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The Effects of Early Intervention on Parent-Premature Infant Interaction

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THE EFFECTS OF EARLY INTERVENTION ON PARENT-PREMATURE INFANT
INTERACTION

by

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A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
Master of Science

Department of Rehabilitation Institute
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Approved by:

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Introduction

Defining a Premature Infant

Rossetti (2001) defines a premature infant as one who is born one month before the estimated delivery date, at or before 36 weeks gestation. As it may be assumed, infants who are born prematurely are born with low birth weight due to a decreased length of stay in utero to develop. The rate of survival for infants directly relates to their birth weight and age of gestation (Rossetti, 2001). Furthermore, simply because an infant was born prematurely, they are at risk for significant medical complications (Rossetti, 2001). These medical complications may greatly lengthen an infant's hospital stay, increasing their vulnerability to developmental impairments or delays, specifically in communication (Rossetti, 2001; Meijssen et al., 2010). This vulnerability occurs because they are removed from utero before their body can fully develop physically and or cognitively. As originally stated by Gunnar and Quevedo (2007), paraphrased by Meijssen, et al. (2010), in order for the development of brain structures to occur, there is a great need for interaction between environmental, social stimulation and neurobiological processes. Preterm infants have not been given the opportune amount of time to develop in utero, so this development of brain structures has not occurred fully. Meijssen et al. (2010), assert, what is considered to be 'normal' amounts of environmental stimuli can over stimulate the preterm infant (Als et al., 2004). This overstimulation can cause serious distress and a negative influence on their brain development (Meijssen et al., 2010). Furthermore, these preterm infants have greater difficulty interacting with their environment, specifically parents or caregivers (Swartz, 2005).

Effects of Prematurity on Parent-Infant Interaction

When an infant is born very preterm (i.e. <32 weeks gestation) the early mother-infant interaction can be severely affected (Meijssen et al., 2010). Premature infants have difficulty interacting with their entire environment, but, most importantly, they have difficulty interacting with their parents due to their lack of responsiveness to the interaction and their partner, which can severely affect communication exchange (Meijssen et al., 2010). The breakdown in interaction between the parent and preterm infant has a spiral affect. When a preterm infant exhibits behaviors during interaction that are not characteristics of full term infants, parents find it more difficult to interact with their child, which may cause them to neglect their child or engage in less interaction (Meijssen et al., 2010). When parents neglect to interact with their preterm infant, the infant does not receive the adequate amount of stimulation, therefore leading the preterm infant to not respond optimally to their parent again (Meijssen et al., 2010).

Importance of Early Intervention Topic

Early intervention focusing on the interaction between premature infants and their parents as an attempt to increase their developmental outcomes has been evaluated in a number of studies. This paper will review the literature about the effects of early intervention on parent-infant interaction, specifically focusing on premature infants. This topic is being studied because the efficacy of how interaction affects the development of parent-infant interaction for premature infants and their parents needs to be determined. This will help researchers and parents develop successful methods to lessen the difficulty of interaction between parents and their premature infants. By providing such evidence, parents can implement these early intervention techniques into their interaction with their premature infants to create a closer bond with them. It is believed that early intervention, specifically with premature infants, is critical to create successful parent-infant interaction. Once this interaction is established, communication between the parent and

child will increase significantly. The purpose of this paper is to examine multiple research studies to determine the validity of this claim.

Effects of Early Intervention for Premature Infants

Transactional Model of Early Home Intervention

Barrera, Rosenbaum, and Cunningham, (1986) designed a study evaluating two treatment approaches, one of which utilized the parent-infant interaction described in the Transactional Model of Early Home Intervention as the intervention strategy. The second approach evaluated the infants' cognitive development as the primary focus of intervention (Barrera et al., 1986). According to Barrera, Rosenbaum, and Cunningham, the Transactional Model of Early Home Intervention targets parents and infants during intervention. Focus on their interaction as the driving force of intervention while also finding it necessary to teach parents problem-solving strategies to cope with the stresses of parenting, specifically parenting premature infants (Barrera et al., 1986). These researchers hypothesized that by increasing the parents' responsiveness and sensitivity to their infant's cues and biological needs; there would be environmental and developmental gains for the infant (Barrera et al., 1986). This study included fifty-nine preterm infants and twenty-four full-term infants who were selected by an inclusion criterion and were randomly assigned to either a parent-infant intervention or a developmental programming intervention (Barrera et al., 1986). The criterion for participation in the study included: a less than 2,000 gram birth weight, a gestational age of thirty-seven weeks or less, discharge from the hospital at least two weeks prior to the start of the study, a good prognosis for survival from the pediatrician, living within the geographical area that receives funding for the services (Barrera et al., 1986). The infants, including both full-term and preterm, were matched according to such variables as corrected age, sex, socioeconomic status, and type of delivery (Barrera et al., 1986).

