

MATERNAL RESPONSIVENESS: A POTENTIAL MEDIATOR FOR ASSOCIATIONS AMONG MATERNAL DEPRESSION, LOW SOCIOECONOMIC STATUS, AND NEGATIVE INFANT LANGUAGE DEVELOPMENT

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ABSTRACT AND INTRODUCTION

Infant language development is thought to be the product of myriad biological, environmental, and interpersonal influences, the exact nature of which is not yet fully understood. Although much remains to be learned about what these factors are and how they both individually and jointly affect infants' communicative abilities, a considerable body of research has indicated that infant-caregiver relationships play a significant role in the language acquisition process. In particular, mothers' verbal and nonverbal responses to their infants during everyday interactions seem to have a notable impact on expressive and receptive language development. Naturally, the content, frequency, and quality of these responses is not consistent across all mothers, and research has attributed this variation to several factors. Two of these potential contributing factors include maternal depression and socioeconomic status (SES), which have both been linked to differences in the ways mothers respond to and communicate with their infants. The association between infant language development and both maternal depression and low socioeconomic status may be the result of similar differences in maternal responsiveness to infants relative to non-depressed mothers and mothers of middle or high socioeconomic status. This potential connection has implications regarding the importance of the relational qualities of language and potential interventions aimed at improving the language abilities of infants whose mothers are depressed or who are members of a low SES household.

THE EFFECT OF MATERNAL DEPRESSION ON INFANT LANGUAGE DEVELOPMENT

A substantial body of research has established that maternal depression is associated with deficits in multiple facets of infant language development. Quevedo et al. (2012), for instance, evaluated 296 mothers for depression between 30 and 60 days postpartum and again when their children were one year old. The Bayley Scales of Infant Development III were then administered to the infants when they were 12 months old. Infants whose mothers were depressed at both times of evaluation scored the lowest on a composite score of the Bayley-III Receptive Communication and Expressive Communication subscales, followed by infants whose mothers had experienced depression at only one time point. These results were partially replicated by Kaplan et al. (2014) in a correlational study that established an association between 80 mothers' scores on the Beck Depression Inventory and their 10 to 14-month-old infants' scores on the revised Bayley Scales of Infant and Toddler Development, such that infants whose mothers had higher BDI-II scores, suggesting a greater degree of depression, scored lower on the Bayley Expressive Communication subscale. In contrast to the prior study, however, they did not find a significant association between mothers' BDI-II scores and infants' Receptive Communication subscale scores.

Although these results are contradictory in that Kaplan et al. (2014) did not find an association between maternal depression and infant receptive communication, there are potential explanations that could account for this discrepancy. First, Quevedo et al. (2012) based their results on a total composite score of both expressive and receptive communication, whereas Kaplan et. al (2014) reported associations for each subscale separately. Consequently, the association between maternal depression and infant language scale scores may be accounted for primarily by Expressive Communication subscale scores.

Second, unlike Quevedo et al. (2012), Kaplan et al. (2014) did not measure maternal depression at multiple time points and thus were not able to assess the effects of depression duration. Considering that Quevedo et al. (2012) reported a significant effect of depression duration on infant language scale scores after adjusting for confounding variables, such that infants of mothers who were depressed for longer had lower scores than infants of mothers who were only depressed at one time point, it is possible that the difference in the results may be accounted for by depression duration. If this were indeed the reason for the discrepancy, it would suggest that receptive communication is particularly affected by the cumulative effects of depression over a long period of time compared to expressive communication.

THE EFFECT OF LOW SOCIOECONOMIC STATUS ON INFANT LANGUAGE DEVELOPMENT

Comparably, low socioeconomic status has also been associated with negative effects on infant language development. Betancourt, Brodsky, and Hurt (2015) examined the association between socioeconomic status and language skills in a sample of 54 seven-month-old African American females using the Preschool Language Scale-5 to assess expressive and receptive communication. Low SES infants had significantly worse scores on the PLS-5 Total Language Composite, Expressive Communication Composite, and Auditory Comprehension Composite (which measures receptive communication skills) relative to infants in the high SES group. Likewise, Fernald, Marchman, and Weisleder (2013) evaluated the language skills of 48 infants when they were both 18 and 24 months old and discovered that infants in the low SES group had less advanced vocabularies and were slower and less accurate in recognizing spoken words than their high SES counterparts at both time points. Strikingly, infants in the high SES group made significantly greater improvements in expressive vocabulary at both 18 and 24 months and had the same accuracy on average in the looking-while-listening task at 18 months as the low SES group had at 24 months. Taken together, these results suggest that infants in low SES households experience delays in language development compared to infants in high SES households, which seem to accumulate and lead to a wide gap in language achievement as time progresses.

