ISSN Online : 2709-4030
ISSN Print : 2709-4022
Vol.7 No.4 2023

Exploring the Role of Sensitive Responsiveness and Non-Directiveness in Mother-Infant Interaction: An Intervention Approach

Iqra Falak
Dr. Um I Lela
Baneeha Zainab

ABSTRACT

This exploratory research study aimed to investigate mother-infant interaction, specifically focusing on sensitive responsiveness, non-directiveness, infant attentiveness, positive affect, negative affect, and liveness. The study was conducted in two phases. In Phase I, the researchers examined these aspects of mother-infant interaction, while Phase II involved implementing an intervention to enhance sensitive responsiveness and address caregiver responsiveness shortcomings. Pre and posttests were conducted to evaluate the impact of the intervention on caregivers.

The study included a sample of 10 mother-infant dyads from the Gujranwala region of Pakistan, selected through purposive sampling. The participants consisted of mothers with varying levels of education and occupation, as well as infants of different ages, birth orders, and sibling status. Inclusion criteria required physically and mentally fit caregivers and infants without psychological disorders, while exclusion criteria involved infants or mothers with psychological or medical problems and second or third children based on birth order.

The research instruments used in this study were the Mother-Infant Interaction Global Rating Scales (MACI) and the Circle of Security Infant Intervention (COS). Phase I involved pre-test data collection using the MACI model and video recordings of caregiver-infant interactions. Phase II implemented the Circle of Security intervention to enhance sensitive responsiveness and promote secure attachment between caregivers and children.

The Circle of Security intervention comprised three sessions, with a 2-day gap between each session. Post-testing occurred one week after the intervention, utilizing the same video recording and decoding procedures. Descriptive analyses and correlations between the MACI scales were conducted. Participants provided informed consent and agreed to have their interactions recorded before and after the intervention.

The study's findings underscored the significance of sensitive responsiveness, non-directive behavior, and attentiveness in mother-infant interactions. These factors were found to contribute to positive child personality development and a favorable attitude toward caregivers. The study also identified a lack of sensitive responsiveness among caregivers, which the Circle of Security intervention aimed to address.

Keywords: *Caregiver, Infant, Sensitive responsiveness, Non directive, Positive attitude, Negative attitude, Liveliness, Attachment, Mutuality*

Introduction:

Interacting with others from birth is an essential aspect of daily life, and recent research has focused on understanding how these interactions are supported by specialized brain functions. Advancements in neuroimaging techniques for studying infants have opened new avenues for exploration in examining the correlations between social experiences in infancy and early brain development. This systematic review aims to investigate the relationship between social interactions in infancy and changes in brain structure and function.[1]

Mothers play a crucial role in promoting the development of infants, and the quality of early interactions between a mother and her infant significantly impacts the child's development.[2] Mother-infant bonding, which involves a loving attachment between a mother and her baby, has profound effects on the child's emotional, social, and cognitive development. Secure attachment relationships foster positive self-esteem, healthy social relationships, and better coping skills, while insecure attachments can lead to emotional and behavioral problems later in life.[3]

Infant-mother attachment is the emotional bond that forms between an infant and their primary caregiver, typically the mother. This bond strengthens over time and is facilitated by a collection of behaviors known as attachment behaviors.

[1] Ilyka D, Johnson MH, Lloyd-Fox S. Infant social interactions and brain development: A systematic review. Neurosci Biobehav Rev. 2021;130:448-69.

[2] Rossen L, Mattick RP, Wilson J, Clare PJ, Burns L, Allsop S, et al. Mother–Infant Bonding and Emotional Availability at 12-Months of Age: The Role of Early Postnatal Bonding, Maternal Substance Use and Mental Health. Maternal and Child Health Journal. 2019;23(12):1686-98.

[3] Hairston IS, Handelzalts JE, Lehman-Inbar T, Kovo M. Mother-infant bonding is not associated with feeding type: a community study sample. BMC Pregnancy and Childbirth. 2019;19(1):125.

