

Attachment and Biobehavioral Catch-up (ABC)



Goals

The Attachment and Biobehavioral Catch-up (ABC) intervention targeting caregivers of infants 6 months to 2 years old who have experienced early maltreatment, and/or disruptions in care that lead to behaviors that push caregivers away.

Children who have experienced early adversity especially need nurturing care and often behave in ways that push caregivers away. Parents may also behave in frightening ways that serve to dysregulate children's behavior. The ABC intervention is based in attachment theory and stress neurobiology. Three key components of the program are designed to help parents to: 1) provide nurturing care even if children fail to elicit it, do not appear to need it, and/or it does not come naturally to parents; 2) follow their child's lead and provide a responsive predictable environment that enhances young children's behavioral and regulatory capabilities; and 3) decrease behaviors that could be overwhelming or frightening to a young child and increase a sense of security.

Program Features

The ABC Intervention is a training program for caregivers of infants and young children, including high-risk birth parents and caregivers of young children in foster care, kinship care (such as a grandparent raising a grandchild), and adoptive care. The program as originally designed starts with children as young as 6 months of age and goes up to 24 months. Developers are beginning to test its use with young children age 2 and older.

The intervention includes 10 structured sessions held in the home weekly for approximately 60 minutes each. Sessions incorporate the use of video for providing immediate feedback and homework. Caregivers and the identified child must be present for all sessions, although others are welcome to attend. Although a manual guides session content, a parent coach observes the parent's interactions with his or her child and provides support and "in the moment" feedback that targets caregiver behaviors of nurturance and non-frightening behaviors. Potential parent coaches first participate in a half-hour screening to determine their suitability for training. If they pass the screening, coaches attend 2 to 3 days of training and a year of supervision (1.5 hours weekly, including group supervision and individual supervision with "in the moment" commenting) to

Attachment and Biobehavioral Catch-Up (ABC) Snapshot

- **EC Profile Indicator:** FS30 -Rate of investigated reports of child abuse/neglect per 1000 children ages 0-5
- **Clearinghouse rating:** Rating of 1 (Well-Supported by Research Evidence) from the California Evidence-Based Clearinghouse for Child Welfare
- **Research supports** use with foster care families caring for infants or toddlers or high-risk mothers with infants or toddlers
- **Related Smart Start outcomes:**
 - Improvements in parent knowledge
 - Increase in positive parenting practices
- **Training required:** Yes
- **Staff qualifications:** University of Delaware assesses aptitude of each potential candidate before acceptance
- **Frequency:** Weekly
- **Dosage:** 10 weeks of 1-hour weekly sessions
- **Minimal service threshold:** 10 weeks of 1-hour weekly sessions
- **Suggested Assessments:** Questionnaire about Children's Crying

become a Certified Parent Coach.

The goals of ABC are to:

- Increase caregiver nurturance, sensitivity, and pleasure
- Decrease caregiver frightening behaviors
- Increase child attachment security and decrease disorganized attachment
- Increase child behavioral and biological regulation

ABC is rated a 1 on the California Evidence-Based Clearinghouse for Child Welfare scientific rating scale, indicating that it is a program with the strongest research evidence among those rated. The California Clearinghouse independently reviews and disseminates information about evidence-based treatment for child welfare.

Evidence for ABC is focused on its use with two specific populations including foster parents of young children and high risk mothers with young children.

ABC Target Audience: Foster Parents with Young Children



Documented Outcomes

	Type of Study	Parent		Child		
		Decreased Avoidance*	Increased Maternal Sensitivity*	Improved Task Achievement	Enhanced Theory of Mind Function	Decreased Cortisol production
Dozier et.al. (2009) ⁱ	Experimental	✓				
Lewis-Morrarty et.al. (2012) ⁱⁱ	Experimental			✓	✓	
Dozier et.al. (2006) ⁱⁱⁱ	Experimental					✓
Dozier et.al. (2008) ^{iv}	Experimental					✓
Bick and Dozier (2013) ^v	Experimental		✓			

This table contains outcomes found to be associated with the program or approach. Individual studies may contain additional outcomes that were tested and not found to be associated with the program or approach.