Relatedly, Hoff (2003) examined the association between socioeconomic status and infant language development in 63 infants between the ages of 16 and 31 months in middle and high SES households. Vocabulary growth was estimated using the transcripts of two naturalistic observations of infant-mother interactions ten weeks apart. Despite similar vocabulary sizes at the time of the first observation, the high SES infants had a significantly larger increase in vocabulary over the course of ten weeks than the middle SES infants, and this association between SES and vocabulary growth was fully mediated by maternal responsiveness. Although this study observed the differences between infants of middle and high socioeconomic status and did not include infants of low socioeconomic status, its findings suggest that the effects of socioeconomic status on language development are not limited to those of low socioeconomic status. Instead, these linguistic differences between socioeconomic classes may operate on a spectrum, such that infants of low SES tend to struggle most and infants of high SES tend to struggle least. A multitude of factors may be responsible for the apparent differential language abilities of infants across social classes, given the broad effects of socioeconomic status on a person's access to resources, values, personality, environment, parenting styles, goals, health, and education, among other things. It is quite probable that a confluence of several of these socioeconomic status-related differences, rather than one individual factor, is responsible for the variation in infant language development across social classes, though some factors may be more salient or influential than others.

THE EFFECT OF MATERNAL RESPONSIVENESS ON INFANT LANGUAGE DEVELOPMENT

One such factor that may at least partially explain the negative effects on language development that appear to be associated with maternal depression and low socioeconomic status is maternal responsiveness. Maternal responsiveness refers to the reactions that mothers and other caretakers have to their infants' communicative efforts, behaviors, and experiences. Mothers often adjust their responses according to the infant's current state and focus of attention. Responses that account for the infant's experiences in this way, and which occur in quick succession to infant communicative bids are often referred to as "contingent responses." Appropriate maternal responses nourish infant language

development by facilitating infants' engagement with their environment, encouraging further thought and exploration, and providing them with words to understand their experiences as they occur.

It is unsurprising, then, that maternal responsiveness has been directly associated with infant language development. In a longitudinal study of 12 mothers and their infants when the infants were 8 to 14 months old, Gros-Louis, West, and King (2014) found that increased maternal responses to infant mother-directed vocalizations were related to an increase in developmentally-advanced consonant-vowel vocalizations – an aspect of expressive communication – such that infants whose mothers responded more to mother-directed vocalizations had a larger increase in these advanced vocalizations from 8 to 14 months of age. Further, among the nine infants in the sample whose parents were given the MacArthur Communicative Development Inventory: Words and Gestures (MCDI) when infants were 15 months, infants whose mothers provided increased sensitive responses overall to their vocalizations had higher vocabulary production and gesture scores. Sensitive responses were classified as verbal or non-verbal responses that occurred within two seconds of infants' vocalizations. Interestingly, mothers' sensitive responses to prior infant vocalizations predicted increased infant mother-directed vocalizations in the following months. These results suggest that maternal sensitive responses contribute to infants' vocal development. Given the finding that maternal sensitive response to prior infant vocalizations predicted the frequency of future infant mother-directed vocalizations, this may be at least partially because sensitive responses encourage the infant to speak more, thus providing them with more opportunities for learning and interaction, though more research is needed to explore potential explanations for this association.

Similarly, in a longitudinal study of 26 mothers and their infants, Bell and Salter Ainsworth (1972) found that infants whose mothers promptly respond to their cries tend to cry less frequently and for shorter duration in their first year of life than those whose mothers are unresponsive, and these infants tend to develop a variety of more nuanced ways of communicating their needs and desires. Infants whose mothers ignored their cries altogether or did not respond promptly to them appeared to be more reliant on crying as a means of communication and thus exhibited fewer alternative effective ways of communicating, such as gestures, facial expressions, and vocalizations. This may be because prompt responses from their mothers assured infants of the efficacy and value of their communicative efforts, encouraging them to further develop them. The consistency displayed by the mothers in their responsiveness may foster a sense of confidence in the infants and reassure them of their physical and emotional safety, thereby granting them the freedom to explore new modes of language. It follows, then, that slow maternal responses that prolong infant distress may interfere with language development by depriving infants of this sense of safety, thereby decreasing the likelihood that they will explore new ways of communicating. Moreover, the association between mothers' prompt response and infants' decreased reliance on crying could also potentially reflect increased opportunities for infants to acquire these more subtle social cues and methods of communication, because mothers may unintentionally model them in their responses to their infants, so that their infants learn by imitating them.