Furthermore, preterm infants were also matched according to pre- and postnatal complications (Barrera et al., 1986). They were then assigned to either a parent-infant intervention or developmental programming intervention (Barrera et al., 1986). All families in each group were treated for a duration of one to two hours by one of four infant-parent therapists (Barrera et al., 1986). As treatment progressed, the length of time between visits increased (Barrera et al., 1986). For the purpose of this review, focus will be made on the parent-infant interaction. The objective of this group was to enhance the quality of interaction between the infant and parent by heightening the parents' observational, sensitivity, and responsive skills rather than targeting specific developmental skills (Barrera et al., 1986). Barrera, Rosenbaum and Cunningham's (1986) study taught parents to modify their behavior depending on the cues, developing abilities and behaviors of the infant as well as to create an individualized program based on specific routine interactional times during the day between the infant and the parent (i.e. feeding and before bedtime).

The mother-infant play period at home was video taped for ten minutes before and just after the treatment visit from the therapist (Barrera et al., 1986). Behaviors observed during the interaction, including: vocalization, verbalization, command, questions, praise, regard, en face, smile, touch, interactive play, independent or solitary play, vocal/verbal independent play, looking away, negative, and no response, were reported on a response-class matrix (Barrera et al., 1986). Reliability for the study was confirmed by having the observers watch videos of infants that were not included in the study until they could reach a reliability agreement of 80% (Barrera et al., 1986). Videotapes of the actual participants were randomly assigned and numbered so that the observers were unaware of the infants' age and group assignment (Barrera et al., 1986).

Data derived from the group by age interaction yielded results that indicated that significant developmental gains were only observed in the treatment groups (Barrera et al., 1986). Furthermore, at four months, the intervention preterm groups differed from the full term groups, but the differences were not present at sixteen months (Barrera et al., 1986). Findings from the study demonstrated the effectiveness of home intervention strategies, specifically the parent-infant interaction intervention on changing the home environment and behaviors during mother-infant interaction (Barrera et al., 1986). Data concerning mother-infant interaction, found that treatment was effective for increasing verbal independent play and mothers' responsiveness in both the parent-infant interaction group and the full-term group (Barrera et al., 1986). Analysis of the infant interactive behaviors indicated that they spent 61% of their time interacting with their parents. 30% of the infant's time was spent playing independently and 9% of their time was spent visually exploring their surroundings (Barrera et al., 1986). Concerning mother interactive behavior, results showed that when infants were four months old, mothers verbalized and vocalized to their infants, and engaged in more eye contact and interactive play more often than when their infants were sixteen months old. When infants were sixteen months old, mothers gave more commands and kept their infants in sight more often than at four months old (Barrera et al., 1986). The parent-infant interaction intervention demonstrated changes in such areas as: the home environment, mother-infant interaction behavioral changes, and slight changes in the infants' cognitive development (Barrera et al., 1986). Furthermore, the gains were much greater in the parent-infant intervention group rather than the developmental intervention group (Barrera et al., 1986). Reciprocal interaction between the parent and their infant is the foundation for the acquisition of many areas of development, including: socioemotional, cognitive and early communication (Barrera et al., 1986).

After reviewing the data from the interaction between the mother and infant, treatment effects were found for the infants' play, including verbal and independent, as well as the mothers responsiveness to her infant (Barrera et al., 1986). It was found that both the preterm infant and full term infant treatment groups engaged in more play, both verbal and independent, than those preterm and full term infants in the control group (Barrera et al., 1986). These results indicate that parent-infant interaction is effective for treatment for premature infants and their parents; by enhancing parents' ability to respond more efficiently to their infants' cues, they also have increased their receptiveness to modifying their behavior and environment to match their child and his or her changing needs (Barrera et al., 1986).