*Aligned with Smart Start outcome *Increase in positive parenting practices.*

Research Evidence for ABC when targeted to Foster Parents of Young Children

- The program addresses three issues that may be present in foster care families caring for infants and toddlers: (a) the ability of the children to regulate behavior and physiology; (b) infant-toddler behaviors that create barriers to nurturance (or, the occurrence of attachment disorganization); and (c) the ability of foster parents to provide nurturance.
- Studies have established the ABC program can effectively mitigate some, if not all, of these issues.

Review of Experimental and Quasi-Experimental Studies

Citation	Dozier, M., Lindhiem, O., Lewis, E., Bick, J., Bernard, K., & Peloso, E. (2009). Effects of a foster parent training program on young children's attachment behaviors: Preliminary evidence from a randomized clinical trial. <i>Child and Adolescent Social Work Journal, 26(4)</i>, pp. 321-332.
Population and Sample	The study incorporated 46 children who received either Attachment and Biobehavioral Catch-up (ABC) or Developmental Education for Families (DEF). At the time of post-assessment, children ranged from 3.6 to 39.4 months in age. Half of the child sample was boys; 63% of the sample was African-American (followed by 26% non-Hispanic White, 3% Hispanic, and 7% biracial). The two groups did not differ with regard to child age, gender, ethnicity, parental income, or education.
Methodology	Experimental with random assignment
Purpose	The study was designed to assess the effectiveness of ABC. Study findings represent the first follow-up period, which occurred 1 month after the program's completion and post-assessments. The study team compared ABC to DEF, both of which consist of 10 individually-administered sessions; sessions were completed, approximately, weekly.
Measures & Assessments	<ul style="list-style-type: none"> Parent Attachment Diaries
Study Implementation	<ul style="list-style-type: none"> The program's structured training manuals were used to inform weekly training sessions, which lasted for 1 hour each for a total of 10 weeks. Trainings occurred within foster parent homes. The study team removed DEF components that involved parental sensitivity to child cues, to "distinguish it from the experimental (ABC) intervention." All sessions were videotaped to allow assessments of fidelity to the training manual.
Staff Qualifications	<ul style="list-style-type: none"> Professional social workers or psychologists with at least 5 years of clinical experience.
Key Findings	<p>Avoidance</p> <ul style="list-style-type: none"> There were significant differences between treatment and comparison groups on measures of avoidance ($p < .05$). Specifically, ABC parents exhibited less avoidance than DEF parents. <p>Security</p> <ul style="list-style-type: none"> The study team failed to find statistically significant differences between treatment and comparison groups on measures of security.

Citation	Lewis-Morrarty, E., Dozier, M., Bernard, K., Terracciano, S. M., & Moore, S. V. (2012). Cognitive flexibility and theory of mind outcomes among foster children: Preschool follow-up results of a randomized clinical trial. <i>Journal of Adolescent Health, 51</i>, pp. S17-S22.
Population and Sample	<p>The study incorporated 61 children, ages 4 to 6 years. Study children were foster children, 37 of whom were involved in the foster care system before age 3. The study randomly assigned the children when they were younger than 20 months of age, to either Attachment and Biobehavioral Catch-up (ABC; $n=17$) or a control intervention group ($n=20$). There also were comparison children ($n=24$) who had no experience in foster care.</p> <p>All parents in the study were female. Study families had a mean family income of \$78,425. Of the 37 foster care children, 35 were adopted or reunited with birth parents, at a mean age of 19.9 months.</p> <p>Children in foster care were younger than study children who were not in foster care ($p < .00$). In addition, there were significant differences in gender and ethnicity ($p < .01$ and $p < .00$, respectively). There also were significant differences in parent education and family income ($p < .00$), wherein parents of children who were not in foster care had more education and earned a higher annual income, compared to ABC and foster care parents. In addition, ABC parents earned a higher annual income than foster care parents ($p < .01$).</p> <p>Finally, ABC and foster participants were significantly different from non-foster care participants on a prenatal risk index ($p < .00$), wherein foster care children were more likely to have experienced exposure to drugs and alcohol, prenatally, compared to non-foster group children.</p>
Methodology	Experimental with random assignment to one of two intervention groups and a third comparison group
Purpose	The study was designed to assess the status of children whose parents participated in an earlier, randomized, study of ABC, which occurred when the children were infants and toddlers.
Measures & Assessments	<ul style="list-style-type: none"> Dimensional Change Card Sort Penny-Hiding Game Prenatal Risk Indices (parent report)

