

# Sustained effects on attachment security in middle childhood: results from a randomized clinical trial of the Attachment and Biobehavioral Catch-up (ABC) intervention

Lindsay Zajac,<sup>1</sup>  K. Lee Raby,<sup>2</sup> and Mary Dozier<sup>1</sup>

<sup>1</sup>Department of Psychological and Brain Sciences, University of Delaware, Newark, DE, USA; <sup>2</sup>Department of Psychology, University of Utah, Salt Lake City, UT, USA

**Background:** Interventions have been developed to promote the development of secure and organized attachments during early childhood among children who have experienced early adversity, yet little is known about whether the effects of these early interventions are sustained beyond 12 months postintervention. The current study examined whether receiving the Attachment and Biobehavioral Catch-Up (ABC) intervention during infancy led to improvements in perceived attachment security in middle childhood among 100 Child Protective Services (CPS)-referred children. **Methods:** Children and parents were randomized to receive ABC or a control intervention during infancy. Children completed the Kerns Security Scale at age nine ( $M_{\text{age}} = 9.46$ ,  $SD = 0.36$ ). (Trial Registry Name: Intervening Early with Neglected Children; Registry ID: NCT02093052; URL for registry: <https://clinicaltrials.gov/ct2/show/NCT02093052?term=dozier&rank=1>). **Results:** Children whose parents received ABC reported higher levels of attachment security on the Kerns Security Scale at age nine than children whose parents had received the control intervention,  $t(98) = 2.31$ ,  $p = .023$ ,  $d = 0.49$ . **Conclusions:** Findings underscore the long-term benefits of intervening early to promote caregiving quality among at-risk families and demonstrate the efficacy of a brief 10-session intervention in promoting attachment security over the span of eight years in a sample of CPS-referred children. **Keywords:** Attachment; middle childhood; intervention; Attachment and Biobehavioral Catch-up; Child Protective Services.

## Introduction

Children are at increased risk for developing insecure and disorganized attachments when they experience insensitive or frightening caregiving (Cyr et al., 2010; De Wolff & Van Ijzendoorn, 1997; Main & Hesse, 1990; Schuengel et al., 1999; Van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Several interventions have been developed to mitigate children's risk for developing insecure and disorganized attachments by improving maternal sensitivity (reviewed by Berlin, Zeanah, & Lieberman, 2016; Facompré, Bernard, & Waters, 2018; Stronach, Toth, Rogosch, & Cicchetti, 2013; Toth, Gravener-Davis, Guild, & Cicchetti, 2013; Valentino, 2017). In particular, the Attachment and Biobehavioral Catch-Up (ABC; Dozier & Bernard, 2019) intervention was developed to help parents respond in nurturing ways when children are distressed, respond in sensitive ways (i.e., following children's lead) when children are not distressed, and reduce frightening or harsh parenting behaviors. A randomized clinical trial with a Child Protective Services (CPS)-referred sample demonstrated that children whose parents received ABC were significantly less likely to be classified as having a disorganized

attachment and more likely to be classified as having a secure attachment in infancy than children whose parents received a control intervention (Bernard et al., 2012).

To our knowledge, no study has examined the efficacy of an early intervention in promoting attachment security beyond 12 months postintervention (Stronach et al., 2013). This is a critical gap in the literature, given that secure attachment at later ages is associated with positive outcomes across a range of domains (e.g., Brumariu, Madigan et al., 2018). Findings from randomized clinical trials suggest that in addition to attachment organization, ABC enhances physiological regulation in infancy and early childhood among CPS-referred children (Bernard et al., 2012; Bernard, Hostinar, & Dozier, 2015). There is also emerging evidence to suggest that ABC has long-term effects on children's development. Specifically, CPS-referred children who received ABC as infants demonstrate more adaptive autonomic nervous system regulation during a stressful task at age nine than children who received the control intervention (Tabachnick et al., 2019). In this sample of CPS-referred children, ABC has also been shown to promote brain development during middle childhood (Bick, Palmwood, Zajac, Simons, & Dozier, 2019). However, it remains unclear whether ABC effects on attachment are sustained in middle childhood.

