

Applying Infant Massage Practices: A Qualitative Study

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Abstract: This study explored the dynamic interaction between a mother and her 11-month-old visually impaired infant before and after the mother was taught infant massage. After the mother learned infant massage, she had more appropriate physical contact with her infant, engaged with him within his field of vision, directly vocalized to him, and had a greater ability to read his cues; the infant's interactions were reciprocal and reflected more-secure attachment, and the infant demonstrated beginning awareness of self and space.

Infant massage has long been a traditional practice, and traditional applications of it are usually passed down from one generation to the next. In the early 20th century, many "folk practices," such as infant massage, were discarded in the interest of scientific advancement. Today, however, modern science is rediscovering age-old treatments, and the field of medicine is incorporating these interventions into scientific protocols (Muscarella, 1996). Infant massage is one such treatment that is currently being explored by scientists, physicians, physiologists, child development specialists, and educators with encouraging results. Among the benefits attributed to infant massage are greater relaxation and body awareness; strengthened circulatory, hormonal, and digestive systems; and improved muscle tone and sleep patterns (Scafidi et al., 1990; Scafidi et al., 1986; Schneider, 1996).

The International Association of Infant Massage (IAIM) teaches a specific method of infant massage that incorporates four main sources: Indian massage techniques, Swedish massage techniques,

reflexology techniques for the foot, and stroke combinations and techniques developed by McClure (1998). The Indian and Swedish strokes are designed to balance one another; the Indian strokes, which involve movement toward the extremities, serve to release tension, while the Swedish strokes, which move toward the heart, increase circulation. Reflexology strokes are intended to stimulate the thousands of nerve endings in the foot that are connected to the rest of the body. The stroke combinations and techniques, as well as the names of the strokes, were adapted or designed by McClure on the basis of extensive medical research, experience, and practice. The massage protocol designed by McClure is specific and unambiguous. Practitioners are required to complete a rigorous training program and internship before they are awarded certification. Although variations of this protocol exist, for the purposes of this study, only the procedures sanctioned by IAIM were used.

This qualitative study observed and documented the dynamics of attachment

formation in an infant with low vision who received infant massage, focusing particularly on the possible effects that infant massage may have on the formation of attachment between the infant and his mother. By examining an instance in which the only disabling condition was visual impairment, this study differed from previous qualitative research. In this respect, if infant massage can be used as an intervention to promote attachment, developmental delays that are sometimes seen in these children may be prevented, and visually impaired infants may eventually attain greater social, emotional, and educational achievements.

Review of the literature

IMPORTANCE OF BONDING

Caregiver-infant bonding is a basic need of all healthy humans and animals. Bonding is a process of mutual communication and interplay that occurs between the infant and caregiver, in which trust and intimacy are developed that are critical for the infant's physical survival, as well as emotional and psychosocial health (Bell & Ainsworth, 1972; Bowlby, 1996; Dellinger-Bavolek, 1996; Harlow, 1958, 1959; Harlow & Harlow, 1962; Harlow, Harlow, & Hansen, 1963; Kennell & Klaus, 1982; Klaus & Kennell, 1976; Klaus, Kennell, & Klaus, 1996; Main, 1981; Restak, 1986). Bonding and attachment are reciprocal processes involving interaction between a caregiver and an infant in which both individuals are active participants. Presumably through a complex system of communication, the infant evokes responses from the caregiver, who is sensitive to these cues and responds appropriately.

According to Crittenden (1983, 1985, 1999), the infant's and the caregiver's be-

haviors both seem to be significant. Whether an infant relies on input from the caregiver to appraise a situation depends on the quality of communication in the dyad (Recchia, 1993). Once mutual patterns and expectations are established, each partner contributes to maintaining the patterns; subsequent growth and development occur on the basis of these expectations. In sum, the dynamics of bonding or attachment formation appear to be crucial to an infant's healthy physical, emotional, and social development.