	<ul style="list-style-type: none"> • Peabody Picture Vocabulary Test, third edition (PPVT-III) • Brief Symptom Inventory • Life Experiences Scale
Study Implementation	<ul style="list-style-type: none"> • The first set of assessments included collection of consent, background information, the Prenatal Risk Indices, the Brief Symptom Inventory, and the Life Experiences Scale. • The study team collected child-level data using the Penny-Hiding Game and the PPVT. • At a subsequent data collection, the study team collected the Dimensional Change Card Sort • There were annual assessments with foster children until they turned 6 years of age.
Staff Qualifications	<ul style="list-style-type: none"> • Not addressed
Key Findings	<p>Tasks</p> <ul style="list-style-type: none"> • The study team found a significant main group effect ($p < .008$), wherein foster care children performed worse on tasks, overall, than ABC and non-foster care children. • There was a significant interaction between task type and group ($p < .03$), wherein foster care children scored lower on the post-switch card sort, compared to both ABC and non-foster care children. Note, a significant interaction was not found on the pre-switch card sort. • ABC children scored significantly higher than foster care children on the post-switch card sort ($p < .00$), with a large effect size of $d = 1.06$. • There were not significant differences between ABC children and children in the non-foster care group on the post-switch card sort. • There were significant differences between children in the non-foster care group and children in the foster care group ($p < .00$), where foster care children scored lower than non-foster care children on the post-switch card sort. The effect size was large ($d = 1.12$). <p>Theory of Mind</p> <ul style="list-style-type: none"> • There was a significant main group effect ($p < .01$), wherein ABC children scored higher than foster care children on the Theory of Mind task ($p < .01$), with an effect size of $d = 1.08$. • There were not significant differences between ABC children and non-foster care children on Theory of Mind scores. • Foster care children scored marginally lower than non-foster care children on Theory of Mind scores. • Independent variables associated with Theory of Mind accounted for 17.4% of score variance, compared to 13% of variance accounted for by group. • The study team found that prenatal risk factor scores were not significantly associated with measures of cognitive flexibility or Theory of Mind. ABC children exhibited stronger cognitive flexibility and Theory of Mind scores, compared to foster care children in the control group intervention. ABC children were not significantly different from non-foster care children on cognitive flexibility and Theory of Mind scores.

Citation	Dozier, M., Peloso, E., Lindhiem, O., Gordon, M. K., Manni, M., Sepulveda, S., Ackerman, J., Bernier, A., & Levine, S. (2006). Developing evidence-based interventions for foster children: An example of a randomized clinical trial with infants and toddlers. <i>Journal of Social Issues, 62(4), pp. 767-785.</i>
Population and Sample	<p>The study incorporated 60 foster care children, who ranged in age from 3.6 to 39.4 months, who completed either Attachment and Biobehavioral Catch-up (ABC) or Developmental Education for Families (DEF). The study also included 104 children who were not in the foster care system, who ranged in age from 20 to 60 months.</p> <p>There were no significant differences among ABC and DEF groups with regard to child age, gender, or ethnicity.</p>
Methodology	Experimental with random assignment to one of two intervention groups and a third comparison group
Purpose	The study examined the effectiveness of ABC for working with young children involved in the foster care system. ABC was designed to address child regulatory capabilities while DEF was designed to address cognitive and linguistic development.
Measures & Assessments	<ul style="list-style-type: none"> • Salimetrics, Inc. High Sensitivity Salivary Cortisol Enzyme Immunoassay Kit • Parent's Daily Report (PDR/IT), infant-toddler and preschool versions
Study Implementation	<ul style="list-style-type: none"> • There was random assignment of foster care parents to ABC or DEF. • Both ABC and DEF interventions consisted of 1 hour weekly training sessions that occurred for 10 weeks. The programs were provided in the home. • The DEF intervention did not include components related to parent sensitivity to child cues. • All sessions were video-recorded to allow assessments of fidelity to a structured training manual. • To the extent possible, the format, duration, and frequency of the interventions were similar for both interventions

