The Effects of an Intervention on Maternal Sensitivity and Infant Attachment Quality in a High-Risk Population

by

Jessica Velez

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Jessica Velez

Approved: _____

Mary Dozier, Ph.D.
Professor in charge of thesis on behalf of the Advisory Committee

Approved: _____

Caroline Roben, Ph.D.
Committee member from the Department of Psychological and Brain Sciences

Approved: _____

Tania Roth, Ph.D.
Committee member from the Board of Senior Thesis Readers

Approved: _____

Michelle Provost-Craig, Ph.D.
Chair of the University Committee on Student and Faculty Honors

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ABSTRACT

Children who face early childhood adversity, such as abuse and neglect, are vulnerable to problematic long-term outcomes. Experiencing these types of insensitive and frightening parenting could lead children to develop insecure or disorganized attachments to their caregivers. Attachment insecurity and disorganization in children are predictive of many long-term consequences such as difficulties with peers, behavior problems, and dissociative symptoms (Carlson, 1998; Fearon et al., 2010; Groh, Roisman, Van IJzendoorn, Bakersman-Kranenburg, & Fearon, 2012). The Attachment and Biobehavioral Catch-up (ABC) intervention was designed to promote the development of secure and organized attachments by helping parents be more nurturing and sensitive to their child's cues. In this study, we examined whether the ABC intervention would affect maternal sensitivity and infant attachment quality in a sample of 24 high-risk mother-infant dyads. Assessments of maternal sensitivity were collected pre- and post- intervention. Assessments of infant attachment quality were collected post-intervention. Maternal sensitivity improved from pre- to post-intervention. Group differences for infant attachment quality were not significant.

Chapter 1

INTRODUCTION

Early adverse experiences, such as abuse and neglect, jeopardize a child's psychological, physiological and emotional development. Children who experience these types of adversity face environments that hinder their ability to develop organized and secure attachments. In order to develop secure attachments to their parents, children need their parents to be responsive to their signals and needs, especially when they are distressed (Ainsworth, Blehar, Waters & Wall, 1978; De Wolf and Van IJzendoorn, 1997). When children do not experience this kind of responsive and nurturing care, they are at risk of developing insecure attachments to their caregivers. Children with parents who exhibit behaviors that are frightening, such as abuse and neglect, are at risk for developing a disorganized attachment to their parent (Carlson 1998; Cyr, Euser, Bakermans-Kranenburg, & Van IJzendoorn, 2010; Van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Attachment insecurity and disorganization are predictive of problematic outcomes in childhood and adulthood, such as difficulties with peers, behavior problems, and dissociative symptoms (Carlson, 1998; Fearon et al., 2010; Groh, Fearon, Bakersman-Kranenburg, Van IJzendoorn, Steele, & Roisman, 2014; Groh, Roisman, Van IJzendoorn, Bakersman-Kranenburg, & Fearon, 2012; Haltigan & Roisman, 2015). The Attachment and Biobehavioral Catch-up (ABC) intervention, developed by Dr. Mary Dozier and colleagues at the University of Delaware, aims to improve the quality of caregiving for children with early adversity by creating a more sensitive environment.

Specifically, parents are taught and encouraged to exhibit three target behaviors: nurturance, following the lead with delight, and non-frightening behaviors (Bernard, Dozier, Bick, Lewis-Morrarty, Lindhiem, & Carlson, 2012). The current study investigates the effect of the ABC intervention on maternal sensitivity and attachment quality in a group of high-risk parents.

Maternal Sensitivity

Mary Ainsworth (1969) defined maternal sensitivity on four scales: sensitivity to the baby's signals, cooperation with baby's ongoing behavior, physical and psychological availability, and acceptance of the baby's needs. When parents meet their infants' needs in these ways, they will act as a buffer between infants and the stressful elements of the environment and promote the development of secure, organized attachments. Parents are less capable of providing this kind of sensitive environment for their infants when they are experiencing higher levels of life stress, frequent negative life events, or problems with drugs and alcohol (Belsky & Fearon, 2008).