Conflict of interest statement: No conflicts declared.

Attachment security can be assessed in a variety of ways during middle childhood (Kerns & Brumariu, 2016). One of the more common methods is to assess children's perceptions of their parents' availability using the Kerns Security Scale (Kerns, Klepac, & Cole, 1996). This self-report questionnaire has been well validated as a measure of attachment during middle childhood; a meta-analysis by Brumariu, Madigan, and colleagues (2018) demonstrated that children with secure perceptions of their parents show more competent adaptation in school contexts, exhibit more emotional and peer social competence, have higher self-esteem, and exhibit fewer behavioral problems than children with insecure perceptions. For example, 5th grade children who viewed their relationship with their mother as more secure (as assessed using the Kerns Security Scale) were more accepted by their peers and less lonely than children who rated their relationship less secure (Kerns et al., 1996). In another study using the Kerns Security Scale with 4th and 5th grade children, secure perceptions were positively associated with teachers' ratings of scholastic adjustment (i.e., comprehension, interest, concentration, ambition, perseverance, and self-confidence; Granot & Mayseless, 2001). Additionally, secure perceptions on the Kerns Security Scale are associated with lower levels of child-reported depressive symptoms (Kerns, Brumariu, & Seibert, 2011) and lower levels of parent-reported anxiety symptoms (Kerns, Siener, & Brumariu, 2011).

Taken together, there is a large body of literature demonstrating the positive correlates of children's secure perceptions of their parents' availability. However, to our knowledge, no study has examined whether an early attachment-based intervention can promote more secure perceptions of parents' availability several years later during middle childhood (Stronach et al., 2013). Thus, the goal of the current study was to examine whether children who received ABC as infants reported higher ratings of perceived attachment security at age nine on the Kerns Security Scale than children who received a control intervention.

## Method

### Participants

Data for this project were collected in the context of a longitudinal study evaluating the efficacy of ABC, and the current study's sample size was determined by the number of families who participated in a follow-up assessment in middle childhood (Figure 1). Families were initially referred for the study by child welfare agencies as part of a foster care diversion program in a large mid-Atlantic city. These families were eligible for participation due to being at high risk for maltreatment. After consenting, 212 families were randomized (by the research study coordinator using a random number table) to receive ABC or a control intervention. Participants and research staff assessing outcomes were blinded to families' intervention condition. Of those 212 families, 183