Staff Qualifications	<ul style="list-style-type: none"> Parent trainers for both interventions were professional social workers or psychologists with at least 5 years of clinical experience
Key Findings	<p>Cortisol Production</p> <ul style="list-style-type: none"> There were significant differences between the ABC and DEF groups on cortisol production ($p < .002$), wherein DEF children exhibited higher cortisol values than ABC children. There were significant differences between the control intervention group and ABC and DEF groups ($p < .001$). There were not significant differences between the experimental intervention group and the typically developing group, wherein there were similar results for the experimental intervention group and typically developing children. <p>Behavioral Problems</p> <ul style="list-style-type: none"> ABC parents reported significantly fewer behavioral problems for toddlers, compared to infants ($p < .05$). This was not the case for DEF parents. The study team did not find the intervention group main effect to be statistically significant and there were not significant differences when only toddler-age children were examined.

Citation	Dozier, M. Peloso, E., Lewis, E., Laurenceau, J., & Levine, S. (2008). Effects of an attachment-based intervention on the cortisol production of infants and toddlers in foster care. <i>Development and Psychopathology</i>, 20, pp. 845-859.
Population and Sample	<p>The study incorporated 93 foster care children who were randomly assigned to either Attachment and Biobehavioral Catch-up (ABC; $n=46$) or Developmental Education for Families (DEF; $n=47$). The study also incorporated 48 children who had no foster care system experience.</p> <p>Children in the study ranged in age from 15 to 24 months.</p> <p>There was a significant difference among groups on gender. Further, the ABC and DEF groups had more children from under-represented minority groups than the comparison group of non-foster care children.</p>
Methodology	Experimental with random assignment to one of two intervention groups and a third comparison group
Purpose	The study examined the effectiveness of ABC, on outcomes related to hypothalamus–pituitary–adrenal (HPA) functioning. More specifically, the study assessed the extent to which participation in ABC helped to normalize HPA functioning in foster care children. ABC was designed to address child regulatory capabilities while DEF was designed to address cognitive and linguistic development.
Measures & Assessments	<ul style="list-style-type: none"> Salimetrics, Inc. High Sensitivity Salivary Cortisol Enzyme Immunoassay Kit
Study Implementation	<ul style="list-style-type: none"> Both the ABC and DEF interventions had 1-hour weekly training sessions, which lasted for 10 weeks. The programs were provided in the home. The DEF intervention did not include components related to parent sensitivity to child cues. After completing the interventions, all children participated in the Strange Situation, which was designed to address infant attachment. All sessions were videotaped, allowing assessments of fidelity to the manual.
Staff Qualifications	<ul style="list-style-type: none"> For both interventions, parent trainers had bachelor’s or master’s degrees in psychology or social work and at least 5 years’ clinical experience.
Key Findings	<p>Cortisol Production</p> <ul style="list-style-type: none"> ABC and comparison group children exhibited lower cortisol levels upon beginning the study, compared to children in the DEF group. Cortisol levels in ABC and comparison group children were not significantly different. The study team failed to find a significant increase in cortisol in any of the three groups, after the Strange Situation. All three groups exhibited negative changes in slopes. The slope for ABC children was not significantly different from zero. The slopes for DEF and comparison children were significantly different from zero ($p < .05$). There were not significant differences among groups with regard to slope. ABC children exhibited lower cortisol levels upon arriving for the Strange Situation, compared to children in the DEF group. Comparison children, with no foster care experience, exhibited lower levels of cortisol than DEF foster care children. Cortisol levels in comparison children were not significantly different from ABC foster care children.