INFANT MESSAGE WITHIN SOCIOCULTURAL CONTEXTS

Infant massage is a form of communication between a caregiver and an infant; messages enter a child's world through the caregiver and become part of the existing social context. Over time, these messages are integrated into caregiver-infant interaction, and, as a result, new patterns of communication emerge that may not have been available to the dyad before. As Pedrosa (1997, quoted in Pantoja, 1997, p. 48) stated, "What is usually called the *social environment* should be construed as a *field of interactions*, which is the founder of, and is founded by, the constitutive actions of human beings, and where information (meaning) creation and significant reciprocal communication take place." These fields of interaction are often handed down from generation to generation and thus exist within a larger cultural context that reflects values that may differ across cultures.

In this study, infant massage, a social phenomenon, was used to create a field of interaction in which significant reciprocal communication took place within a larger field of interaction—the interactive contact between a female researcher

of Caucasian northern European descent (the first author), a female interpreter of Latin-Caribbean descent, and a mother and infant of Mexican American descent. The interpreter was able to serve as a cultural informant.

The literature on the Mexican American heritage has noted several important values that need to be recognized in any effort to understand Mexican American culture, such as *la plática* ("small talk") and *simpatía* (behaviors that encourage pleasant social relationships) (Jay, 1996). Although it is crucial not to make stereotypical generalizations about any group of people, it is also important to provide cultural insights into some basic characteristics of Mexican Americans (Jay, 1996) that are relevant to the present study. To capture the participants' perspective accurately, the methodology in this study took into consideration the cultural values and beliefs of Mexican Americans by engaging in culturally appropriate communication, such as *simpatía* and *la plática*, as well as employing a knowledgeable cultural information.

The study

PURPOSE

Infant massage may be a crucial and overlooked promoter of bonding for infant development in all caregiver-infant dyads (McClure, 1998). In dyads in which additional stress exists, such as when the infant has a disabling condition like visual impairment (that is, blindness or low vision) or when the infant is at risk for developmental delays, infant massage may be an especially important treatment. Anecdotal reports from infant massage therapists have suggested that infants who are visually impaired who receive massage

from their caregivers become more aware of their bodies and hence begin to explore independently. If infant massage facilitates a shift in the dynamics of attachment formation, then possible developmental delays may be avoided or reduced. The purpose of this study was to explore whether infant massage facilitated such attachment formation between a mother and her infant.

RESEARCH QUESTIONS

This study, characterized by an emergent design, was conducted with the following research questions in mind:

1. In a natural setting, what is the dynamic nature of a mother-infant dyad in which the infant has low vision? What do the two parties do; that is, how do they interact?
2. In the same natural setting, what is the dynamic nature of the same mother-infant dyad after the mother receives training in infant massage? Is the interaction different; that is, has anything changed? If so, what has changed and in what ways?

METHOD

In an effort to describe the nature, dynamics, and impact of infant massage on mother-infant attachment when the infant has low vision, a multiple, mixed research design was used that combined aspects of the phenomenological, ethnographic, and microethnographic approaches, as well as an explicit form of variable manipulation in a natural setting.

The phenomenological focus of the research was on documenting the participants' subjective experiences and interpretations of their world. The ethnographic

aspect examined the cultural relevance of mother-infant attachment. Finally, the researcher used a form of microethnographic analysis and engaged in a form of variable manipulation—infant massage. A narrative-developmental approach was used throughout the study to explore data from the mother-infant relationship. The narrative-developmental approach provided grounded qualitative methodology to investigate microscopically the development of relational and meaningful experiences (Pantoja, 2001). Combining these approaches, originally defined by Bogdan and Biklen (2003), allowed the researcher to develop an understanding of the phenomenon of mother-infant attachment when the infant is visually impaired and the effects of introducing infant massage on this phenomenon.

Furthermore, on the basis of work by Pantoja (1997, 2000, 2001) and Fogel (1993, 1995, 2001), the study used the narrative form as a means of examining emotional development in the context of mother-infant dynamics. This is a multi-step process that involves creating chronological narratives; that is, detailed descriptions of the observed phenomena in terms of sequences of events. The researcher described in written form what was seen on videotape, transcribing the observational data into text.

This study took place in a natural setting in which the researcher functioned as an instrument of data collection and a participant observer. The research focused on inductive analysis of the participants' meanings and an expressive, persuasive description of the processes (Crewswell, 1998).