Additional research has supported this association between maternal responsiveness and infant language development. Paavola, Kunnari, and Moilanen (2005) found that maternal responsiveness at 10 months predicted infant receptive communication, but not expressive communication, at 12 months in 27 dyads. Maternal responses were defined as meaningful verbal changes that occurred within five seconds after an infant verbal or exploratory act. Expressive communication comprised word production, symbolic actions, and gestures, while receptive communication constituted infants' comprehension abilities. Contrastingly, Tamis-LeMonda, Bornstein, and Baumwell (2003) found that maternal responsiveness at 9 and 13 months predicted the timing of five infant expressive language milestones more than infant behavior in 40 mother-infant dyads. Maternal responses were operationalized in the same way as they were by Paavola, Kunnari, and Moilanen (2005), and milestones included first imitations, first words, 50 words in expressive language, combinatorial speech, and the use of language to discuss the past. Responsiveness at 13 months predicted language milestone achievement timing more strongly than responsiveness at 9 months. The discrepancy between the findings of these two studies regarding the association between expressive communication skills and maternal responsiveness may be due to methodological differences between the studies.

There are many possible explanations for the association between maternal responsiveness and infant language acquisition. First, maternal responsiveness may promote infant language development by encouraging infant object and environmental exploration, which could in turn provide infants with more novel experiences to learn from and prompt them to attend more to these experiences, leading to richer and more informative exploration. Stenberg (2003) provided support for this explanation using two experiments to test the effect of adult contingent responding on 44 12-month-old infants' behavior when presented with an ambiguous toy. In the first experiment, the experimenter looked at a phone, as if distracted, while the infant played. When the infant looked at the experimenter, he either stopped looking at the phone and responded immediately (contingent responding) or continued to look at the phone for a few seconds before responding. Then, the experimenter gave the infant an unfamiliar toy, along with a positive message about it. A similar procedure was repeated in the second experiment, except with the infant's parent in place of the experimenter.

In both situations, infants who received adult contingent responses played with the toy more than those who did not. Thus, infants who received contingent responses were more likely to explore a new object, regardless of who presented them with it. Perhaps the contingent responses provided by the adults communicated to the infant that the adult was paying attention to them and therefore made them feel safer or more supported, such that playing with the new toy seemed less risky or more valued by the adult. If so, this feeling of safety and support that encourages infants to explore new objects may also encourage them to experiment with language and attempt to converse. Additionally, the fact that contingent responses appear to increase the likelihood that infants will participate in object exploration is important because infant object exploration has been linked to expressive and receptive vocabulary at one year (Ruddy and Bornstein, 1982; Zuccarini et al., 2018). Object exploration may facilitate linguistically rich infant-mother interactions by giving dyads a common focus that prompts mothers to provide infants with novel information about the object of their infants' attention.

Secondly, maternal responsiveness may foster infant self-efficacy by assuring them of the power they hold in their interpersonal relationship with their mother and leading them to form social expectations of others. These social expectations may translate to increased infant social and communicative bids. Mothers who respond promptly to their infants and attend to their interests convey to their infants the idea that their communicative and social bids are valued and that their actions and speech are impactful. Infants may come to understand that their vocalizations, gestures, and other linguistic expressions have desired consequences (e.g., their mothers' attention). Becoming aware of this cause-and-effect sequence, in which infants communicate in some way and their mothers respond favorably, may positively reinforce infants' verbal and nonverbal language use.

Mcquaid, Bibok, and Carpendale (2010) found support for the idea that mothers' contingent responsiveness leads infants to develop social expectations for how others will respond to their communicative bids by examining infant-mother smiling using 64 mothers' interactions with their four- and five-month-old infants. Mothers were asked to interact with their infant for two minutes, maintain a still face for one minute, and then continue interacting normally for an additional two minutes. Mothers' smiles that were contingent on infants' smiles during normal interaction accounted for differences in infant social bids during the still-face phase, such that infants whose mothers who gave more contingent smiles displayed more social bids. This suggests that the infants formed expectations about how their mothers would respond to their behavior based on her prior responses and that these expectations affected infants' attempts at non-verbal communication. It is possible that such expectations and the sense of self-efficacy that they cultivate also translate to verbal communication and other forms of non-verbal communication.