Infant Health and Development Program

Supporting the effectiveness of early intervention on parent-premature infant interaction is a study conducted by Spiker, Ferguson, and Brook-Gunn (1993). This study evaluated the Infant Health and Development Program (IHDP) as a successful early intervention program for premature, low birth weight (LBW) infants in altering mother-infant interaction, the child's behavior during interaction, and the interaction between the two (Spiker et al., 1993). As part of the IHDP, 985 premature infants and their families were evaluated at thirty months to assess the quality of mother-infant interaction and child social competence using both rating scales and problem solving tasks (Spiker et al., 1993). The rating scales looked at two broad areas of maternal interaction behavior, including: positive affective involvement and warmth and of developmentally appropriate stimulation and instruction (Spiker et al., 1993). The IHDP used eight clinical sites to evaluate the effectiveness of an early-intervention program for premature, LBW infants (Spiker et al., 1993). From these eight medical school sites, 985 participants were recruited and were randomly assigned to either a medical follow-up or a comprehensive early

childhood intervention group following discharge from the neonatal unit of the hospital (Spiker et al., 1993). “Of the 985 families in the IHDP study, videotapes of mother-child interaction were obtained for 683 (69%) mothers with their 30-month-olds (or 83% of those families who were seen at 30 months)” (Spiker et al., 1993). The mother-infant dyads were recorded during free-play, clean up, and three problem solving tasks; during the problem solving tasks, the child worked to obtain a toy by solving a problem (Spiker et al., 1993). The videotaping continued until one of two things occurs. First, the child solves the problem or second, six minutes have passed, whichever happens first (Spiker et al., 1993). The problem solving activities were rated on different size scales using qualitative dimensions of interaction: supportive presence, quality of assistance, persistence, and percentage of time off-task, enthusiasm, overall child, overall experience and mutuality (Spiker et al., 1993).

Concerning the child ratings, the early childhood intervention group children had ratings that were significantly higher for persistence, enthusiasm, and overall child. The early childhood intervention group had lower ratings for time off-task as well (Spiker et al., 1993). For dyadic ratings, the early childhood intervention group had ratings that were significantly higher for mutuality, but excluded experience (Spiker et al., 1993). Results from this study found that the IHDP intervention had a small, positive effect on both mother-infant interaction and child social competence demonstrated by the increase in the child’s persistence, involvement, and enthusiasm while trying to solve problems during interaction with the mother (Spiker et al., 1993).

Enhancing the Quality of Mother-Infant Interaction

A third study supporting the importance of early intervention to enhance parent-premature infant interaction is a study conducted by Wendland-Carro, Piccinini, and Millar

(1999), that evaluated the efficacy of an intervention program that focused on increasing the mother's sensitivity and in turn, responsiveness to her infant by educating her about the infants ability to interact, how to promote affectionate handling of the infant and motivation to interact with the infant. "On the basis of theory and observational studies, several investigators have stressed the role of early mother-infant interaction in the development of attachment" (Wendland-Carro et al., p. 713, 1999). Attachment theory centralizes around the idea that in order to form a secure attachment, there needs to be a quality dyadic interaction. In order for that interaction to occur, the mother needs to have sensitive responsiveness to the infant's signals, ensuring that the infant organizes his or her feelings of security and experiences (Wendland-Carro et al., 1999). Infants of sensitive and responsive mothers are shown to cry less often, vocalize more, and respond more positively to mother's physical contact (Wendland-Carro et al., 1999). Furthermore, mothers who are responsive and sensitive are more likely to respond to their infant's signals. As well as have more knowledge of their infant better and modify their own behavior by understanding their infant's signals and cues (Wendland-Carro et al., 1999). Two groups were created for the study; the first group's focus was to heighten the mother's sensitivity and responsiveness to her infant (Wendland-Carro et al., 1999). The second group's focus was to design a controlled intervention setting to provide beneficial information about caregiving skills to the mothers (Wendland Carro et al., 1999). It was hypothesized that the mothers receiving the enhancement intervention would increase their sensitive responsiveness to the infant than those in the control group (Wendland-Carro et al., 1999).

Thirty-eight mothers and their infants from Brazil agreed to participate in the study and were randomly assigned to a group (Wendland-Carro et al., 1999). The study experienced attrition, with two mothers dropping out of the study; leaving nineteen dyads in the control group and seventeen dyads in the experimental group (Wendland-Carro et al. , 1999). Two or three

days after delivery the investigator met with each of the thirty-six mother-infant dyads and presented one of two videos to the mother and infant. Intervention group one was presented with a video focusing on how newborn infants interact, how to show affection to the infant while holding them, and motivate the mothers to interact with the infant (Wendland-Carro et al., 1999). Furthermore, the investigator tailored the conversation to discuss what the mother previously knew about newborn behavior, what behaviors she had already experienced with her infant, and discuss her future expectations of her infant (Wendland-Carro et al., 1999). Once the session was over, the mothers were given a list of behaviors to try and recognize in their infant after they got home (Wendland-Carro et al., 1999). Intervention group two was presented with a video that demonstrated basic caregiving skills, and infant health issues (Wendland-Carro et al., 1999). Likewise, after the completion of the video, the investigator discussed major points from the video and mothers were presented with a list of items that were discussed during the session (Wendland-Carro et al., 1999). After one month, all dyads were evaluated at home while the infant was awake.