According to Crittenden (1999), several important issues affect the assessment of

patterns of attachment and the analysis of these data. The primary issue is whether attachment can be *measured* with regard to frequency, variety, or intensity, or whether it is best *assessed* in terms of functioning. With regard to this study, the quality and character of attachment was assessed. In a naturalistic context, dyadic interactions were observed and recorded, focusing on reciprocal communication between the mother and the infant and global patterns of interaction, such as comfort seeking, affective sharing, and information gathering. Attention focused on the nature of interactions between the mother and the infant that included the mother's degree of involvement; sensitivity; and social interaction, such as vocal and tactile communication.

RESEARCH SITES

For the purposes of this study, all research involving the mother-infant dyad was conducted in the mother and infant's home. This choice was supported by the findings of other studies (Brambring & Troster, 1994; Crittenden, 1992; Erwin, 1992; Ferrell, 1985; Gerra, 1992), which suggested that visually impaired infants are disadvantaged in unfamiliar environments. In addition, the subject matter and design of the research called for observations in natural settings—in this case, at the dyad's home. The panel review of the videotapes and the focus-group discussion, discussed later, took place in a lecture room on the campus of Teachers College, Columbia University, in New York City.

Selection of participants

The participants were selected using specific purposive sampling methods that enabled the researcher to establish a list of

attributes that the participants had to possess. After screening several potential caregiver-infant dyads, the researcher identified a qualifying dyad from an early intervention agency. The infant was an 11-month-old boy, who was born prematurely at 5 months gestation and whose only known disability was visual impairment. The infant weighed less than 1 pound at birth and was found to have a severe visual impairment, later identified as retinopathy of prematurity. His caregiver was his 34-year-old biological mother, born and raised in Mexico, who had the primary responsibility for the daily care and well-being of the infant, as well as his three older siblings, aged 8, 7, and 5. The mother was a non-English-speaking immigrant who had completed an eighth-grade education in Mexico. The family shared a two-story home with several other families; all the facilities, including the kitchen and bath, were shared.

Volunteers from Teachers College acted as independent panelists to view videotaped observations and to participate in focus-group discussions. The volunteers were older than 22 years of age and were either employees or students at Teachers College. To ensure that their responses to the videotaped segments would be unbiased, the researcher chose panelists who did not have specific academic knowledge of or training in attachment theory.

Procedure

There were several phases to this investigation. In Phase 1, after permission to recruit participants was granted by the appropriate institutions, the researcher engaged in the process of selecting the dyad and the panelists for the focus group from a number of possible participants to

obtain the participation of a dyad and panelists with the specific characteristics that were necessary for this study. The length of time between the initial identification of the participants and postintervention was approximately six months; the intervention and analysis phases took place over a two-month period.

In Phase 2, the initial audio- and videotaped interview and conversation with the mother were conducted. In Phase 3, the naturalistic observation phase, the researcher assessed the spontaneous behaviors and interactions between the mother and infant in routine and naturally occurring situations. These observations took place before the mother was taught the infant-massage protocol and were videotaped on four separate days over the course of one week, for a total of four hours.

In Phase 4, the intervention sessions, the mother was taught the techniques of infant massage, as defined by IAIM and as delivered by a certified infant massage instructor. Instruction took place in the home environment on a one-on-one basis. This instruction was also videotaped on three separate days over the course of a week, for a total of three hours.

Phase 5, a naturalistic observation phase, took place after the infant massage techniques were taught to the mother. These observations were used to assess the spontaneous behaviors and interactions between the mother and the visually impaired infant in routine and naturally occurring situations after the mother had been instructed in the infant massage protocol. The goal was to determine what, if any, differences in mother-infant dynamics appeared to result from the mother's use of the infant massage skills. These observations were videotaped on four separate

days over the course of one week, for a total of four hours.