Finally, maternal responsiveness may positively contribute to infant language development by simply providing infants with increased linguistic input on subjects they are already attending to. Contingent responses often take a didactic form that gives infants additional information about subjects of interest by providing description or labels and asking questions. For example, a mother whose infant has pointed at the family dog may respond something like, "Oh look, is that Fido? He has such fluffy brown hair, doesn't he?" Responses like this one are a source of additional input that may expand young infants' vocabulary and grammatical repertoire, particularly since they are more lexically diverse and

lexical diversity has been shown to aid infant vocabulary growth (Song, Spier, & Tamis-LeMonda, 2014). The positive effects of the didactic nature of contingent responses and the lexical diversity within them may be enhanced by the fact that they typically relate to objects or events that infants are already attending to. Infants' attention to a particular subject may increase the odds that they hear and remember words and other relevant information encoded in the response (Tamis-LeMonda, Kuchirko, & Song, 2014). Clearly, then, there are several features of maternal responsiveness that may explain its positive impact on infant language development, from its descriptive nature to its effect on infants' perceptions of themselves and others in an interpersonal context.

NEGATIVE EFFECTS OF MATERNAL DEPRESSION AND LOW SOCIOECONOMIC STATUS ON MATERNAL RESPONSIVENESS

Of course, not every mother responds to her infant in ways that effectively nurture language development; maternal responsiveness varies across individuals, such that mothers may be unresponsive, slow to respond, or fail to adjust their responses to accommodate their infants' current state. Although the research regarding the effects of maternal depression and low socioeconomic status on maternal responsiveness is sparse at present, it is not unreasonable to infer that these factors may be a source of this variation in responsiveness. If this is true, differences in maternal responsiveness according to mothers' mental health and socioeconomic status may contribute to the negative effects on infant language development that have been associated with maternal depression and low socioeconomic status. Further, it is possible that maternal depression and low socioeconomic status may lead to similar changes in or patterns of responsiveness.

MATERNAL DEPRESSION AND RESPONSIVENESS

In support of this idea, some studies have found an association between maternal depression and lower maternal responsiveness. Milgrom, Westley, and Gemmill (2004) investigated the link between maternal depression and responsiveness in a sample comprised of 40 inpatient, depressed mothers and 48 non-depressed mothers and discovered that depressed mothers were less likely to respond sensitively to their six-month-old infants' verbal and non-verbal cues than their non-depressed counterparts. Sensitive responses were classified as those that were in tune with infants' current state, as evidenced by their communicative signals; for example, soothing a distressed baby. Similarly, Stanley, Murray, and Stein (2004) found that depressed mothers were less contingent and less affectively attuned to their infants during dyadic interactions. Taken together, these results suggest that maternal depression has a significant effect on responsiveness.

Pearson et al. (2012) expanded on these findings using data from a sample of 872 mother-infant dyads who participated in the Avon Longitudinal Study of Parents and Children (ALSPAC). Non-verbal maternal responsiveness was measured at 12 months during an approximately five-minute-long activity involving sharing a picture book. Responses were categorized as neutral if no instances of positive or negative behaviors were observed and the mother was non-responsive. Positive responses included stroking or kissing the infant, making eye contact, and smiling, while negative responses included avoiding eye contact and poking or pushing the infant. Depression was measured during mid-pregnancy and again when infants were eight months using the Edinburgh Postnatal Depression Scale. Results indicated that women who experienced depression during mid-pregnancy but not when their infants were eight months old, women who experienced depression when their infants were eight months old but not during mid-pregnancy, and women who experienced depression at both timepoints were more likely to exhibit neutral maternal responses than mothers who were not depressed at either point. In other words, both prenatal and postnatal depression were predictors of maternal unresponsiveness, regardless of whether mothers experienced both prenatal and postnatal depression or only one. Hence, it appears that both prenatal and postnatal depression may lead mothers to exhibit unresponsive behavior toward their infants.