Infant Attachment Quality

Attachment reflects the child's expectations of parent availability as a result of the parent's ability to respond to the child's cues (Ainsworth, et al., 1978). Infants who experience consistent, timely and appropriate responses from their parents are likely to develop secure attachments to their parents. Over time, these infants learn that they can trust their parents to respond to their distress cues. On the other hand, children who do not receive consistent and appropriate responses to their distress cues are at risk for developing insecure attachments. Children with both secure and

insecure attachments learn to expect a certain type of response from their parents. They are then able to use this expectation to develop different strategies to cope with stressful situations.

Parents who exhibit frightening behaviors put their child at risk for developing disorganized attachments. Disorganized attachments represent a breakdown in the strategy used to cope with stressful situations and often indicate that a child is uncertain of how his or her parent will respond (Main and Solomon, 1990). There are a number of behaviors that are characteristic of children with disorganized attachments. For example, while distressed, the child may clearly signal for his or her parent but simultaneously back away as the parent approaches. Whereas most children with secure attachments would go to their parents after a separation from them, disorganized children might cry for the parent while simultaneously backing away from the parent. Disorganized attachment predicts problematic outcomes later in life such as externalizing problem behavior and aggression in school age children and dissociative symptoms in middle school through adulthood (Carlson 1998; Fearon et al., 2010; van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Children in higher-risk families are more likely to exhibit patterns of disorganization (Cyr et al., 2010; Van IJzendoorn, et al., 1999).

Attachment and Biobehavioral Catch-up Intervention

The Attachment and Biobehavioral Catch-up intervention (ABC) was developed by Dr. Mary Dozier and colleagues at the University of Delaware. The ABC intervention aims to enhance children's regulatory abilities by targeting parents' ability to provide a responsive, predictable environment (Bernard et. al., 2012). For 10 weekly sessions, trained clinicians, called "parent coaches," meet in the family's

home with all interested members of the family. In each session the parent coaches deliver manual content about the importance of being nurturing, following their child's lead during interactions, and behaving in non-frightening behaviors for an infant's emotional development. Nurturance involves a parent responding with comfort when the child becomes upset, for example, picking up and holding the child when he or she cries. Following the lead involves the parent playing along with the child's game in a contingent manner. For example, if the child holds out a toy to the caregiver, the parent would take the toy. Frightening behaviors involve over-stimulating play (tickling), or loud and scary voices or threats. (e.g., telling a child that a monster will get her if she doesn't behave).

Along with the manual content, parent coaches make "In The Moment" comments. These comments are used to directly reinforce or redirect a parent's interaction with his or her child to encourage target behaviors: nurturance, following the lead with delight, and non-frightening behaviors. When a parent coach sees a parent display a positive target behavior, he or she is instructed to make a positive comment, such as "Great job following his lead - he held out the block to you and you took it from him." When a parent coach sees a missed opportunity for a positive target behavior, he or she is instructed to scaffold or shape the parent with a comment, such as "See how he's banging the blocks together, why don't you try banging the blocks too?" By making comments as the interaction occurs, parents are given feedback regarding their behavior and are able to practice these new skills immediately. In addition, the positive feedback that the comments provide helps the parents feel more confident in their parenting.

Efficacy of the ABC Intervention

The ABC intervention has been effective in improving parent-child interactions in several different samples. Bick and Dozier (2013) reported that foster parents of high-risk infants who received the ABC intervention showed improved sensitivity compared to the foster parents who received the control intervention (DEF). Bernard, Yarger, Meade and Dozier (in preparation) found that ABC improved sensitivity of parents of children adopted internationally, such that parents who received the ABC intervention showed higher rates of sensitivity than the parents in the control group. Bernard et al. (2012) reported that children of high-risk parents who received the ABC intervention were significantly more likely to develop organized and secure attachments compared to children whose parents received the DEF control intervention.

Current Study

The current study is a small pilot study that aims to examine the effect of the ABC intervention on maternal sensitivity and infant attachment quality through a randomized clinical trial of 24 high-risk mother-infant dyads. Given the previous findings regarding sensitivity (Bernard et al., in preparation; Bick & Dozier, 2013), mothers who received the ABC intervention were expected to demonstrate an increase in sensitivity from pre-to post-intervention. Given the previous findings regarding attachment (Bernard et al., 2012), group differences were expected to emerge for attachment disorganization, with more infants of mothers who received the ABC intervention developing organized and secure attachments than infants of mothers who received the control intervention.