The results included increases in frequency of the following behaviors, during free-play and bathing especially: infant looks at mother-mother looks at infant, infant looks at mother-mother vocalizes to infant and infant looks and mother-mother smiles at infant (Wendland-Carro, et al., 1999). Also, results indicated significantly more of the following behaviors for the basic skills group: infant vocalizes-mother unresponsive and infant cries-mother unresponsive (Wendland-Carro et al., 1999). “For the enhancement group, there were more co-occurrences involving infant vocalization with mother’s reciprocal vocalization, smiling, soothing, and stimulation compared to the control group” (Wendland-Carro et al., 1999, p. 719). This study demonstrated the effectiveness of increasing the mother’s awareness of the child’s abilities and

the importance of interaction to facilitate mutual co-occurrences of mother-infant exchanges (Wendland-Carro et al., 1999).

The Mother Infant Transaction Program

The fourth study supported the efficacy of early intervention for parent-premature infant interaction, which assessed the effects of The Mother Infant Transaction Program (MITP) on mothers and moderately and late preterm infant interactions (Ravn et al., 2011). “It was hypothesized that the MITP would have a positive effect on social interaction for moderately and late preterm infants and their mothers at 12 months and that the program would be more appropriate for first-time mothers” (Ravn et al., 2011, p. 216). The MITP consists of 11, one-hour sessions including 118 mothers-infant dyads that were separated into intervention and control groups based on characteristics (Ravn et al., 2011).

The aim is to help parents appreciate their infant’s unique characteristics, temperament, and developmental potential, make the parents more sensitive and responsive to their infants’ physiological and social cues, particularly those that signal stimulus overload. It focuses on teaching the parents to understand the individuality of an atypical child, to establish a good pattern of interaction and to encourage the parents to enjoy their infants (Ravn et al., 2011, p. 216).

An Infant Behavior Questionnaire (IBQ) was an instrument used for the parents to report on the following: Activity Level, Distress to Limitations, Approach, Duration of Attention, Smile and Laughter, and Soothability using a seven point Likert scale at age increments of six and twelve months (Ravn et al., 2011). Also, The Pictorial Infant Communication Scales (PICS) was administered to the parents to report on their infant’s communication development, including: Initiating joint attention (IJA), Initiating behavior regulation/request (IBR) and Responding to joint attention (RJA) on a four-point Likert scale (Ravn et al., 2011).

Nine months after the intervention was complete, video observation of mother-infant interactions took place (Ravn et al., 2011). After reviewing the videos, results indicated the sensitivity and responsiveness were two areas that the preterm infant mothers scored significantly higher than no treatment (Ravn et al., 2011). Nine months post-treatment, the mothers that received intervention with their premature infants had enhanced sensitivity and responsiveness to their infant's physical and social cues during play interactions (Ravn et al., 2011). Furthermore, these interactions encompassed more reciprocal interactions between mother and infant (Ravn et al., 2011). Several other studies, including Newnham et al. (2009) and Olafsen et al. (2006), examined the efficacy of the MITP on mother-infant interaction (Ravn et al., 2011). Specifically, the Newnham et al. (2009) study focused on mother-infant interactions of younger preterm infants, finding that these mothers were also more sensitive and responsive to their infant's cues. Also, the preterm infants that received the intervention had increased alertness and attentiveness (Newnham et al., 2009).

Intervention With African American Premature Infants

Teti and colleagues discuss a four-month early intervention program targeting African American mothers and their premature infants. This study developed due to previous studies that determined that interventions targeting both members of the dyad, instead of just one or the other, were more successful (Teti et al., 2009). Furthermore, the intervention method was based off of these previous studies as well. Tactile-Kinesthetic stimulation was used with the premature infants, based on the rationale that it will provide the infant with the stimulation that they would have received if the pregnancy went full-term (Teti et al., 2009). Such massage techniques, used in the neonatal intensive care unit, increase the premature infants' physical and mental development (Teti et al., 2009). As mentioned in Teti et al., 2009, originally cited in