In Phase 6, the mother was asked to view segments of the pre- and postinstruction videotapes and to share her thoughts on what had occurred and why. After the researcher reviewed the data, Phase 7 was initiated by the showing of pre- and postinstruction videotapes of the dyadic interactions to a panel of three volunteers to establish interobserver reliability and to provide independent feedback. The rationale for this procedure was that if pronounced changes, although possibly temporary, in the nature of the mother-child interaction were manifested as a result of the intervention, then they should be noticeable even to naive observers. The panelists were requested to view randomly selected videotaped interactions of the dyad, to independently describe in writing what they saw in each video segment, and then to individually sequence the videotapes as pre- or postintervention. At the end of the videotaped presentations, the panelists were asked to participate in a focus group to provide feedback on what they observed.

Confidentiality was preserved by creating pseudonyms for the participants. The mother was given the name Marta and her infant son was called Juan. Interrater reliability was established by the use of debriefing sessions for the researcher, interpreter, and massage instructor, as well as by the panel discussion and focus-group participation. Furthermore, reliability was established by consensus, by quantitatively attending primarily to the nonverbal interactions, rather than the verbal interactions, since, in many cases, there was no actual ver-

balization and the raters did not necessarily know Spanish.

It is important to note that the qualitative approaches used in this study were relational, continual, and embedded within each other. These processes, like personal relationships, cannot be parceled out. The manner in which one family member acts and interacts affects all the other family members. For example, the manner in which Marta was treated and responded to by the staff of the neonatal intensive care unit (NICU) of the hospital at the time of Juan's birth affected the family unit as a whole and their place in the larger community.

FRAMES OF ANALYSIS

In this study, since attachment formation between a mother and her visually impaired infant was studied, it follows that the type and quality of engagement relative to attachment were explored. Twelve major categories of communication frames were identified in relation to the caregiver and infant and were named on the basis of their content. "A crucial component of the narrative-developmental approach consists of the qualitative and detailed descriptions of the emergence of emotions, using frames as the basic unit of analysis" (Pantoja, 2001, paragraph 9). Frames may be composed of intonations of voice, gestures, vocalizations, smiles, particular body locations, and forms of co-orientation that present their own inherent and dynamic organization. They are "recurring patterns of action" or emotion (Pantoja, 2001). These frames constitute self-contained units or patterns of action or, at times, of nonaction, rather than tran-

sitional moments, and involve both the mother and the infant. Before intervention, the following six frames were observed (with examples of each):

- *Nonengagement/awake*: The infant was sitting in his mother's lap, facing outward (Session 1).
- *Play/solo*: The mother was nearby but was not engaging the infant; the infant was hitting a toy (Session 2).
- *Arbitrary poking/bouncing*: The mother roughly and abruptly handled the infant and made no apparent effort to engage beyond poking or bouncing (Session 2).
- *Feeding/rejecting food*: The mother fed the infant without observing the infant's cues, and the infant rejected the food (Session 2).
- *Nonengagement/awake*: The infant was lying near the mother, motionless (Session 3).
- *Nonengagement/withdrawal by the mother*: The mother moved away from the infant (Session 4).

After the intervention, the following six frames were observed:

- *Engagement/play, infant standing*: The mother engaged the infant in play, and the infant stood (Session 5).
- *Infant massage*: The mother and infant engaged in infant massage (Session 5).
- *Engagement/infant held inward by the mother*: The mother held the infant face to face (Session 6).
- *Feeding/accepting*: The mother fed the infant, attending to the infant's cues, and did not force-feed the infant (Session 6).

- *Engagement/play, infant and siblings*: The siblings engaged the infant in face-to-face play (Session 7).
- *Engagement/play, mother*: The mother introduced an object and engaged in appropriate play with the infant (Session 8).

The data were analyzed using a narrative descriptive method based on work by Pantoja (2000). To answer some of the questions raised by this inquiry more completely, however, numeric analyses were performed to summarize the observation sessions. Multiple frames per session were observed and are summarized in Tables 1 and 2. In the tables, the term *nonengagement* was used when no interaction was observed between mother and infant; the term *engagement* was used when interaction—either appropriate or inappropriate—was observed between mother and infant.