Citation	Bick, J., & Dozier, M. (2013). The effectiveness of an attachment-based intervention in promoting foster mothers’ sensitivity toward foster infants. <i>Infant Mental Health Journal</i>, 34(2), pp. 95-103.
Population and	The study incorporated 96 foster mother and infant dyads, wherein the infants ranged in age from 1 to

Sample	<p>22 months. The dyads were randomly assigned to either Attachment and Biobehavioral Catch-up (ABC; n=44) or Developmental Education for Families (DEF; n=52).</p> <p>The demographic breakdown in foster mothers was: 43% African American, 46% White non-Hispanic, 7% Hispanic, and 4% biracial. The median family income was \$50,000. As regards family structure: 68% of the foster mothers were married, 21% were single, 7% were divorced, and 4% were widowed. As regards education: 19% had not completed high school, 41% had completed high school, 24% had completed an associate's or trade degree, 12% had completed college, and 4% had completed post-college graduate education.</p> <p>There were no differences among foster children with regard to age, duration of foster care placement, prior number of foster care placements, or foster parent age.</p>
Methodology	Experimental with random assignment to one of two interventions
Purpose	The study examined the effectiveness of ABC with regard to maternal sensitivity. The ABC program was designed to "promote sensitive caregiving behavior."
Measures & Assessments	<ul style="list-style-type: none"> • 5-point Likert observation scale of maternal sensitivity • To receive a score of "5" on maternal sensitivity, mothers had to "appropriately and consistently adjust their behavior to respond to their infant's cues for the duration of the interaction."
Study Implementation	<ul style="list-style-type: none"> • Both the ABC and DEF interventions had 1-hour weekly training sessions, which lasted for 10 weeks. • The programs were provided in the home. • The DEF intervention did not include components related to parent sensitivity to child cues. • Maternal sensitivity first was assessed 1 week prior to the beginning of the groups. • Post-assessments varied by child age at the time the intervention groups were completed and occurred at: 30 days after the completion of the intervention program (all children); at 12 or 24 months of age for comparison to a normative group of children (54 children who were 9.5 months old or younger when they completed the sessions received both the 12 month and 24 month assessments; 42 children who were older than 9.5 months when they completed the sessions received the 24 month assessment). • Maternal sensitivity was assessed at 30-days, 12 months, and 24 months after completion of the sessions. • Parent trainers' fidelity to the treatment program was examined on a weekly basis during a group supervision meeting. • Clinical supervisors viewed video recordings of previous intervention sessions and monitored parent trainers' adherence to intervention manual.
Staff Qualifications	<ul style="list-style-type: none"> • Parent trainers who had extensive experience working with parents and infants delivered intervention sessions for both programs.
Key Findings	<ul style="list-style-type: none"> • ABC foster mothers exhibited greater increases in maternal sensitivity scores, compared to DEF foster mothers ($p < .05$). • After controlling for co-variables, there were not differences between ABC and DEF foster mothers' starting values. • There were significant associations between foster mother education level and the duration of current placement, with pre-intervention maternal sensitivity. There were not significant associations of these factors with change in maternal sensitivity scores. • After controlling for child age, duration of placement, and foster mother educational level, the type of intervention predicted the degree of change in maternal sensitivity score. • There was not significant variation in foster mother maternal sensitivity intercept estimates and change in maternal sensitivity scores. • The final model, which included the intervention groups and covariates, explained a significant amount of variance in maternal sensitivity scores (10.5%).

Review of Meta-Analyses

None

Review of Descriptive and Non-Experimental Studies

None

ABC Target Audience: High Risk Mothers or Home Environments with Young Children



Documented Outcomes:

	Type of Study	Parent		Child		
		Increased Maternal Sensitivity	Decreased Maternal Intrusiveness	Decreased Disorganized Attachments	Increased Secure Attachments	Increased Negative Affect Regulation
Yarger et.al. (2016) ^{vi}	Experimental	✓	✓			
Bernard et.al. (2012) ^{vii}	Experimental			✓	✓	
Lind et.al. (2014) ^{viii}	Experimental					✓
Berlin et.al. (2014) ^{ix}	Experimental	✓				

This table contains outcomes found to be associated with the program or approach. Individual studies may contain additional outcomes that were tested and not found to be associated with the program or approach.

Research Evidence for ABC when targeted to High Risk Mothers or Home Environments

- The program is associated with outcomes such as enhanced maternal sensitivity in mothers and reduction in problematic behaviors or enhanced attachments in children.