Although prenatal and postnatal both seem to have similar effects on maternal responsiveness, Pearson et al. (2012) hypothesized that they may do so via different mechanisms. They suggested that postnatal depression likely disrupts mothers' ability to respond to their infants due to the symptomology

inherent to depressive episodes, including lack of motivation, preoccupation with negative thoughts, and impaired emotional responses. Prenatal depression, on the other hand, was hypothesized to disrupt the changes in neural networks normally brought on by increased hormone levels during pregnancy that lead to maternal responsiveness, specifically reward processing. The presence of a distinct effect of prenatal depression on mothers' responsiveness even when postnatal depression is not apparent suggests that prenatal depression may have long-lasting neurological consequences that impede responsiveness. Furthermore, it is possible that postnatal depression also has a neurological effect on responsiveness, although this remains unknown.

LOW SOCIOECONOMIC STATUS AND RESPONSIVENESS

Socioeconomic status has also been linked to lower maternal responsiveness, though the research exploring this connection is limited at present. To examine the effects of a proposed intervention meant to increase caregiver contingent talk, McGillion et al. (2017) assessed baseline caregiver contingent talk during a 30-minute free play session in a sample of 142 caregivers and their 11-month-old infants, which included caregivers of both high and low SES. This baseline measurement revealed a positive correlation between SES and the proportion of caregiver speech that was contingent on infants' subject of attention, such that high SES caregivers had a higher proportion of contingent responses than their low SES counterparts. Further, there was a marginally significant correlation between SES and how often caregivers vocally responded to infant vocalizations within one second. Interestingly, there was no association between SES and infant expressive communication at 11 months, but a follow-up assessment at 24 months found that infant vocabulary was predicted by differences in infant communication, SES, and caregiver contingent talk at 11 months. Infant receptive communication was not assessed. This suggests that low SES caregivers are less contingently responsive to their infants' vocalizations than higher SES caregivers, in terms of both the promptness and the content of their responses, and that this deficit in contingent responsiveness is partially responsible for infants' subsequent expressive language abilities.

These findings align with other research that has found similar differences in contingent responsiveness and infant language abilities according to socioeconomic status. For example, the previously mentioned findings of Hoff (2003) implicated maternal responsiveness as a full mediator of the association between SES and infant vocabulary growth. Similarly, Hoff-Ginsberg (1991) examined mother-child interaction in a sample of 63 dyads, 30 of which were working class and 33 of which were upper-middle class. The mean age of the children was 21.6 months. Mothers' contingent responses, behavior directives, and conversation-eliciting utterances were rated using transcripts of videotaped interactions between mothers and their children at home during mealtime, dressing, book reading, and play; contingent responses were defined as topic-continuing replies to children's vocalizations, behavior directives as attempts at directing children's behavior or attention, and conversation-eliciting utterances as questions intended to generate verbal responses and prompts to answer questions that had previously been asked. Upper-middle class mothers were more likely to respond to their children with topic-continuing replies and less likely to attempt to direct children's behavior and attention than working class mothers, but no association between SES and conversation-eliciting utterances was found.

The finding that working class mothers were more likely to use language to direct their children is salient in that those attempts at directing behavior often involve turning the infants' attention away from their current focus, which is essentially the opposite of contingent responding. Thus, low SES mothers' increased attempts at directing infants may further detract from the learning opportunities and encouragement conferred by contingent responsiveness. It is worth noting, however, that providing directives is certainly sometimes a necessary and unavoidable part of parenting (e.g., when an infant is doing something dangerous). Furthermore, directives are helpful and responsive in some cases. For example, when infants lose focus and need guidance, directing their attention to a new object or event is an appropriate, beneficial response that provides the infant with more stimulation and learning opportunities. Thus, directiveness and responsiveness are not mutually exclusive; directiveness only becomes problematic when it is repeatedly used to redirect infants' attention to the extent that it inhibits

their ability to interact with their environment and prevents them from fully participating in interpersonal relationships.

Tomasello and Farrar (1986) found evidence for the learning-impairing effects of directiveness aimed at redirecting infants' attention using two studies of mother-infant interactions. The first study examined the naturalistic interactions of 24 mother-infant dyads. It found that maternal references to subjects that 21-month-old infants were already focused were positively correlated with vocabulary, while attempts at redirecting the child's attention to a different subject were negatively correlated with it. In the second study, an unfamiliar adult attempted to teach novel words to 10 17-month-old infants and found that infants more readily learned words that referred to an object they were already focused on than words that were used to attempt to redirect them. Thus, it appears that directives that attempt to redirect infants' attention may hinder their ability to learn new words, eventually leading to vocabulary deficits. By contrast, following the infants' focus seems to promote word learning. This suggests that infants may learn language best when they are allowed to take a leading role in interpersonal interactions and guide their own inquiry into their environment.