Bowlby's Attachment Theory explains how this attachment system has evolved to promote and maintain physical closeness, providing protection for the infant. The reciprocal relationship between infant and mother involves behaviors that are preadapted to each other, emphasizing the importance of a sensitive and responsive mother in the infant's environment.[4]

The Manchester Assessment of Caregiver-Infant Interaction (MACI-Infant) is a coding scheme methodology used to analyze behavioral interactions between mother and infant through play. It offers a brief and valid measure to evaluate global features of interaction, making it suitable for longitudinal studies.[5]

Nurturing and responsive caregiving practices are crucial for the healthy development of infants. Effective parenting interventions, such as the Circle of Security Infant Attachment, can support positive mother-infant relationships and promote positive outcomes for both the mother and the child.[6] By understanding the significance of nurturing mother-infant relationships, we can foster healthy development and support positive outcomes for infants and families.

Bowlby's Attachment Theory highlights the importance of a comparative approach to studying development and considering evolutionarily conserved features of attachment. The theory emphasizes the infant's need to form bonds with caregivers and suggests that these early bonds impact behavioral and psychological development throughout life. The reciprocal system of maternal behavior complements the infant's attachment behavior, and deviations from this environment can lead to behavioral anomalies.[7]

Understanding the role of mother-infant relationships in infant development is crucial for promoting positive outcomes. Sensitivity and responsiveness in caregiving practices contribute to secure attachments, liveliness, and positive coping strategies in infants. By utilizing effective parenting interventions and recognizing the evolutionary significance of attachment behaviors, we can support healthy development in infants and foster positive mother-infant relationships.[8]

Literature Review:

The literature on mother-infant relationships highlights the importance of social interactions and experiences in infant development.[9]

Responsive and sensitive caregiving during the early years promotes secure attachment and positive developmental outcomes.[10] Evidence-based interventions focused on enhancing parental sensitivity and responsiveness are effective in supporting child development, particularly for children who have experienced early adversity.[11] However, there is a need for further understanding of how responsive caregiving influences child development within different cultural and socioeconomic contexts.[12]

[4] Bowlby J. The Bowlby-Ainsworth attachment theory. Behavioral and Brain Sciences. 1979;2(4):637-8.

[5] Wan MW, Brooks A, Green J, Abel K, Elmadih A. Psychometrics and validation of a brief rating measure of parent-infant interaction: Manchester assessment of caregiver–infant interaction. International Journal of Behavioral Development. 2016;41(4):542-9.

[6] Powell B, Cooper G, Hoffman K, Marvin B. The circle of security intervention: Enhancing attachment in early parent-child relationships: Guilford publications; 2013.

[7] Granqvist P. Attachment and religiosity in adolescence: Cross-sectional and longitudinal evaluations. Personality and Social Psychology Bulletin. 2002;28(2):260-70.

[8] Granqvist P. Attachment and religiosity in adolescence: Cross-sectional and longitudinal evaluations. Personality and Social Psychology Bulletin. 2002;28(2):260-70.

[9] Henderson JM, Larson CL, Zhu DC. Cortical activation to indoor versus outdoor scenes: an fMRI study. Experimental Brain Research. 2007;179(1):75-84.

[10] Feldman R. Parent–Infant Synchrony: Biological Foundations and Developmental Outcomes. Current Directions in Psychological Science. 2007;16(6):340-5.

[11] Campbell SB, Denham SA, Howarth GZ, Jones SM, Whittaker JV, Williford AP, et al. Commentary on the review of measures of early childhood social and emotional development: Conceptualization, critique, and recommendations. Journal of Applied Developmental Psychology. 2016;45:19-41.

[12] Scherer E, Hagaman A, Chung E, Rahman A, O'Donnell K, Maselko J. The relationship between responsive caregiving and child outcomes: evidence from direct observations of mother-child dyads in Pakistan. BMC Public Health. 2019;19(1):252.

Studies have examined the relationship between caregiver contingent social responsiveness and secure infant attachment, as well as the impact of caregiver sensitivity on secure infant attachment.[13] It is important to differentiate between attachment and affiliative behaviors in infants to gain insight into the nature of their social relationships.[14] Additionally, the association between sensitive and stimulating parenting and positive child outcomes may be influenced by factors such as the child's temperament or genetic influences.[15]

To address the limitations in previous research, this study aims to investigate the impact of mother-infant interaction on cognitive development, social interaction, secure attachment, and personality traits in infants in Pakistan. The Manchester Assessment of Caregiver-Infant Interaction (MACI) coding scheme will be utilized to analyze mother-infant interactions.[16] This study seeks to provide a more comprehensive understanding of the core processes involved in mother-infant interactions and to identify pre-stage intervention protocols to minimize maladaptive behaviors and promote positive infant development.