Review of Experimental and Quasi-Experimental Studies

Citation	Yarger, H. A., Hoye, J. R., & Dozier, M. (2016). Trajectories of change in Attachment and Biobehavioral Catch-up among high-risk mothers: A randomized clinical trial. <i>Infant Mental Health Journal, 37(5)</i> , pp. 525-536.
Population and Sample	The study incorporated 24 mothers and their biological children who ranged in age from 6 to 20 months. Participants were randomly assigned to either Attachment and Biobehavioral Catch-up (ABC; n=13) or Developmental Education for Families (DEF; n=11). Several participants did not qualify to participate due to household incomes greater than \$35,000 or status on parenting behavior criteria.
Methodology	Experimental with random assignment, short-term longitudinal design
Purpose	The study examined the relation of ABC and changes in maternal sensitivity and intrusiveness. The study also examined the “rate and shape” of change in parenting behaviors among parents in the study. Of note, the study authors described ABC’s goals as “to teach parents to provide nurturance to their children when they are distressed; respond in sensitive, contingent ways when children are not distressed; delight in their children; and behave in non-frightening ways.” Similarly, the study authors described the DEF intervention as “adapted from previous interventions shown to improve children’s gross and fine motor skills, cognition, and language abilities.”
Measures & Assessments	<ul style="list-style-type: none"> • Demographic questionnaire • Video-recorded observations of parents playing with their children, coded using an adapted version of the Observational Record of the Caregiving Environment (ORCE)

Study Implementation	<ul style="list-style-type: none"> Eligible participants had unsubstantiated reports of neglect in the state of Delaware. Eligible participants also included incomes of less than \$35,000 and low levels of sensitive behaviors or high levels of intrusive behaviors. Both the ABC and DEF interventions had 1-hour weekly training sessions, which lasted for 10 weeks. The programs were provided in the home. The program is manualized intervention and all sessions were video-recorded for fidelity checks.
Staff Qualifications	<ul style="list-style-type: none"> Experienced interventionists
Key Findings	<ul style="list-style-type: none"> Groups did not differ significantly on baseline levels of sensitivity or intrusiveness. <p>Maternal Sensitivity</p> <ul style="list-style-type: none"> There was a significant difference between ABC and DEF mothers on measures of maternal sensitivity, with ABC mothers assessed as “significantly more sensitive” than DEF mothers. ABC mothers also exhibited a steeper rate of change in maternal sensitivity (.97 unit increase in sensitivity across 10 sessions), compared to DEF mothers (.26 increase in sensitivity across 10 sessions), $p=.04$, effect size of $d=.70$. There was a steeper increase in sensitivity during the first half of the intervention, compared to the second half. <p>Intrusiveness</p> <ul style="list-style-type: none"> There was a significant difference between ABC and DEF mothers on measures of intrusiveness, with ABC mothers assessed as “less intrusive” than DEF mothers. ABC mothers exhibited a 1.22 unit decrease in intrusiveness across 10 sessions, compared to a .26 unit decrease in DEF mothers, across 10 sessions ($p=.02$, $d=-.81$). There was a steeper decline in intrusiveness during the first half of the intervention, compared to the second half.