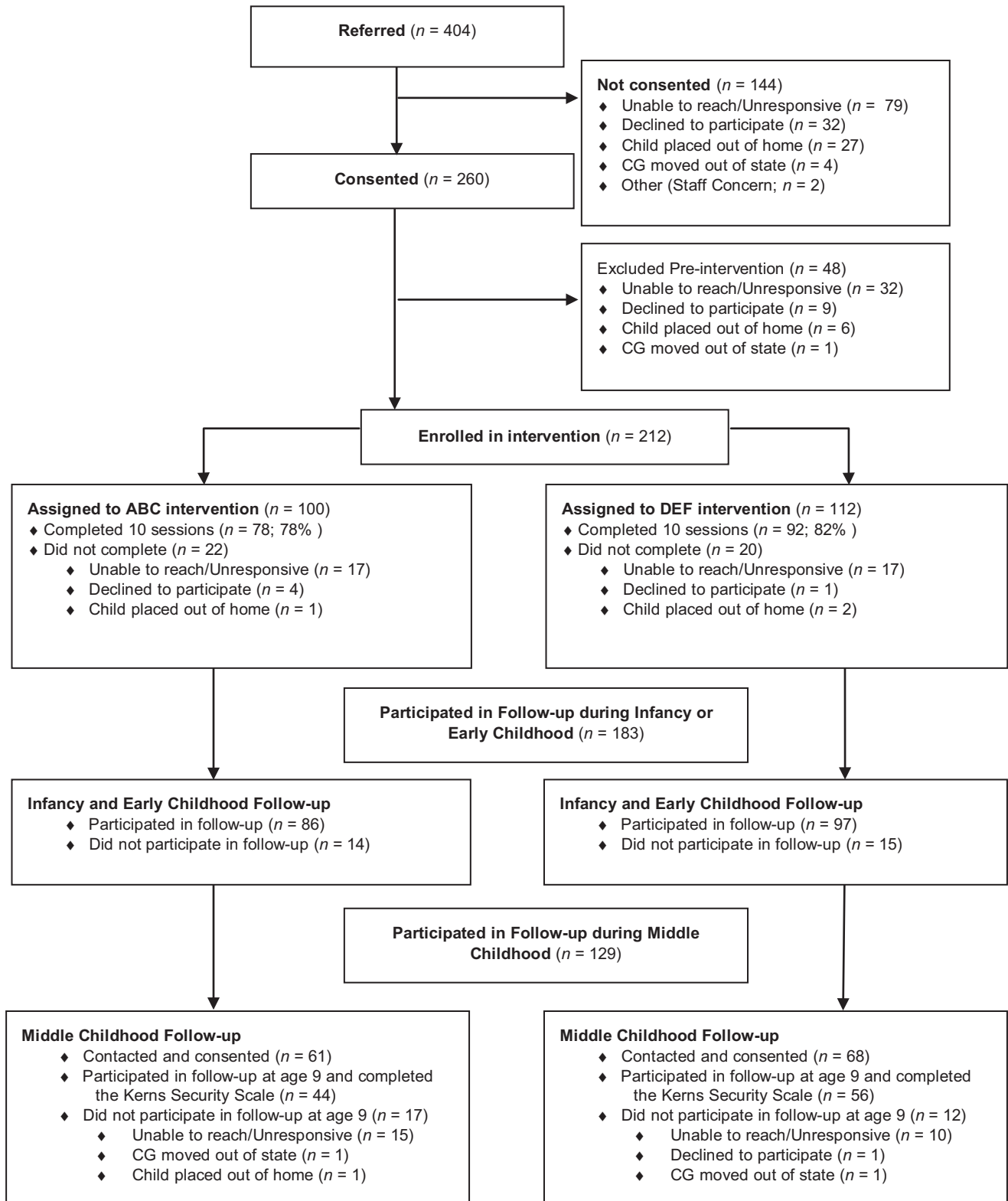
families completed at least one postintervention follow-up assessment during infancy, early childhood, or middle childhood. Please see Bernard et al. (2012) for more detailed information regarding the protocol for the randomized controlled trial (RCT), intervention content, and the first published ABC effects on children's attachment outcomes. The Kerns Security Scale was completed during a middle childhood visit. For the middle childhood study, 129 families consented and agreed to participate in assessments when children were approximately 8, 9, and 10 years of age. Attrition analyses demonstrated that there were no significant differences between the initial sample of 212 families and the subsample of 129 families who consented to participate in the middle childhood study with regard to demographic characteristics at the time of enrollment (e.g., parent age, parent education level, income, marital status, child gender, child race/ethnicity). As part of this study, several key outcomes in middle childhood were assessed<sup>1</sup>, including physiological regulation, emotion regulation, inhibitory control, peer relations, and parenting.

Data for the Kerns Security Scale were available for 100 out of the 129 children because not all children completed the follow-up assessment at age nine. There were no significant differences between the 112 families who did not complete the follow-up assessment at age nine and the subsample of 100 families who did complete the follow-up assessment at age nine with regard to demographic characteristics at the time of enrollment (Table 1). Table 2 presents demographic characteristics for children and parents at the time of the age 9 follow-up visit.