Maternal responsive caregiving and its association with infants 'The literature suggests that responsive caregiving and the mother-infant relationship play a crucial role in child development. Early experiences and interactions with caregivers shape social, emotional, cognitive, and neurobiological development. Evidence-based interventions that enhance parental sensitivity and responsiveness are effective in promoting positive outcomes, especially for children who have experienced early adversity. However, there is a need for further understanding of how responsive caregiving impacts child development in different cultural and socioeconomic contexts. Differentiating between attachment and affiliative behaviors in infants provides insight into the nature of social relationships. Additionally, the association between sensitive and stimulating parenting and positive child outcomes may be influenced by factors such as the child's temperament or genetic influences. To address the limitations in previous research, this study aims to investigate the impact of mother-infant interaction on cognitive development, social interaction, secure attachment, and personality traits in infants in Pakistan. The Manchester Assessment of Caregiver-Infant Interaction (MACI) coding scheme will be used to analyze mother-infant interactions.[17]

Method:

Study Design:

This exploratory research study consisted of two phases. Phase I involved an exploratory study of mother-infant interaction, focusing on elements such as sensitive responsiveness, non-directiveness, infant attentiveness, positive affect, negative affect,

[13] Dunst CJ, Kassow DZ. Caregiver sensitivity, contingent social responsiveness, and secure infant attachment. Journal of Early and Intensive Behavior Intervention. 2008;5(1):40-56.

[14] Bates E, Bretherton I, Snyder L, Beeghly M, Shore C, McNew S, et al. From first words to grammar: Individual differences and dissociable mechanisms. New York, NY, US: Cambridge University Press; 1988. xii, 326-xii

[15] Rutter M. Developmental catch-up, and deficit, following adoption after severe global early privation. English and Romanian Adoptees (ERA) Study Team. J Child Psychol Psychiatry. 1998;39(4):465-76.

[16] Wan MW, Brooks A, Green J, Abel K, Elmadih A. Psychometrics and validation of a brief rating measure of parent-infant interaction: Manchester assessment of caregiver–infant interaction. International Journal of Behavioral Development. 2016;41(4):542-9.

[17] Wan MW, Brooks A, Green J, Abel K, Elmadih A. Psychometrics and validation of a brief rating measure of parent-infant interaction: Manchester assessment of caregiver–infant interaction. International Journal of Behavioral Development. 2016;41(4):542-9.

and liveness. Phase II implemented an intervention to enhance sensitive responsiveness and address shortcomings in caregiver responsiveness towards their infants. Pre and posttests were used to assess the impact of the intervention on caregivers.

Objectives:

- Explore the sensitive responsiveness of mothers during interactions with their infants.
- Explore non-directiveness in mother-infant interaction.
- Explore infant attentiveness towards their mother.
- Explore the impact of mother-infant interaction on an infant's liveness.

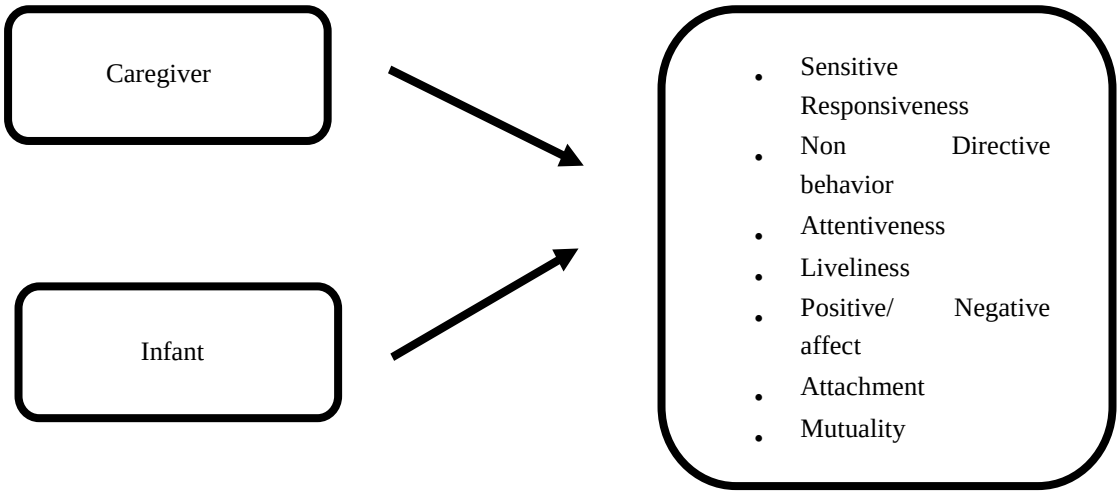
Sample:

