s curriculum alone. Further research needs to be done on a curriculum that utilizes massage for the infant-mother dyad as an individualized intervention that is not a one-sized fits all approach. Those who work with mothers and infants must see each participant in the dyad as having unique sensory needs. The use of eye contact for one infant may be engaging, but for another infant it may make the massage overestimating. Teaching parents the value of understanding their infant’s unique sensory preferences can help the dyad to regulate together. This co-regulation between the caregiver and the infant allows more time for the dyad to have more positive communication interactions.

The combination of the International Association of Infant Massage’s Curriculum and the additional handouts given to the mother’s in this study seemed to positively impact the way the mother interacted with her infant. She expressed a
greater understanding of her infant’s communication and felt more positive about her ability to parent.

“With intervention, this mother could learn how to read her baby’s cues and, like a detective, figure out through trial and error how to move him or her toward more optimal regulation. Each small step along the way increases her sense of usefulness, puts a smile on her face, and gives her a surge of energy. Her sense of being a good mother boosts her toward optimal regulation.”

(Lillas and Turnbull, 2009, p. 53)
APPENDIX A

Questionnaire

Infant-Parent Communication
Infant-Parent Communication Survey

1. Section 1

Getting to know you and your baby...

1. Please fill in the following demographic information.
   
   Your Name: 
   Address: 
   City/Town: 
   Email Address: 
   Phone Number: 

2. How many years of school have you completed?
   
   □ Less than 12
   □ between 12 and 16 years
   □ between 16 and 20 years
   □ more than 20 years

3. My child's name is: 

4. My child's birthdate is: 

5. Who lives in the home with you and your baby?
   
   Name of adult: 

10. Please describe any medical issues your baby faced in pregnancy and after the birth.

11. How much of the day are you the primary caregiver of your baby?
- 16-24 hours
- 12-17 hours
- 8-11 hours
- 0-6 hours

What other people care for my baby:

12. What do you hope to get out of an infant massage course?
Infant-Parent Communication Survey

2. Section 2

The following are questions about communication and infant massage.

1. How does your baby communicate the following needs to you most of the time? Please select ONLY ONE ITEM PER LINE.

<table>
<thead>
<tr>
<th></th>
<th>crying</th>
<th>fussing</th>
<th>turning away</th>
<th>turning to you</th>
<th>cooing/babbling</th>
<th>smiling</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I want to eat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. I am done eating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. I am sleepy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. I want to play</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. I want to be alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. I want to be held</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. I want to be diapered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
93

3. Please describe how you typically feel when your baby cries.

4. Please explain how you MOST OFTEN react to the following communication behaviors. Please select ONE ITEM PER LINE that best describes your reaction to your baby's communication.

   | hold | rock | feed | touch | smile | talk | other |
---|------|------|------|-------|-------|------|-------|
When my baby cries I:
   |      |      |      |       |       |      |       |
When my baby fusses I:
   |      |      |      |       |       |      |       |
When my baby turns away I:
   |      |      |      |       |       |      |       |
When my baby turns to me I:
   |      |      |      |       |       |      |       |
When my baby coos/babbles I:
   |      |      |      |       |       |      |       |
When my baby smiles I:
   |      |      |      |       |       |      |       |
Other (please specify):

5. In your opinion, how should a parent respond when a baby cries?

6. Please describe what you typically do while you feed your baby.

7. Please describe what your baby does during a typical feeding.

8. Please describe the following reactions.

My baby reacts to new environments or experiences

<table>
<thead>
<tr>
<th></th>
<th>positively</th>
<th>mostly positive</th>
<th>neutral</th>
<th>mostly negative</th>
<th>negative</th>
</tr>
</thead>
</table>

9. Routine

My baby's daily routine is

<table>
<thead>
<tr>
<th></th>
<th>regular</th>
<th>mostly regular</th>
<th>neutral</th>
<th>mostly irregular</th>
<th>irregular</th>
</tr>
</thead>
</table>

10. Mood

My baby is most often in a positive mood

<table>
<thead>
<tr>
<th></th>
<th>positive mood</th>
<th>mostly positive mood</th>
<th>neutral mood</th>
<th>negative mood</th>
<th>mostly negative mood</th>
</tr>
</thead>
</table>