Chapter 2

METHODS

Participants

This study included 24 high-risk mother-infant dyads. We recruited participants from a list of families with unsubstantiated abuse or neglect accusations that was provided by the state's child welfare office. If interested, parents were then screened for inclusion criteria, and consented into the study. The study consisted of mothers with infants younger than 20 months at the time of the screening visit (M=14.6), who were rated lower than the midpoint on the sensitivity scale or higher than the midpoint on intrusiveness, and who reported an annual income that was less than $35,000 ($M$=14,725). Demographic characteristics of the families are provided in Table 1. The infants (54% male) were African American (54%), European-American (37.5%), biracial (4%) and other (4%).

Procedure

Trained clinicians visited the mothers and their infants at the families' homes to collect demographic information and to assess mothers' sensitivity in a play assessment. Mothers who fit the inclusion criteria (see above) were invited to enroll in the study. The 24 participants who met the criteria were randomly assigned to either the Attachment and Biobehavioral Catch-up Intervention (ABC) or the Developmental Education for Families (DEF) control intervention. Each intervention session was recorded and interventionists met for weekly supervision of their session to maintain

intervention fidelity. Four weeks after the final intervention session, each dyad was brought back to the lab at the University of Delaware to participate in a follow-up assessment.

Measures

Maternal Sensitivity. The mothers' sensitivity was measured by a 7-minute play assessment at 12 time points: the consent visit, the beginning of each of the ten intervention sessions, and the follow-up visit one month post-intervention. The play assessments collected at the consent visit and session 1 were averaged for pre-intervention sensitivity score, and the session 10 and post-visit assessments were averaged for post-intervention sensitivity score. The caregiver was given a standard set of toys and was asked to "Play with your child as you normally would." For the current study, sensitivity was defined as the caregiver's following the child's lead (e.g., the child bangs two blocks together and caregiver bangs two blocks together imitating child; Bernard, Meade & Dozier, 2013). Sensitivity was scored on a 5-point Likert scale where a higher score reflects greater sensitivity. An expert, blind coder at the University of Delaware coded each play assessment.

Infant Attachment Quality. The Strange Situation (Ainsworth et al., 1978) was used to measure infant attachment quality. The infant Strange Situation involves a series of increasingly challenging conditions, including two separations, during which the mother leaves the child alone or with an unfamiliar research assistant for 3 minutes, and two reunions, during which the mother reenters the room and greets the child. The procedure lasts about 24 minutes and is designed to assess the infant's attachment quality to his or her parent through behaviors observed during the reunions.

The infants were first classified according to the three organized patterns: secure (B), avoidant (A), and resistant (C). Infants classified as secure may or may not show distress during separations, but return their parent's greeting at the reunion and are able to return to play. Infants classified as avoidant do not show overt signals of distress during separations and do not return their parent's greeting at the reunion. Infants classified as resistant usually show strong distress during the separations, stay distressed despite making contact with their parent at reunion, and are unable to return to play (Ainsworth et al., 1978). The infants were also assigned a rating of attachment disorganization on a scale of 1 to 9 as specified by Main and Solomon (1990), and infants were classified as disorganized if they received a score of 5 or higher. Infants classified as disorganized show a breakdown in their strategy to cope with the separation and upon their parent's return the infants show behaviors of fear, confusion or general disorganization. For example, an infant may cry in his or her parent's absence, but upon reunion, back away from the parent while crying more intensely. Infants who met Main and Solomon's (1990) disorganization criteria displayed one or more of the following behaviors: sequential displays of contradictory behaviors, simultaneous displays of contradictory behaviors, misdirected or incomplete movements and expressions, stereotypies or anomalous postures in the presence of parent, freezing and stilling in presence of parent, direct indices of apprehension regarding the parent, or direct indices of disorganization (Main & Solomon, 1990) A blind, expert coder scored assessment.