The sample consisted of 10 mother-infant dyads from the Gujranwala region of Pakistan, selected through non-probability purposive sampling. The sample included a diverse range of participants, including educated and uneducated mothers, housewives, and job holders. The mothers' ages ranged from their late 20s to early 30s, and the infants were 1 year old or younger. Infants from different birth orders, twins, and only children participated.

***Inclusion Criteria*:** Infants aged 1 year or younger, medically fit and physically active. Caregivers and infants who were physically fit and mentally active, with no history of psychological disorders. All infants were the first child of their mothers.

***Exclusion Criteria*:** Infants or mothers dealing with psychological or medical problems. Second or third children of mothers according to birth order were not preferred.

Proposed Model



Research Instruments:

The study utilized the Mother-Infant Interaction Global Rating Scales (MACI) to observe and analyze various aspects of caregiver-infant interactions. The MACI scales focus on sensitivity, responsiveness, emotional attunement, and communication. Additionally, the Circle of Security Infant Intervention (COS) was applied to enhance the attachment relationship between caregivers and infants.

Phase I:

Phase I involved data collection before the intervention (pre-test). The MACI model was used to analyze caregiver-infant interactions, and videos of caregivers and infants

playing together were recorded. The videos were decoded using the MACI decoding scale.

Phase II:

Based on the results of Phase I, Phase II implemented the Circle of Security intervention to improve sensitive responsiveness of caregivers towards infants. Efforts were made to foster secure maternal-child attachment and enhance the caregiver-child relationship. The intervention focused on caregivers' sensitivity, responsiveness, and understanding of their child's needs.

Purpose:

The primary purpose of Phase II was to promote secure attachment between caregivers and children by enhancing the quality of the caregiver-child relationship.

Sample Description:

The same participants from Phase I were contacted to participate in Phase II to maintain continuity. The sample consisted of mothers in their late 20s to early 30s and infants aged 1 year or younger, including different birth orders, twins, and only children.

Procedure:

The Circle of Security intervention was applied in three sessions, each lasting 60 minutes, with a 2-day gap between sessions. The sessions provided guidelines and instructions on improving attachment, sensitive responsiveness, and liveliness within the caregiver-infant relationship. Post-testing was conducted a week after the intervention, following the same video recording and decoding procedures as the pre-test.

Results:

The result section includes descriptive various analyses to achieve the main objective of the study. MACI ratings for each scale were generally well distributed (given in anorexia).

However, infant positive affect and infant negative did not receive any “7” ratings. Most MACI scales were positively inter-correlated, except infant liveliness, which was correlated only with mutuality. Although caregiver sensitive responsiveness and caregiver no directiveness were correlated, the former was significantly correlated with infant affect and dyad engagement intensity. Mutuality, a dyad scale, was correlated with infant attentiveness and caregiver sensitive responsiveness, while dyad engagement intensity was most closely associated with mutuality and infant attentiveness. In this study, two sets of videos were recorded: one before the intervention was introduced and another set afterward. Only participants who provided their informed consent were included in the study. This means that individuals who agreed to participate and were willing to have their videos recorded both before and after the intervention were included in the analysis.