11. Activity level

My baby is most often active

<table>
<thead>
<tr>
<th></th>
<th>active</th>
<th>fairly active</th>
<th>neutral</th>
<th>fairly inactive</th>
<th>inactive</th>
</tr>
</thead>
</table>

12. Please describe the following reactions.

I react to new environments or experiences

<table>
<thead>
<tr>
<th></th>
<th>positively</th>
<th>mostly positive</th>
<th>neutral</th>
<th>mostly negative</th>
<th>negative</th>
</tr>
</thead>
</table>

13. Routine

My daily routine is regular

<table>
<thead>
<tr>
<th></th>
<th>regular</th>
<th>mostly regular</th>
<th>neutral</th>
<th>mostly irregular</th>
<th>irregular</th>
</tr>
</thead>
</table>

14. Mood

I am most often in a positive mood

<table>
<thead>
<tr>
<th></th>
<th>positive mood</th>
<th>mostly positive mood</th>
<th>neutral mood</th>
<th>negative mood</th>
<th>mostly negative mood</th>
</tr>
</thead>
</table>

15. Activity level

I am most often active

<table>
<thead>
<tr>
<th></th>
<th>active</th>
<th>fairly active</th>
<th>neutral</th>
<th>fairly inactive</th>
<th>inactive</th>
</tr>
</thead>
</table>
16. What do you think infant massage does for the baby?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Maybe</th>
<th>Yes</th>
<th>I don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>provides relaxation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>supports physical growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>supports mental growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>improves communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>between parent and child</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>supports bonding and attachment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>makes baby more popular with playmates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>helps with colic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>improves sleep</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. Have you ever massaged your baby before?

- Yes
- No

If yes, how often?

18. What do you think infant massage does for the parent?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Maybe</th>
<th>Yes</th>
<th>I don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>provides relaxation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lessens post partum depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>improves communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>between parent and child</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>supports bonding and attachment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thank you very much for your participation. I appreciate your time and thoughtful answers.
Questionnaire Follow-up Questions (Section 3)

1. What were the concepts that you learned in the infant massage class that were most instrumental in benefiting you and your infant?
2. What was challenging for you about the infant massage class?
3. What did you learn about your relationship with your baby during the course of infant massage?
4. Do you feel like the infant massage course helped you more deeply understand your baby’s communication strategies?
5. If yes, then what aspects of the communication were improved?
6. Did you notice any changes in your baby’s behavior that you think were attributed to the infant massage class?
7. Did you notice any changes in your behavior that you attributed to the infant massage class?
8. Did you alter the International Association of Infant Massage routine to meet the needs of your baby?
9. If so, how did you change it?
10. Why did you choose to alter or not alter the routine?
11. Will you describe a time when you massaged your baby and it did not feel good?
12. Will you describe a time when you massaged your baby and it did feel good?
Thank you so much for your participation in this research. I have appreciated you time. It was my pleasure to get to spend time with you and your baby.
APPENDIX B

_Flyer Announcing the Study, Informed Consent, and Lay Summary_

Are you having a baby?  
Do you have a new baby?  
Would you be interested in taking an  
Infant Massage Course?

I am seeking mothers and infants  
(newborn to 2 months)  
to participate in a research project.

Interested?  
Please Contact Beth @  
(707)834-3167 or baf13@humboldt.edu

Your responsibilities:
- Fill out a survey prior to the first massage class and following the last massage class
- Allow the researcher to videotape you feeding your infant prior to the first massage class and following the last massage class
- Attend 5 classes (1 ½ hours each) on infant massage
- Massage your infant at home in between classes (keep a log of the frequency of this event in between classes)

The researcher's responsibilities:
- Answer all of your questions regarding the research project
- Keep confidential your participation and any information regarding you and your family gathered in the study confidential
- Provide you and your infant with a course in infant massage utilizing the guidelines from the International Association of Infant Massage.
- Share with you all assessments gathered through the research project.
Provide you with a safe environment to explore your relationship with your infant.
keep a log of the frequency of the massage interaction. At the end of the five session course of infant massage, you will be asked to fill out the survey again and another video recording of a feeding event will take place. (This recording will be assessed in the same manner as the first video recording, by the same reviewers.)