### Procedure

After parents were referred to the study, research staff contacted them to describe the research protocol. If parents were interested, research staff completed a consent visit in families' homes. After consenting, parents were randomized to receive either ABC or a control intervention (Developmental Education for Families; DEF). Approximately one month after the last intervention session, parents and their children completed follow-up assessments annually through early childhood. When children were in middle childhood, research staff contacted parents about an additional research opportunity. If parents were interested, research staff again completed a consent visit in families' homes. Children completed the Kerns Security Scale (Kerns et al., 1996) as part of the follow-up study in middle childhood when children were approximately nine years of age ( $M = 9.46$ ,  $SD = 0.36$ ). Depending on the time of referral and children's ages, families received ABC or the control intervention between 2006 and 2009. Data collection for the Kerns Security Scale occurred between 2015 and 2017. Informed consent was appropriately obtained for all participants, and the study's research protocol was approved by the Institutional Review Board at the University of Delaware.

*Experimental intervention: ABC intervention.* Attachment and Biobehavioral Catch-up was developed to enhance children's attachment quality and regulatory capabilities. ABC focused on improving caregiving quality by helping parents provide nurturance when children were distressed, respond in sensitive ways (i.e., follow the child's lead) when children were not distressed, and reduce frightening or harsh behaviors (Dozier & Bernard, 2019). Implemented weekly in families' homes, ABC consisted of 10-hr-long sessions. Over the course of the intervention, trained interventionists (referred to as parent coaches) delivered focused session content pertaining to target behaviors. Specifically, Sessions 1 and 2 focused on providing nurturance and interpreting child signals, Sessions 3 and 4 focused on



**Figure 1** Consolidated Standards of Reporting Trials (CONSORT) diagram

responding in sensitive ways and delighting in the child, Sessions 5 and 6 focused on behaving in non-frightening ways, and Sessions 7 and 8 focused on identifying and overriding personal challenges that might prevent parents from responding in nurturing ways. For example, it might be difficult for a mother to respond in nurturing ways to her child if her own parents believed that nurturing children 'spoiled' them. During

Sessions 9 and 10, parent coaches aimed to consolidate parents' gains. Across all sessions, parent coaches provided 'in the moment feedback' to reinforce target behaviors, identify examples, and support the parents' efforts to respond in sensitive and nurturing ways. Additionally, parent coaches incorporated relevant research findings (e.g., providing nurturance to young children is associated with children crying

**Table 1** Demographic characteristics of children and parents at time of enrollment

	Did Not Complete Visit at Age 9 ( <i>n</i> = 112)	Completed Visit at Age 9 ( <i>n</i> = 100)	Test of Difference
Child gender (% male)	58	52	$\chi^2 (1, N = 212) = 0.778, p = .378$
Child race			
African American (%)	69	66	$\chi^2 (2, N = 212) = 0.322, p = .851$
Caucasian (%)	14	15	
Biracial (%)	17	19	
Child ethnicity			
Non-Hispanic or Latino (%)	81	80	$\chi^2 (1, N = 212) = 0.053, p = .818$
Hispanic or Latino (%)	19	20	
Parent gender (% female)	96	97	$\chi^2 (1, N = 212) = 0.312, p = .576$
Parents' employment status			
Employed (%)	14	17	$\chi^2 (2, N = 212) = 4.864, p = .088$
Unemployed (%)	75	80	
Did not report (%)	11	3	
Education			
Less than high school degree (%)	51	60	$\chi^2 (1, N = 184) = 3.606, p = .462^a$
High school degree or GED (%)	33	31	
Some college (%)	3	6	
Baccalaureate degree (%)	1	0	
Postgraduate degree (%)	0	1	
Did not report (%)	12	2	
Household income			
<\$10,000 (%)	58	62	$\chi^2 (2, N = 169) = 1.247, p = .536^b$
\$10,000–\$19,999 (%)	10	16	
\$20,000–\$29,999 (%)	8	7	
\$30,000–\$39,999 (%)	3	4	
\$40,000–\$59,999 (%)	1	1	
\$60,000–\$99,999 (%)	1	0	
Did not report (%)	19	10	

<sup>a</sup>Given the expected cell counts for some education categories, the test of differences only included the categories of less than a high school degree and high school degree or GED.