Results

During the preintervention observations, a total of 13 frames were documented, all of which were of negative interactions. During the postintervention period, 14 frames were observed, 11 (79%) of which were of positive interactions. Negative frames were defined as interactions between Marta and Juan in which Marta was intrusive, nonresponsive, or inappropriately responsive (that is, did not interpret Juan's cues correctly). Positive frames were defined as interactions between Marta and Juan in which Marta correctly interpreted Juan's cues and responded appropriately, with kindness and caring behaviors. Before interven-

Table 1
Analysis of observations made of preintervention sessions.

Activity	Session 1		Session 2		Session 3		Session 4	
	Minutes	%	Minutes	%	Minutes	%	Minutes	%
Nonengagement	49	82	46	77	42	70	21	35
Engagement	1	1	14	23	18	30	39	65
Frames								
Nonengagement	Infant awake and sitting		Infant awake and sitting		Solo play		Infant awake and sitting	
	Infant awake and lying				Infant awake and lying		Withdrawal by mother	
Engagement	Feeding or rejecting food		Feeding or rejecting food Arbitrary poking or bouncing		Feeding or rejecting food		Feeding or rejecting food Arbitrary poking or bouncing	

tion, 7 of the 13 observed frames represented nonengagement, and none of the frames were interpreted as positive. After the intervention, the majority (79%) of the 14 observed frames were interpreted as positive; and only 3 (21%) of the frames fell into the nonengagement category. On the basis of this single-subject study, it appears that infant massage can facilitate better caregiver-infant relationships. Repeated exploration of the data

placed the frames within the context of the historical narrative and revealed themes, which are not discussed here.

Discussion

INFANT MASSAGE

It is difficult to determine the extent of Marta's awareness of her baby's cues, whether they were feeding cues, such as pushing the bottle out of his mouth; distress cues as such as eye poking; or play

Table 2
Analysis of observations of postintervention sessions.

Activity	Session 5		Session 6		Session 7		Session 8	
	Minutes	%	Minutes	%	Minutes	%	Minutes	%
Nonengagement	0	0	4	7	1	2	4	7
Engagement	60	100	56	94	8	13	41	68
Frames								
Nonengagement	—		Withdrawal by mother		Infant awake and lying		Infant awake and lying	
Engagement	Infant and siblings play		Infant held inward by mother		Infant held inward by mother		Mother introduces object, play	
	Infant stands, play		Feeding and accepting		Infant stands, play		Infant held inward by mother	
	Infant massage				Infant and siblings play			
	Infant held inward by mother							

cues, such as startling him with a squeaky toy before she learned infant massage. Marta constantly repeated that Juan slept too much, but the researcher observed little actual sleep. Before she learned infant massage, Marta put Juan down whenever she was not attending to his physical needs. Juan would then become still, and she interpreted this stillness as sleep. Infants with visual impairments often “still” in an effort to interpret stimuli, and caregivers frequently misinterpret “stilling” in their babies.

Infant massage is a social phenomenon that is taught in a social context. It was impossible, and not the intent of this study, to establish a “cause and effect.” Modeling appropriate behaviors and attention to and talking about cues, taught within the context of infant massage, undoubtedly played a role in helping Marta establish better communication—bonding—with Juan. Marta was able to interpret Juan’s feeding cues more accurately and did not force the bottle on him. She engaged him face to face, spoke directly to him using “motherese,” and actively played with him by introducing a toy. As a social phenomenon, infant massage affects not only the dyad but the other family members as well. In this study, the mother increased her appropriate physical engagement not only with the infant, but with her other children, as well. In addition, the mother’s negative self-talk decreased and her appropriate vocal engagement with all of the children increased.

Given the two-month time span from preintervention to postintervention and the types of communicative interactions (or lack thereof) exhibited between Marta and Juan, it is highly unlikely that the re-

sults simply reflect the fact that Juan was providing extremely subtle cues that Marta, or any typical caretaker, could not have picked up on. Rather, it seems to be warranted to assume that these changes were the result of the complex interaction of Marta, Juan, the massage therapist, the interpreter, and the researcher that were a part of the intervention.