Confidentiality will be maintained. Pseudonyms will be used to identify parents and children in my research report. All data and documentation that are collected during the study will be destroyed at the end of the study and will be contained in a locked cabinet until that time. During the course of the study, participants will be videotaped. These tapes will also be stored and destroyed with the rest of the data and documentation.

Through participation in this study, you will have time to explore the communication between you and your baby, learn more about infant communication, and meet other families who share in your experience of parenting a new baby. I do not anticipate that there are any risks to you or your infant. If at any time the content of this study brings up feelings that require professional counseling, I will refer you to the appropriate professionals for assistance. I am a mandated reporter, by law, and will report any suspicion of child abuse.

Thank you in advance for your time. I look forward to learning from you. If you have any questions or concerns about this research you may contact me at (707)834-3167 or my thesis committee chair Dr. Ann Diver-Stamnes at (707)826-5822.
Beth Heavilin has thoroughly explained this research to me. I understand that she will answer any questions I may have concerning the investigation or the procedures at any time. I also understand that participation in this research study is voluntary and that we can discontinue our participation at any time without jeopardy. I also understand that Beth Heavilin may discontinue our participation in the study at any time. I know that there is no compensation for my participation in this study.

_I give informed consent for my child and myself to participate in this study._

Child's name______________________________
Parent/legal guardian's printed name______________________________
Signature____________________________________
Date______________________________

Contact information:
Researcher, Beth Heavilin: (707)834-3167
Academic Advisor, Ann Diver-Stamnes: (707) 826-5822
APPENDIX C

Massage Log

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*Beginning on (Date TBA) please mark each day with one of the following codes:

- ✓ Infant Massage attempted and successful
- ✗ Infant Massage attempted and unsuccessful
- o Not Attempted
The experience of infant massage is enhanced when the parent observes their infant’s communication cues to discover what the infant’s sensory likes and dislikes may be. What one baby experiences as pleasure may be an uncomfortable experience to another baby. To have a mutually beneficial massage experience parents experiment with their baby’s different sensory preferences.
Your infant’s cues will guide you in experimenting with the following factors that influence these sensory preferences. By asking questions about the duration, intensity and rhythm of the massage you and your baby will discover what works best for the two of you. These are some questions you may ask yourself to have the best possible experience with your baby:

- How long does your baby like the massage routine to be?
- How slowly/quickly does your baby like each massage stroke to last?
- Are there times of the day when your baby enjoys longer or shorter periods of massage?

- How does your baby like to be touched during the massage? Light pressure? Deep pressure?
- Does your baby like to have eye contact during the massage?
- Does your baby like it when you talk or sing during the massage?
- Does your baby like it quiet?
- Does your baby like it when the lights are low or when the room is bright?
- Does your baby like the active movements or the passive massage strokes?

- What time of the day is your baby open for infant massage?
- What works to help your baby maintain a quiet alert state? (Optimal state for infant massage)
- What rhythm of music does your baby enjoy? (If music is enjoyable to your baby’s senses.)
- Does your baby need to take breaks from the massage?

Reminder: For some babies, participating in the massage may provide too much sensory information. In your exploration process with your baby you may find that your baby needs less touch than an “active” massage. Containment holds (rocking, carrying, and swaying) may be what your infant enjoys. The most sensory rich thing for many infants is feeling their cheek against a chest, listening to the heart beating, and feeling the safety and security of their parent’s arms. The act of massaging your infant is only one way of building a healthy relationship with your infant.
REFERENCES


Brazelton, T.B. & Sparrow, J. (2010, March). The touchpoints approach. Symposium conducted at the meeting of the University of Massachusetts, Boston, Infant-Parent Mental Health Post Graduate Institute, Napa, California.


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Tronick, E. (2010, July). *Relational psychophysiology & meaning making*. Symposium conducted at the meeting of the University of Massachusetts, Boston, Infant-Parent Mental Health Post Graduate Institute, Napa, California.