Evans, (1990), The researchers hoped that the massages, administered by the parents, would increase the parents' awareness of their infants' cues, including both bodily cues and social cues (Teti et al., 2009). Furthermore, the parentally administered massage would also increase the parents' confidence and sensitivity when handling their infant (Teti et al., 2009). The researchers hypothesized that this intervention would increase the amount of reciprocal interactions between infants and their caregivers, as well as enhancing premature infants' attachment to their caregivers (Teti et al., 2009). The second intervention approached focused on psychoeducational intervention (Teti et al., 2009). With this type of intervention, the parents were provided with information on the infants' current skill level and strategies to respond to their cues appropriately (Teti et al., 2009). Within the psychoeducational intervention method, two approaches were used; first, The Brazelton Neonatal Behavioral Assessment Scale (NBAS) and second, was the showing of a twenty minute video to the parents (Teti et al., 2009). The video titled "Premie Talk: Understanding Your Premature Baby's Behavior", educated parents on their infants' capabilities and provided caregiving practices that can be successfully used with their premature infants (Teti et al., 2009).

As stated above, the participants in their study consisted of exclusively African American families, particularly mothers, of low birth weight and premature infants (Teti et al., 2009). 194 families out of 295 eligible were recruited from neonatal units in multiple hospitals; however, twenty-one families refused, leaving 174 participating families in the baseline portion of the study (Teti et al., 2009). 168 of these infants were low birth weight and premature infants (Teti et al., 2009). Families who were excluded from the study were mothers who tested positive on a toxicology report, were under eighteen years old, or if the infant had a abnormality of a chromosome (Teti et al., 2009). At post-intervention, 138 families were present in the study,

including sixty-six in the intervention group and seventy-two in the control group; compared to eighty-four in the intervention group and eighty-nine in the control group (Teti et al., 2009).

The Brazelton Neonatal Behavioral Assessment Scale consists of interaction between the examiner and parent, so that the parent could learn about their infant's behaviors, including interactive style and cues (Teti et al., 2009). The examiner aided in interpreting the infants' behavior and taught sensitive behavioral approaches (Teti et al., 2009). The researchers administered the NBAS multiple times throughout the first four months of the infants life, teaching the mothers to focus of the infant's development of capacities including reflexive and interactional as well as how the infants' matured during the administrative period (Teti et al., 2009). The "Premie Talk" videotape was played to the African American mothers two times before their infants were discharged from the neonatal unit (Teti et al., 2009). Overall, the intervention lasted for twenty weeks, consisting of 8 sessions, using a combination of all of the approaches discussed above transitioning from the neonatal unit to the homes (Teti et al., 2009).

Post-intervention outcome measures were determined during two visits to the home at 3 to four months infants corrected age (Teti et al., 2009). At the first visit, mothers completed a questionnaire while RAs simultaneously assessed the infant's cognitive and motor skill development (Teti et al., 2009). During the second visit, one to two hour observations of interaction between the infant and mother were implemented to assess the mother's sensitivity level (Teti et al., 2009). An assessment used at post-intervention was the Maternal Self-Efficacy Scale, which assessed the mother's perception of her own competence in different tasks (Teti et al., 2009). Tasks assessed on this scale included the mother's competence of ability to sooth the infant, feed, change and bathe the infant (Teti et al., 2009). The mother's competence to understand the infant's wants and needs, and enjoyments were evaluated (Teti et al., 2009). Finally, the mother's competence of ability to communicate with the infant, gaining and

maintaining the infants attention were assessed (Teti et al., 2009). The mother's sensitivity to her infant was measured using the Maternal Behavioral Q-Set (Teti et al., 2009). Physical examinations pre- and post-intervention were used to determine the infants' development throughout the study (Teti et al., 2009). The Bayley Scales of Infant Development-Version II, was used to assess the infants' intellectual and motor development, generating two scores, the Motor Development Index (MDI) and the Psychomotor Development Index (PDI) (Teti et al., 2009).

Concerning maternal self-efficacy, the analysis of the control group and intervention group yielded a significant intervention effect; determining that the mothers in the intervention group had significantly higher scores of self-efficacy compared to the control group mothers (Teti et al., 2009). Analysis of the Bayley's MDI performance scores for the intervention group and the control group indicated a significant effect for extremely low birth-weight infants in the intervention group (Teti et al., 2009). Likewise, PDI performance scores indicated a significant effect for the intervention group (Teti et al., 2009). " At postintervention assessment, intervention mothers had slightly higher but reliable differences in their self efficacy" (Teti et al., 2009, p. 159). Extremely low birth-weight infants who received intervention demonstrated significantly higher Bayley MDI scores in comparison to the control group extremely low birth-weight infants (Teti et al., 2009). Although the effects were solely found in the maternal self efficacy skills, the researchers recommend that implementing this intervention program aids the parents in realizing their competence level in their roles as parents (Teti et al., 2009). Further implications for this study are that this intervention approach is most recommended for the extremely low birth-weight infants, seeing that intervention was most effective for them (Teti et al., 2009).