Citation	Bernard, K., Dozier, M., Bick, J., Lewis-Morrarty, E., Lindhiem, O., & Carlson, E. (2012). Enhancing attachment organization among maltreated children: Results of a randomized clinical trial. Child Development, 83(2), pp. 623-636.
Population and Sample	<p>The study incorporated 120 children who ranged in age from 1.7 to 21.4 months and 113 parents. Participants were randomly assigned to either Attachment and Biobehavioral Catch-up (ABC; $n=60$) or Developmental Education for Families (DEF; $n=60$).</p> <p>The target population represents children considered at risk for maltreatment, based upon the family’s involvement with CPS. All participating parents were enrolled in a program designed to “divert” children from foster care.</p> <p>Sixty-eight percent of the parents did not complete high school. There were no group differences with regard to parent age, parent education, or parent minority status.</p> <p>Among children, there were no significant group differences with regard to child age at enrollment, age at participation in Strange Situation, gender, or minority status.</p>
Methodology	Experimental with random assignment to one of two interventions
Purpose	The study examined the effectiveness of ABC on child likeliness of developing organized attachments, when compared to children participating in DEF.
Measures & Assessments	<ul style="list-style-type: none"> Strange Situation
Study Implementation	<ul style="list-style-type: none"> Both the ABC and DEF interventions had 1-hour weekly training sessions, which lasted for 10 weeks. The programs were provided in the home. Parents and children received the Strange Situation approximately 1 month after the intervention was completed (or, later for children who were too young at 1 month post-treatment to participate in Strange Situation). All sessions were video-recorded to allow assessments of fidelity to a structured training manual.
Staff Qualifications	<ul style="list-style-type: none"> For both interventions, parent trainers had experience with children and strong interpersonal skills.
Key Findings	<p>Disorganized Attachments</p> <ul style="list-style-type: none"> There were significant differences between ABC children and DEF children on measures of disorganized attachments, wherein ABC children exhibited lower rates of disorganized attachments. Specifically, 32% of ABC children exhibited disorganized attachments, compared to 57% of DEF children ($p<.01$), effect size of $d = .52$. <p>Secure Attachments</p> <ul style="list-style-type: none"> There were significant differences between ABC children and DEF children on measures of secure attachments, wherein ABC children exhibited higher rates of secure attachments. Specifically, 52% of ABC children exhibited secure attachments, compared to 33% of DEF children ($p<.05$), effect size of $d =$

.38.

- Findings regarding attachment disorganization remained statistically significant after the study team excluded from analyses children who were older than 24 months at the time of the Strange Situation ($p < .05$; $d = .47$).
- Findings regarding attachment security did not remain statistically significant after the study team excluded from analyses children who were older than 24 months at the time of the Strange Situation.
- Findings regarding attachment disorganization and attachment security remained statistically significant after the study team excluded from analyses the second child (from those seven parents who had two children enrolled in the study) at $p < .01$ and $p < .05$, respectively (and $d = .57$ and $d = .44$, respectively).

Citation	Lind, T., Bernard, K., Ross, E., & Dozier, M. (2014). Intervention effects on negative affect of CPS-referred children: Results of a randomized clinical trial. <i>Child Abuse & Neglect</i>, 38, pp. 1459-1467.
Population and Sample	<p>The study incorporated 117 children under the age of 2 years and 112 caregivers who had been reported to Child Protective Services (CPS). Participants were randomly assigned to Attachment and Biobehavioral Catch-up (ABC; $n=56$) or Developmental Education for Families (DEF; $n=61$).</p> <p>There were not significant differences between groups with regard to child age at enrolment, child age at Tool Task, child gender, or child minority status. There were not significant differences between groups with regard to parent age, parent education, or parent minority status.</p>
Methodology	Experimental with random assignment to one of two interventions; Intent-to-Treat
Purpose	This study investigated the effectiveness of ABC with regard to child expression of negative affect in a challenging task.
Measures & Assessments	<ul style="list-style-type: none">• Tool Task
Study Implementation	<ul style="list-style-type: none">• Both the ABC and DEF interventions had 1-hour weekly training sessions, which lasted for 10 weeks.• The programs were provided in the home.• The DEF intervention did not include components related to parent sensitivity to child cues.• The Tool Task assessment was conducted with children 1 to 27.2 months following completion of the program.• Child outcome data were collected when children were approximately 24- to 36-months old. Post-intervention data collections occurred at two time points. A total of 183 children were involved in study follow-up; 117 participated in the assessment of negative affect regulation.
Staff Qualifications	<ul style="list-style-type: none">• Parent coaches for both interventions were a mix of bachelor- and master's-level and received similar supervision.
Key Findings	<p>Negative Affect Regulation</p> <ul style="list-style-type: none">• There were significant differences between ABC and DEF children on negative affect expression, wherein ABC children exhibited lower levels of negative affect expression ($p < .05$, Cohen's $d = .42$), compared to DEF children. ABC children exhibited lower levels of anger ($p < .05$, Cohen's $d = .40$), lower levels of anger toward parent ($p < .05$, Cohen's $d = .43$), and lower levels of global anger/sadness ($p < .05$, Cohen's $d = .44$), compared to DEF children.