ISSN Online : 2709-4030
ISSN Print : 2709-4022
Vol.7 No.4 2023

Table 1

The mean of the MACI rating scale

Caregiver Interactive styles	**Rating scale**	**Mean**
Sensitive	1-6 (Minimal to consistent sensitive Responsiveness)	2.5
Directive	1–6 (Highly to Nondirective)	2.8
Attentiveness	1–6 (Inattentive to somewhat attentive)	2.4
Positive affect	1-4 (No to some positivity)	1.7
Negative affect	1-4 (No to some negativity)	2.1
Liveliness	1-5 (Unlively to generally lively)	2.4
Mutuality	1-4(non-mutual somewhat mutual)	3.1
Engagement Intensity	1-5 (Almost no to medium Intensity)	2.4

During Phase II of the study, two mothers willing to participate in the rerecording of videos with their infants and participated in the intervention, indicating their interest and willingness to engage in the program. The same rules and guidelines provided by the Manchester Assessment of Caregiver-Infant Interaction (MACI) were followed during the video recording process. These rules and guidelines likely include obtaining informed consent from the participants, ensuring privacy and confidentiality, and adhering to ethical considerations. The positive outcomes observed in the participating mothers highlight the effectiveness of the intervention in promoting positive changes in their caregiving behaviors and the quality of the mother-infant relationship. These results support the value and importance of providing interventions that aim to enhance the caregiver-infant bond and contribute to positive parental outcomes. The results of the post test shown in the table are as follows.

Table 2

Results of post-test after intervention

Caregiver Interactive styles	Rating scale A	B	Sample	Sample
Sensitive	1-6 (Minimal to consistent sensitive Responsiveness)		5	6
Directive	1–6 (Highly to Nondirective)		5	4
Attentiveness	1–6 (Inattentive to somewhat attentive)		6	5
Positive	1-6 (No to some positivity)		4	3

affect				
Negative affect	1-6 (No to some negativity)		2	1
Liveliness	1-6 (Unlively to generally lively)		5	5
Mutuality	1-6 (non mutual to somewhat mutual)		4	4
Engagement	1-6 (Almost no to medium intensity)	5		5

Discussion:

The purpose of this study was to explore the sensitive responsiveness, non-directive behavior and attentiveness of mothers towards infants and infant's liveliness towards his caregiver. Most of the research was focused on the caregiver's point of view of spending quality time with their infants in the early years of their life. No doubt Infant's perspective was also considered because of caregiver's attachment and attention span. This study was conceptualized to explore the role of caregiver in his infant's first year of life. As the caregiver shows sensitive responsiveness and non-directive behavior and accurate attentiveness towards the infant, the child's personality starts to grow positively, and they show a positive attitude to their caregiver. The results of the study showed how caregivers are lacking how to sensitively respond to their infants.

This drawback can be improved by applying Circle of security intervention on caregivers that will enhance caregiver's lacking abilities. Various research studies provide explanations and evidence to support this similar outcome. Mesman and his colleague's research have shown that sensitivity in non-Western contexts is meaningfully related to infant development, including attachment security. Factors such as maternal education, depression, partner support, and maternal attachment representations have also been found to be associated with variations in sensitivity in these contexts. These findings provide evidence for the validity of the sensitivity construct in non-Western cultures. While it is important to note that not all caregivers within a community or culture show equal levels of sensitivity, this is also true in Western countries.

The passage cautions against drawing conclusions that sensitivity is irrelevant in non-Western contexts based on isolated cases of insensitive parenting. It suggests that sensitivity exists along a continuum, and variations in the level of sensitive responsiveness have been reported in non-Western samples as well. The study covers the importance of studying sensitivity in non-Western cultures, recognizing the variations and nuances in how it is expressed, and considering the cultural context in understanding caregiver-infant interactions and attachment patterns. Future research should strive to capture the complexities of these contexts to deepen our understanding of sensitive responsiveness.

The findings of Dunst and his colleagues indicate that sensitivity measures that incorporate explicit aspects of caregiver contingent social responsiveness show the strongest association with secure infant attachment. Specifically, sensitivity measures that involve reciprocal responsiveness between the caregiver and child in their interactions are particularly influential in predicting secure attachment. This supports Gewirtz's operant learning model of attachment, which posits that the quality of

contingent social responsiveness enhances the reinforcing consequences of caregiver responsiveness to child behavior, thereby influencing attachment patterns. [18]

It is important to note that the qualifying statement is based on the observation that three out of the four caregiver contingent social responsiveness measures that were most strongly linked to secure infant attachment (mutuality, synchrony, response quality) include qualitative aspects of caregiver interactional behavior. This suggests that the quality of interaction and the specific ways in which caregivers respond to their infants' cues contribute to the development of secure attachment. [19]

Overall, these findings highlight the significance of caregiver contingent social responsiveness, particularly in terms of reciprocal and qualitative aspects, in shaping the attachment relationship between caregivers and infants. The results support the notion that the quality of caregiver responsiveness, characterized by contingent and reciprocal interactions, plays a crucial role in fostering secure attachment bonds.