Conclusion

Implementation of Evidence

The topic of efficacy of early intervention for preterm infants is extremely important. Every professional encourages families to obtain these services if needed, and therefore it is important that these services have evidence in their success. The research studies presented provided valuable evidence as to why early intervention is critical to facilitate parent-infant interaction and increase premature infants' communication development. A common theme that should be implemented into clinical work will be the importance of enhancing the parents' ability to respond to cues from the infant. First, the parents should be educated on realistic communication competencies of the premature infant. Next, the parent should be taught to identify the infant's cues and then to respond with appropriate behaviors. These steps are critical to facilitate a strong interaction between the parent and premature infant. This education may be simply facilitated by videos to show the parents or actual hands-on intervention techniques being taught. One study discussed the efficacy of MITP for mother-infant interaction with premature infants, specifically first-time mothers and their premature infants. After seeing the results, this study has clinical implications within the program that should be implemented with first-time mothers of moderate and late preterm infants because these mothers are considered vulnerable due to their lack of experience.

Future Research

After reviewing the literature on the topic of efficacy of early intervention on parent-premature infant interaction two future research topics arose. First, further research needs to be completed on the long-term effects of early intervention on parent-premature infant interaction. Thus far, the research found focused on the effects of this intervention in the first year and a half after the infant was born. It would be beneficial to generate a longitudinal study that determines

the efficacy of early intervention for premature infants and their interactions with parents when the child is older. This would be especially interesting if the premature infant has significant delays due to low-birth weight or decreased gestational age at birth. A second topic that future research could discuss would be to determine if the increases in social behavior, seen during early intervention as an infant, filters into the child's academic and school performance later in childhood. It would be important to compare those premature infants who received early intervention and those who did not in a longitudinal study to determine if performance was increased. This is a critical area to research not only because it is important to see if early intervention is successful for infants to decrease developmental delays or impairments but it is also very important to determine if early intervention can have positive implications for the child's future skill development and performance.

For Whom Does It Work

Rossetti (2001) discusses the famous question of whether early intervention works. However, he poses the idea that the question should not be whether or not early intervention is successful, because it is proven to be effective. Rossetti (2001) believes that the question should be rephrased to, "For whom does it work and under work circumstances?" (p. 264). Originally discussed in articles written by Bennett & Guralnick, 1992; Bryant & Ramey, 1987; Infant Health and Development Program, 1990 but cited by Rossetti (2001):

It has been well documented that comprehensive early intervention programs (multifaceted and integrated child development with family focus) can be effective in reducing the overall decline in developmental status that is observed in the first few years of life for children at biological risk and for those from severely disadvantaged families (p. 267).

Family-centered early intervention services have proven to be effective for children who are determined to be at risk or those children with established risks (Rossetti, 2001). "For

example. The adverse developmental outcomes associated with prematurity are lessened to a substantial degree through early intervention programs that have focused on enhancing the quality of parent-child interactions as well as parents' feelings of competence and confidence" (Rossetti, p. 269, 2001). Many articles discussed above mentioned the efficacy of early intervention with premature infants in the neonatal unit. With advances in medicine, leading to a significant increase in survival rate of premature infants, the focus has now shifted to improving the infants' developmental capabilities (Rossetti, 2001). There is no earlier setting to provide early intervention to infants than in the neonatal unit (Rossetti, 2001). However, it may be more difficult because intervention could target the infant, parents, or the neonatal staff; but upcoming research suggests that intervention incorporating all three parties will be most effective (Rossetti, 2001). Overall, early intervention is extremely beneficial for premature infants and their families. When provided at the earliest time possible and combined with a family-centered focus, early intervention for the premature infant can increase maternal sensitivity by heightening their awareness to their infants cognitive and motor capabilities as well their behavioral cues. Consequently, early intervention for the premature infant increases reciprocal parent-infant interaction because as the parent responds more appropriately to the infant, the infant in turn, increases the amount of interaction they provide to the parent. Premature infants who receive early intervention increase their social behavioral cues during interaction as well.

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