Citation	Berlin, L. J., Shanahan, M., & Carmody, K. A. (2014). Promoting supportive parenting in new mothers with substance-use problems: A pilot randomized trial of residential treatment plus an attachment-based parenting program. <i>Infant Mental Health</i>, 35(1), pp. 81-85.
Population and Sample	<p>The study incorporated 21 mothers and their infants living in one of two residential substance-abuse treatment facilities for at least 2 months. Participants were randomly assigned to Attachment and Biobehavioral Catch-up (ABC; $n=11$) or a control group ($n=10$).</p> <p>As regard participant characteristics: 86% of mothers were white; 86% had at least a high school diploma or GED; 86% were single, divorced, or widowed; 91% were receiving public assistance; 76% had previously received inpatient substance abuse treatment; and 52% had previously received mental health treatment.</p> <p>Participating children ranged from 1 to 21 months of age; 62% were male. The ABC children were significant older than the control children.</p> <p>Seventy-six percent of participants (or, 8 in each group) completed their interventions and post-intervention observation.</p>
Methodology	Experimental with random assignment to treatment and control groups

Purpose	The study was a pilot randomized trial to assess the implementation and results of supplemental residential substance-abuse treatment. The study focused on new mothers.
Measures & Assessments	<ul style="list-style-type: none"> • Childhood Trauma Questionnaire (CTQ) • Center for Epidemiologic Studies Depression Scale (CES-D) • Generalized Anxiety Disorder 7-Item Scale (GAD-7) • Maternal Behavior Q-Sort (MBQS)
Study Implementation	<ul style="list-style-type: none"> • The CTQ, CES-D, and GAD-7 were administered along with a pre-intervention interview. • The ABC program consisted of weekly, 1-hour sessions that lasted for 10 weeks. Services were provided within the parents' homes. • The control program consisted of 10-sessions in which the study clinicians delivered less or non-intensive services and "made general inquiries about the mothers' and infants' well-being and gave mothers a developmentally appropriate book for their child." • Two parenting coaches were involved and were trained by the program developer. • Post-intervention assessments, including the MBQS, were completed within two weeks of the program's completion.
Staff Qualifications	<ul style="list-style-type: none"> • Not addressed
Key Findings	<p>Observed Sensitive Parenting Behavior</p> <ul style="list-style-type: none"> • There were not significant group differences on measures of observed sensitive parenting behavior, although findings favored the ABC parents ($d = .67$). • The program effect was maintained across child ages. • The mean ABC score ($M = .51$) was three times higher than the control group mean score ($M = .17$). • The mean score for the ABC group ($M = .51$) was lower than a sample of low-risk mother ($M = .73$)

Review of Meta-Analyses

None

Review of Descriptive and Non-Experimental Studies

None

End Notes

ⁱ Dozier, M., Lindhiem, O., Lewis, E., Bick, J., Bernard, K., & Peloso, E. (2009). Effects of a foster parent training program on young children's attachment behaviors: Preliminary evidence from a randomized clinical trial. *Child and Adolescent Social Work Journal*, 26(4), pp. 321-332.

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ⁱⁱⁱ Dozier, M., Peloso, E., Lindhiem, O., Gordon, M. K., Manni, M., Sepulveda, S., Ackerman, J., Bernier, A., & Levine, S. (2006). Developing evidence-based interventions for foster children: An example of a randomized clinical trial with infants and toddlers. *Journal of Social Issues*, 62(4), pp. 767-785.

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^v Bick, J., & Dozier, M. (2013). The effectiveness of an attachment-based intervention in promoting foster mothers' sensitivity toward foster infants. *Infant Mental Health Journal*, 34(2), pp. 95-103.

^{vi} Yarger, H. A., Hoye, J. R., & Dozier, M. (2016). Trajectories of change in Attachment and Biobehavioral Catch-up among high-risk mothers: A randomized clinical trial. *Infant Mental Health Journal*, 37(5), pp. 525-536.

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^{ix} Berlin, L. J., Shanahan, M., & Carmody, K. A. (2014). Promoting supportive parenting in new mothers with substance-use problems: A pilot randomized trial of residential treatment plus an attachment-based parenting program. *Infant Mental Health*, 35(1), pp. 81-85.

Note: Research summaries could include verbiage directly reproduced from the research literature. Quotes and italics may be used to show a direct quote but not always.

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