<sup>b</sup>Given the expected cell counts for some income categories, the test of differences only included the categories of < \$10,000, \$10,000–\$19,999, and \$20,000–\$29,999.

less). Parent coaches also provided structured activities to promote parent–child interaction and used video feedback to highlight parent strengths and weaknesses and celebrate positive changes (Dozier & Bernard, 2019).

**Control intervention: DEF.** Developmental Education for Families matched ABC with regard to duration (10-hr-long sessions), frequency (weekly), and setting (families' homes). DEF focused on promoting children's cognitive and motor development. It was borrowed from a home visitation component of the early intervention program developed by Ramey and colleagues (Ramey, McGinness, Cross, Collier, & Barrie-Blackley, 1982; Ramey, Yeates, & Short, 1984). For the purposes of this RCT, DEF was adapted from its original form. Specifically, any content related to promoting parental sensitivity or responsiveness was removed. Parent coaches provided educational information about developmental milestones for children and helped children engage in activities with their parents that enhanced their cognitive and motor development.

## Measures

**Kerns Security Scale.** When children were approximately 9 years old, they completed the Kerns Security Scale (Kerns et al., 1996). The Security Scale is a self-report questionnaire that assesses children's perceived attachment security to a particular parent. It is a moderately stable and robust measure of attachment in middle childhood and early adolescence and has been shown to be significantly associated with other measures of attachment (e.g., Strange Situation

and parental sensitivity (see Brumariu, Giuseppone et al., 2018; Brumariu, Madigan et al., 2018 for a review). Additionally, scores on the Security Scale are positively associated with school adaptation, emotional competence, and peer competence, and negatively associated with internalizing and externalizing symptoms (Brumariu, Giuseppone et al., 2018; Brumariu, Madigan et al., 2018).

For each of the 15 survey items, research assistants (who were blind to children's intervention status) presented children with two sentences. For example, one item read: 'Some kids go to their [mom/dad] when they are upset BUT Other kids do not go to their [mom/dad] when they are upset.' Children were first asked to identify which sentence was most like them and then to specify whether the sentence was 'really like' or 'sort of like' them. In this way, each item was scored on a four-point scale (i.e., 1–4). Items assessed children's perceptions of whether the parent figure was responsive and reliable, children's tendency to rely on the parental figure when distressed, and children's ease and interest in communicating with the parent. Children were asked to respond to the questions with their primary caregiver (who was the same caregiver who accompanied the child to the research assessment and usually (88%) the mother) in mind. Responses were averaged across the 15 items ( $\alpha = .71$ ), resulting in a continuous measure of perceived attachment security. Higher scores indicate higher levels of perceived attachment security ( $M = 3.37$ ,  $SD = 0.44$ , Range = 1.80–4.00). These descriptive statistics are consistent with other studies using the Security Scale with children of a similar age (e.g., Diener, Isabella, Behunin, & Wong, 2008; Kerns et al., 1996; Verschueren & Marcoen, 2002).