During the infant massage sessions, Marta was never instructed, by the certified infant massage instructor, researcher, or interpreter, how to care for Juan or how a visually impaired infant may be different from a sighted infant. Although the IAIM protocol allows for the discussion of infant-caregiver issues, in this study these discussions were directed by Marta, who felt the need to tell and retell the story of Juan’s birth, her experience in the NICU, and Juan’s “stubbornness.” She did not appear to understand or acknowledge that Juan’s behaviors or differences were the result of his visual impairment and did not ask for suggestions for caregiving. It is worth restating that Marta took excellent physical care of Juan’s needs both before and after the infant massage instruction. A comparison of touch interactions in Session 1 (preintervention) and Session 8 (postintervention) showed that Marta increased the number of times that she touched Juan from 6 to 15. A comparison of occurrences in Session 2 (preintervention) and 7 (postintervention) revealed not only an increase in Marta’s interactions with Juan from 8 to 14, but Juan’s initiations of interactions with Marta. It is interesting to note that during Session 7, Marta also interacted with her other two sons and that they interacted with Juan. Sessions 5–8, after infant massage instruction, showed a greater number of touch

interactions than did the observations that occurred before the instruction. As the frames evolved from *nonengagement/awake: sitting* in Session 1 to *engagement/play: object* in Session 8, the number of occurrences of touch among the participants increased.

LIMITATIONS

Sample size

The biggest limitation to this study was the small sample size. Given the extremely low incidence of the population of caregiver-infant dyads in which the infant was visually impaired and between birth and 12 months, the researcher was able to recruit only one caregiver-infant dyad for participation in this study. Other studies involving visually impaired infants had included from one to five caregiver-infant dyads. As a result, the fact that this study worked with only one dyadic pair does not seem unreasonable, particularly since the research was qualitative in nature. Although the findings are relevant for other caregiver-infant dyads in that the introduction of infant massage increased positive interactional communication between the caregiver and the infant, thereby increasing bonding and attachment, the reader should reflect seriously on the extent to which the understandings gained from this study can be transferred to other contexts and dyads.

The limitation of a small sample is due, in part, to the fact that visual impairment is a low-incidence disability. In addition, a logistical problem is that of early identification. There is value, however, in a single-case study. In a single-case study, the researcher invests time in multiple, intensive observations of one caregiver-

infant dyad and, therefore, can observe in greater detail the dynamics of attachment in a caregiver-infant dyad. Since a goal of this study was to explore this dynamic, the case-study approach is “conceptually coherent with the research goals and the theoretical approach” (Pantoja, 2000, p. 34). In addition, according to Patton (1990), detailed single-case studies are valued for the richness of the information that can be obtained. Finally, single-case design is particularly appropriate in the context of investigating caregiver-infant dyads in which the infants are visually impaired.

Language barrier

The family who participated in this study did not speak English, and the researcher was not fluent in their language, Spanish. This problem was diminished by engaging a Latina interpreter who was fluent in Spanish and was well aware of the appropriate cultural protocol, nuances, issues, and practices. To ensure validity, a second bilingual, bicultural individual was involved in the back translation of the demographic questionnaire. Back translation, also known as “double translation,” is a recognized and effective method (Jay, 1996; Marin & Marin, 1991; Rodriguez, 1998) that involves at least two bilingual persons translating independently. The first interpreter translated the original forms from English into Spanish, and then the second interpreter translated the forms back into English. The back translation did not result in a significant deviation from the original, and thus the language of the ethnographic questionnaire was thought to be accurate and appropriate.

Conclusion

In response to the first research question, the data analysis showed the dynamic relationship between Marta and Juan to be one of missed cues, miscommunication, intrusiveness, and possibly cultural and familial influences. Prior to the intervention, Marta spoke to and held Juan as little as possible. When she did hold him, she was rigid and tense, keeping him at arm's length or as far from her body as she could. She did not engage him face to face, did not use motherese with him, and did not vocalize with him except to reprimand him. She neither smiled at him nor addressed him with affection. She appeared unable or unwilling to read his cues for hunger, discomfort, or pleasure. Her affect with him was flat, as his was with her. Marta touched Juan only to take care of his physical needs.

In response, Juan did not engage Marta except when he was distressed, and his body alternated between rigidity and limpness. Left alone by Marta and lying on his back, he stayed motionless, sucking and blinking and sometimes sleeping. Their interactions were reciprocal, continuous, and cyclical but did not reflect secure attachment. These behaviors appeared to be consistent with data from other studies on maternal depression; infants with disabilities, including visual impairment; and parental grief.