Chapter 3

RESULTS

Preliminary Analyses

Preliminary analyses showed there were no significant group differences between families assigned to ABC and DEF for parent ethnicity, child ethnicity, parent age, child's age at time of the Strange Situation, or parent income (see Table 1). All 24 consent-visit play assessments, all 24 intervention session 1 play assessments and all 24 post-intervention play assessments were included in the analyses. Two of the 24 session 10 play assessments were not collected because two dyads did not complete all 10 intervention sessions. The Strange Situation was collected for all; however due to technological difficulties, only 23 could be coded.

Primary Analyses

Maternal Sensitivity. The sensitivity scores for consent visit and session 1 were averaged together for a single pre-intervention score (M= 2.1; SD= 0.8). The sensitivity scores for session 10 and post-intervention visit were averaged together for a single post-intervention score (M= 2.9; SD= 0.8). For the two dyads for whom only a post-intervention assessment was available, the score for that assessment was used rather than an average. An analysis of variance (ANOVA) showed that there was a significant interaction between changes in maternal sensitivity from pre- to post-intervention: F (1,20) = 5.2, p= .03; see Table 2; see Figure 1). Follow-up analyses showed there was a significant increase in maternal sensitivity from pre-to post-

intervention for parents who received the ABC intervention (t (11) = 4.075, p = .002) but not for parents who received DEF intervention (t (9) = .968, p = .36).

Attachment Security. A chi-square analysis revealed that intervention did not have a significant effect on attachment security, $_{X}^{2}$ (1, N = 23) = 0.38, p= .56. Within the ABC group, 5 infants (42%) displayed a secure attachment and 7 infants (58%) displayed an insecure attachment. Within the DEF group, 6 infants (55%) displayed a secure attachment and 5 infants (45%) displayed an insecure attachment.

Disorganized Attachment. A chi-square analysis revealed that intervention did not have a significant effect on attachment disorganization, $_{X}^{2}$ (1, N = 23) = 0.52, p= .47. Within the ABC group, 7 infants (58%) displayed an organized attachment pattern and 5 infants (42%) displayed a disorganized attachment. Within the DEF control group, 8 infants (73%) displayed an organized attachment and 3 infants (27%) displayed a disorganized attachment.

Table 1 Demographic Information by Intervention Group

Demographics by Intervention Group

Variable	ABC (*n*= 13)	DEF (*n*= 11)	
Caregiver Ethnicity			$p = .39$
African-American	38.5 (5)	54.5 (6)	
European-American	53.8 (7)	27.3 (3)	
Hispanic	7.7 (1)	18.2 (2)	
Caregiver Age	24.70 (4.19)	28.82 (7.09)	$p = .09$
Child Age	13.18 (4.38)	15.14 (3.64)	$p = .25$
Child Gender			$p = .43$
Male	61.5 (8)	45.5 (5)	
Female	38.5 (5)	54.5 (6)	
Household Income	$11,015.54 ($8,438.78)	$13,688.89 ($11,463.91)	$p = .54$

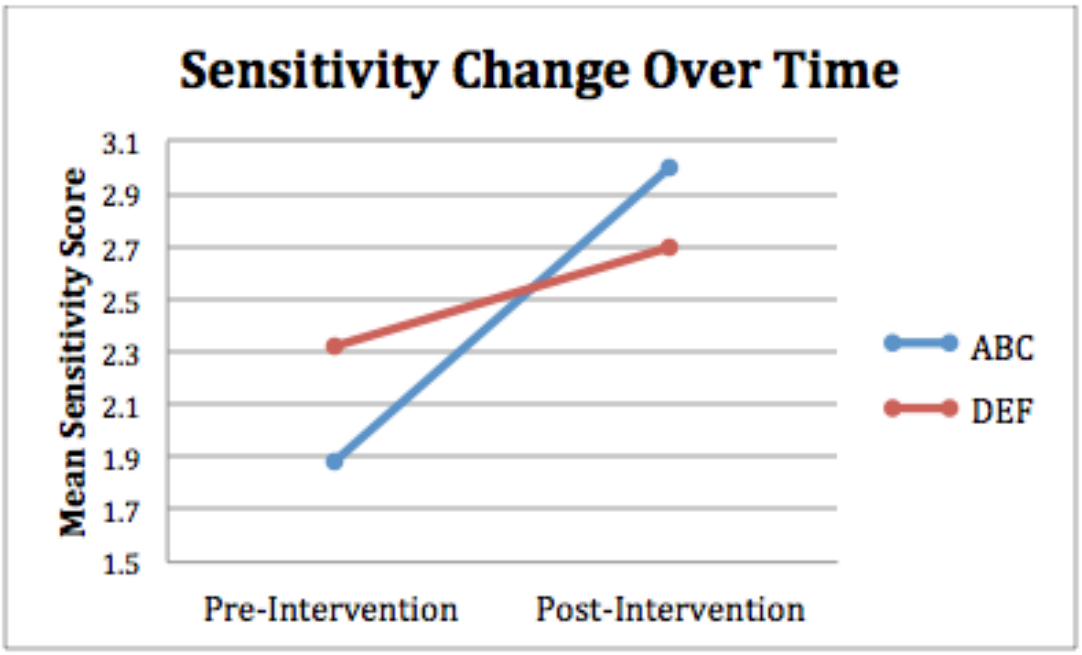
Table 2 Analysis of Variance (ANOVA) Summary for Maternal Sensitivity