Similarly, Van den Boom concluded his findings as, the observations made in Gusii caregiving support previous findings that smiling, talking, and face-to-face contact are relatively infrequent compared to Western caregiving practices. Additionally, it is important to note that the responsiveness of mothers in the Gusii community does not indicate that one group of mothers is more responsive than the other (referring to a comparison between Gusii and American mothers). Instead, it suggests that responsiveness is expressed differently based on cultural variations and infants' signals.

Conclusion:

The conclusion emphasizes that normativity and universality in sensitive responsiveness should not be defined solely based on specific behaviors, as these behaviors can vary significantly across cultures. Rather, the focus should be on the function of meeting the infant's signaled needs. In the specific sample of Gusii families studied, sensitive responsiveness was not limited to basic survival needs but also extended to sensitive play interactions.

Like other cultural contexts, there were variations in sensitivity ratings among Gusii families, with four out of seven mothers demonstrating medium to high levels of sensitivity. This finding suggests that the universal hypothesis in attachment theory, which suggests that attachment patterns are consistent across cultures, should not be rejected based on parenting patterns among the Gusii. [20]

Moving forward, it is important to understand the sources and consequences of individual variations in caregiver sensitivity within communities like the Gusii.

This understanding becomes crucial in contexts where traditional and modern caregiving practices coexist and where sensitivity manifests differently compared to Western samples. Further research is needed to explore these variations and their implications for caregiver-infant relationships and child development.

Implications of the Research:

The research provides valuable insights into the nature and quality of interactions between mothers and their infants under the framework of the MACl manual. By examining the responsive stimulation for cognitive security attachments, it sheds light

[18] Dunst CJ, Johanson C, Trivette CM, Hamby D. Family-oriented early intervention policies and practices: Family-centered or not? Exceptional Children. 1991;58(2):115-26.
[19] Dunst CJ, Johanson C, Trivette CM, Hamby D. Family-oriented early intervention policies and practices: Family-centered or not? Exceptional Children. 1991;58(2):115-26.
[20] Van Egeren LA, Hawkins DP. Coming to Terms with Coparenting: Implications of Definition and Measurement. Journal of Adult Development. 2004;11(3):165-78.

on the factors that contribute to healthy mother-infant relationships. The findings of the research can have significant implications for promoting cognitive development in infants. By identifying effective interventions to improve attachment styles between mothers and their young babies, the research highlights strategies that can enhance the cognitive security and overall development of infants under six months.

The research outcomes can inform the design and implementation of parenting programs in Pakistan. The identified interventions can be incorporated into existing programs or used as a basis for developing new interventions that aim to strengthen the mother-infant bond and foster positive cognitive outcomes. The research may provide a basis for policy recommendations aimed at supporting early childhood development. The implications of the study can be used to advocate for policies that prioritize the provision of resources, education, and support to empower mothers in their interactions with their young babies, thereby positively influencing cognitive security attachments.

Limitations of the Research:

Cultural Factors. The research was conducted in Pakistan, and cultural factors specific to this context may have influenced the results. It is important to consider the cultural nuances and social norms that may impact mother-infant interactions and attachment styles, as these factors could limit the generalizability of the findings to other cultural settings.

Ethical Considerations. The research should consider any ethical concerns that may have arisen during the study. Ensuring the well-being and consent of the participants and maintaining confidentiality are important ethical considerations that should be addressed and discussed in the limitations section.

Short-term follow-up: Feasibility trials often have a relatively short duration, which may limit the ability to assess the long-term effectiveness and sustainability of the MACI Model. Long-term follow-up would be needed to understand the lasting effects of the intervention on caregiver sensitivity.

Potential selection bias: The recruitment process for participants may introduce selection bias if certain types of caregivers or parents are more likely to participate. This bias could affect the representativeness of the sample and limit the generalizability of the findings to a broader population.

The research may have been constrained by time limitations, such as a relatively short duration for observing and measuring changes in attachment styles. Longer-term follow-up studies may be necessary to assess the sustainability and lasting effects of the interventions on mother-infant interactions.