In response to the second research question, the data analysis indicated that significant changes in behaviors occurred after the intervention. For example, Marta changed the way she held Juan, bringing him against her chest and holding him over her heart. As her affect changed, she talked sweetly to him, smiled at him within his field of vision,

and engaged him in play. She also attempted to help him developmentally by encouraging his increased motor activity. She was more aware of his cues and responded according to his needs. In response, Juan smiled back at Marta, gurgled to her, and laughed when she played with him. Significantly, he melded his body to hers instead of arching away from her or going limp. In addition, during and after infant massage, Juan began to explore his own body and those of others, particularly his mother and siblings, which helped him to begin to develop spatial awareness.

According to her comments, Marta was pleased to have learned infant massage so that she now had something to do with Juan other than just take care of his physical needs. They now had a reciprocally pleasurable activity to share. As a result, Marta stated, she felt that their relationship was better. Again, these findings appear to be consistent with those of other studies.

This study confirmed that infant massage is an important tool for facilitating attachment in infants if it is provided in an appropriate context of facilitated communication and a shared belief system. While the researcher hypothesized that there might be changes in the dynamics of the mother-infant relationship pre- and postintervention, there were other unexpected findings. She did not foresee that, postintervention, Marta would begin to cue Juan orally as to what was to come in situations other than massage. There was an important difference in how Marta talked to Juan after the intervention. Marta's use of motherese increased, her tone was tempered, and the quality of the talk was different and positive. Although

it is known that infant massage can facilitate body awareness in infants, the researcher did not anticipate that she would see, in such a short time, Juan begin to explore his own and others' bodies and his place in space. In Session 8, Juan reached for his toes and reached for Marta. This was the first observation of his initiation of touch with his mother. These results suggest the importance of the ongoing study of infant massage as an intervention for promoting secure attachment formation in infants with visual impairments and other handicapping conditions, such as hearing impairments, mental retardation, and early-onset autism spectrum disorder.

References

- Bell, S., & Ainsworth, M. (1972). Infant crying and maternal responsiveness. *Child Development, 43*, 1171–1190.
- Bogdan, R. C., & Biklen, S. K. (2003). *Qualitative research for education* (4th ed.). Boston: Allyn and Bacon.
- Bowlby, J. (1996). *Attachment and loss*. New York: Basic Books.
- Brambling, M., & Troster, H. (1994). The assessment of cognitive development in blind infants and preschoolers. *Journal of Visual Impairment & Blindness, 88*, 9–18.
- Crewswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: Sage.
- Crittenden, P. M. (1983). Mother and infant patterns of interaction: Developmental relationships. Unpublished doctoral dissertation, University of Virginia, Charlottesville.
- Crittenden, P. M. (1985). Maltreated infants: Vulnerability and resilience. *Journal of Child Psychology and Psychiatry, 26*, 85–96.
- Crittenden, P. M. (1992). Treatment of anxious attachment in infancy and early childhood. *Development and Psychopathology, 4*, 575–602.
- Crittenden, P. M. (1999). Danger and development: The organization of self-protective strategies. In J. Vondra & D. Barnett (Eds.), *Monographs of the Society for Research on Child Development* (pp. 145–191).
- Dellinger-Bavolek, J. (1996). Infant massage: Communicating love through touch. *International Journal of Childbirth Education, 11*(4), 34–37.
- Erwin, E. L. (1992). *Social participation and peer interactions of young children with visual impairment in integrated and specialized settings*. Unpublished doctoral dissertation, Teachers College, Columbia University, New York.
- Ferrell, K. A. (1985). Infancy and early childhood. In G. T. Scholl (Ed.), *Foundations of education for blind and visually handicapped children and youth*. New York: AFB Press.
- Fogel, A. (1993). *Developing through relationships: Origins of communication, self, and culture*. Chicago: University of Chicago Press.
- Fogel, A. (1995). Relational narratives of the pre-linguistic self. In P. Rochat (Ed.), *The self in early infancy: Theory and research*. Amsterdam: Elsevier.
- Fogel, A. (2001). A relational perspective on the self and emotions. In H. A. Bosma & E. S. Kunnen (Eds.), *Identity and emotion: Development through self-organization*. Cambridge, England: Cambridge University Press.
- Gerra, L. L. (1992). *Attachment formation of infants with visual impairment with their mothers in a strange situation*. Unpublished doctoral dissertation, Teachers College, Columbia University, New York.
- Harlow, H. (1958). The nature of love. *American Psychologist, 13*, 673–685.
- Harlow, H. (1959, June). Love in infant monkeys. *Scientific American, 200*, 68–74.
- Harlow, H., & Harlow, M. (1962). Effects of various mother-infant relationships on rhesus monkey behaviors. *Determinants of behavior* (Vol. 4). London: Methuen.
- Harlow, H. F., Harlow, M. K., & Hansen, E. W. (1963). The maternal affectional system of rhesus monkeys. In H. C. Rheingold