Analysis of Variance (ANOVA) Summary for Maternal Sensitivity

	Sum of Squares	*df*	*F*	*p*
Between subjects				
Intercept	274.09	1	372.12	<.01
Intervention (DEF=0, ABC=1)	0.21	1	0.28	.60
Error	14.73	20		
Within subjects				
Time	5.16	1	12.84	<.01
Time*ABC	2.09	1	5.20	.03
Error	8.03	20		

Note: DEF = Developmental Education for Families. ABC = Attachment and Biobehavioral Catchup.

Figure 1 Maternal Sensitivity Change Over Time



Chapter 4

DISCUSSION

In the current study we examined the effect of the ABC intervention on maternal sensitivity and infant attachment quality through a randomized clinical trial of 24 high-risk mother-infant dyads. We investigated whether the ABC intervention would improve maternal sensitivity over the 10-week intervention. We also investigated whether the infants in the ABC intervention group would have more secure and organized attachments than the infants in the DEF control group. Consistent with prior findings (Bernard et al., in preparation; Bick & Dozier, 2013), results of the study showed a change in sensitivity from pre- to post-intervention, such that mothers who received the ABC intervention had increased sensitivity from pre- to post-intervention. To see a significant change in parenting is especially impressive considering the high-risk nature of this sample. Caregivers in the study faced a variety of negative life events including problems with drug and alcohol use, divorce, depression, unemployment and frequent loss and change in housing. Despite the many stressors, the caregivers were able to change their parenting in as little as 10 weeks. The literature suggests the more sensitively a parent responds to his or her child, the better the child's outcomes in areas such as self-control (Feldman et al., 1999; Lindsey et al. 2009), self-regulation (Harrist & Waugh, 2002) and vocabulary development (Harrist & Waugh, 2002; Harris et al., 1996).

Overall, 8 of the 23 infants (35%) were classified as displaying disorganized attachment patterns, which is similar to the meta-analytic estimates of the frequency of

disorganization among high-risk population (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). In contrast to expectations, there were no significant group differences for attachment security or attachment disorganizations between children of mothers who received the ABC and DEF interventions. However, the results from the current study supporting the efficacy of ABC improving maternal sensitivity, along with previous research supporting the efficacy of the ABC intervention improving infant attachment quality, suggest that perhaps this sample was too small to detect differences.

Like all studies, this current study has several limitations. One limitation of this study is the lack of a baseline measure of attachment. Without the baseline of attachment, investigating the change of attachment quality over time can only be inferred. In addition, given that the sample size was small, the possibility of detecting statistical significance was limited. Perhaps with a larger sample size group differences for attachment security and disorganization would emerge.

Although the literature on attachment is vast and constantly expanding, there are still many unanswered questions about the formation of attachment. The null findings of this study suggest that it may take longer than two months of sensitive caregiving for an infant to develop a more organized attachment. Future exploration of this topic should work to determine the length of time needed to develop and change one's attachment quality. In addition, future work should investigate whether there are changes in attachment from pre- to post-intervention by including an assessment of attachment before the intervention, rather than only at post-intervention.

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