Although present research points to a connection between SES and maternal responsiveness, questions remain regarding the reasons this relationship exists. One possible explanation proposed by Evans, Boxhill, and Pinkava (2008) is that low-income mothers have less access to social support and greater levels of stress than high SES mothers. They assessed maternal responsiveness, maternal stress, and maternal social networks in a sample of 223 mothers and their seventh to eight grade children, of whom 53% were low income and found that low SES mothers were less responsive to their children. Maternal responsiveness in this case was reported by the mothers' children using a rating scale that measured instrumental (e.g., help with homework) and emotional (e.g., willingness to talk to me when needed) responsiveness. Furthermore, low SES mothers also had higher levels of stress and smaller social support networks than higher SES mothers, and maternal stress and social support partially mediated the relationship between SES and maternal responsiveness. Although this study examined adolescents rather than infants and understandably operationalized maternal responsiveness differently, it is reasonable to assume that the elevated levels of maternal stress and reduced social support of low SES mothers revealed by the study are likely applicable to mothers of infants as well and that this may explain the association between SES and elements of maternal responsiveness more relevant in infancy, like contingent responsiveness.

IMPLICATIONS AND FUTURE RESEARCH

Indeed, maternal depression and low socioeconomic status may negatively affect infant language development via differences in maternal responsiveness. Specially, depressed mothers and low SES mothers both appear to respond less contingently to their infants, both in terms of promptness of responses and the tendency of responses to align with infants' interests and subjects of attention. Contingent responsiveness has been found to be beneficial to infant language development, likely because it facilitates infant object and environment exploration, engages infant attention, provides additional linguistic input about subjects of infants' focus, and communicates to infants a sense of safety and encouragement. Thus, decreased responsiveness may deprive infants of these benefits and partially explain why infants of depressed and low SES mothers appear to experience delays in language development relative to their peers.

Furthermore, research suggests that although depression and low SES both impact maternal responsiveness, they do so via different mechanisms. Depression's negative effect on responsiveness has been theorized to be the result of its symptomology's effect on mothers' motivation, interest, and emotional state and possibly even neurological changes. Low SES, on the other hand, seems to relate to lower levels of social support and higher levels of maternal stress that may create unique parenting challenges, prevent mothers from being fully emotionally available, and/or lead them to value different styles of mother-infant interaction. These differences are important to recognize because they provide a glimpse into how certain disadvantages relate to mothers' specific relational difficulties in their relationship with their infant. Mothers experiencing either depression or financial struggle may have different needs to address responsiveness deficits if these deficits are caused by different aspects of their

situation. Additionally, because maternal depression and low SES may be conflated in research and often occur together, mothers who are both depressed and of low SES may have compounded struggles due to the individual struggles conferred by both statuses and require extra support.

Maternal depression and low SES also appear to lead to different types of deficits in maternal responsiveness. Maternal depression has been linked to less sensitive responses and even to unresponsiveness, which likely reflect the nature of the illness and its emotional and mental impact on those who suffer from it. Contrastingly, low SES has been associated with low responsiveness *and* increased use of directives, which may imply that low SES mothers have different values regarding the communicative relationship with their infants or possibly that directives are more necessary or useful in this context. Additional research is needed to fully understand these differences and determine the exact nature of the effects maternal depression and SES have on responsiveness.

The connection between maternal depression and low SES regarding their impact on infant language development via maternal responsiveness suggests that the relational qualities of language are a critical aspect of fostering infant language development. The ways in which mothers respond to their infants matter because they help infants gain an understanding of their role in their interpersonal world and actively engage in the natural classroom that is their environment, which facilitates language development and nurtures infants' sense of self. Future research should aim to uncover the full extent of maternal responsiveness's impact on language development to better understand how to best structure interventions aimed at improving infant language development in a variety of disadvantageous situations, including in the context of financial strain and maternal depression. Interventions aimed at increasing maternal responsiveness may be efficacious for both depressed mothers and low SES mothers, though certain differences regarding the facets of responsiveness impacted by each may require more individualized approaches.

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