- (Ed.), *Maternal behavior in mammals*. New York: John Wiley & Sons.
- Jay, V. N. (1996). *Mexican-American mothers' beliefs regarding disability in children*. Unpublished doctoral thesis, University of Illinois, Urbana-Champaign.
- Kennell, J., & Klaus, M. (1982). *Parent-infant bonding*. St. Louis, MO: C. V. Mosby.
- Klaus, M., & Kennell, J. (1976). *Maternal-infant bonding*. St. Louis, MO: C. V. Mosby.
- Klaus, M., Kennell, J., & Klaus, P. (1996). *Bonding: Building the foundations of secure attachment and independence*. New York: Perseus Books.
- Main, M. (1981). Infant response to the rejection of physical contact by mother: Aggression, avoidance, and conflict. *Journal of the American Academy for Child Psychiatry*, 20, 292–307.
- Marin, G., & Marin, B.V. (1991). *Research with Hispanic populations*. Newbury Park, CA: Sage.
- McClure, V. (1998). *Teaching infant massage: A handbook for instructors*. Denver: International Association of Infant Massage.
- Muscarella, E. (1996, May 3). Infant massage provides invaluable benefits. *PT Bulletin*, 11–18.
- Pantoja, A. P. F. (1997). *Relational-historical change processes in early mother-infant communication: A qualitative investigation*. Unpublished master's thesis, University of Utah, Salt Lake City.
- Pantoja, A. P. F. (2000). *Emotional development from a relational-historical approach: The story of one mother-infant dyad*. Unpublished doctoral dissertation, University of Utah, Salt Lake City.
- Pantoja, A. P. F. (2001, September). A narrative-developmental approach to early emotions. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 2(3) [Online]. Available: <http://www.qualitative-research.net/fqs/fqs-eng.htm>
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*. (2nd ed.). Newbury Park, CA: Sage.
- Recchia, S. L. (1993). *How visually impaired toddlers and their mothers respond to ambiguous stimuli*. Unpublished doctoral dissertation, University of California at Los Angeles.
- Restak, R. (1986). *The infant mind*. Garden City, NY: Doubleday.
- Rodriguez, B. L. (1998). *A comparative study of mainstream and Mexican-American mothers' beliefs regarding child rearing, education, disability, and language impairment*. Unpublished doctoral dissertation, University of Washington, Seattle.
- Scafidi, F. A., Field, T. M., Schanberg, S. M., Bauer, C. R., Tucci, K., Roberts, J., Morrow, C., & Kuhn, C. M. (1990). Massage stimulates growth in preterm infants: A replication. *Infant Behavior and Development*, 13, 167–188.
- Scafidi, F. A., Field, T. M., Schanberg, S. M., Bauer, C. R., Vega-Lahr, N., Garcia, R., Poirier, J., Nystrom, G., & Kuhn, C. M. (1986). Effects of tactile/kinesthetic stimulation on the clinical course and sleep/wake behavior of preterm neonates. *Infant Behavior and Development*, 9, 91–105.
- Schneider, E. (1996). The power of touch: Massage for infants. *Infants and Young Children*, 8(3), 40–55.

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