**Table 2** Demographic characteristics of children and parents at follow-up assessment at age 9 years

	ABC ( <i>n</i> = 44)	DEF ( <i>n</i> = 56)	Test of difference
Child age (years; <i>M</i> & <i>SD</i> )	9.45 (0.34)	9.46 (0.38)	$t(98) = -0.217, p = .829$
Child gender (% male)	52	52	$\chi^2(1, N = 100) = 0.002, p = .961$
Child race			
African American (%)	71	68	$\chi^2(1, N = 85) = 0.668, p = .414^a$
Caucasian (%)	2	13	
Biracial (%)	21	13	
Others (%)	6	6	
Child ethnicity			
Non-Hispanic or Latino (%)	79	77	$\chi^2(1, N = 100) = 0.109, p = .741$
Hispanic or Latino (%)	21	23	
Parent age (years; <i>M</i> & <i>SD</i> )	38.71 (10.02)	37.14 (9.46)	$t(98) = 0.799, p = .426$
Parent gender (% female)	96	95	
Parents' employment status			
Employed (%)	57	54	$\chi^2(1, N = 100) = 0.105, p = .746$
Unemployed (%)	43	46	
Education			
Less than high school degree (%)	46	25	$\chi^2(2, N = 97) = 4.481, p = .106^c$
High school degree or GED (%)	41	57	
Some college (%)	11	14	
Baccalaureate degree (%)	0	4	
Postgraduate degree (%)	2	0	
Household income			
< \$10,000 (%)	9	26	$\chi^2(2, N = 59) = 5.468, p = .065^d$
\$10,000–\$19,999 (%)	25	25	
\$20,000–\$29,999 (%)	20	11	
\$30,000–\$39,999 (%)	14	9	
\$40,000–\$59,999 (%)	2	9	
\$60,000–\$99,999 (%)	7	0	
Did not report (%)	23	20	
Financial assistance from government			
Yes (%)	75	73	$\chi^2(1, N = 100) = 0.041, p = .840$
No (%)	25	27	

<sup>a</sup>Given the expected cell counts for some child race categories, the test of differences only included the categories of African American and biracial.

<sup>b</sup>Given the expected cell counts for male gender, a formal test of differences could not be conducted.

<sup>c</sup>Given the expected cell counts for some parent education categories, the test of differences only included less than high school degree, high school degree or GED, and some college.

<sup>d</sup>Given the expected cell counts for some household income categories, the test of differences only included < \$10,000, \$10,000–\$19,999, and \$20,000–\$29,999.

## Results

We first conducted preliminary analyses to explore potential differences regarding demographic characteristics of the intervention groups and examine potential associations between demographic variables and perceived attachment security in middle childhood. An independent samples *t*-test then examined whether children who received the ABC intervention had higher ratings of perceived attachment security than children who received the DEF intervention at age nine.

### Preliminary analyses

Of the 100 children included in the study, 44 had been randomly assigned to receive the ABC intervention, and 56 had been randomly assigned to the DEF intervention. Children in the ABC intervention did not differ significantly from the children in the DEF intervention with regard to age at the follow-up assessment, gender, or racial/ethnic minority

status. There were also no group differences in parent age at follow-up assessment, parent education, parent employment status, or parent racial/ethnic minority status. However, marginal group differences did emerge at the time of the follow-up assessment with regard to household income ( $p = .065$ ). Specifically, parents in the DEF group reported marginally lower levels of household income than parents in the ABC group (Table 2). Of note, this chi-square test was limited in sample size ( $n = 59$ ) due to small expected cell counts in higher income brackets. At the time of the age 9 assessment, parents also reported on whether or not they received financial assistance from the government. These data were available for all participants, and the intervention groups did not significantly differ with regard to how many parents reported receiving financial assistance from the government.

At the time of the follow-up assessment, 10 children were living with a caregiver who was not the parent who received the intervention during infancy.

The ABC and DEF groups did not significantly differ with regard to whether children were living with a caregiver who did not receive the intervention at the time of the research assessment at age nine,  $\chi^2(1, N = 100) = 0.07, p = .788$ .

### Potential covariates

Perceived attachment security ratings in middle childhood did not significantly differ based on child gender (girls:  $M = 3.40, SD = 0.47$ ; boys:  $M = 3.35, SD = 0.42$ ),  $t(98) = 0.50, p = .619$ ; child race (African American:  $M = 3.41, SD = 0.38$ ; biracial:  $M = 3.46, SD = 0.35$ ; Caucasian:  $M = 3.10; SD = 0.78$ ; others:  $M = 3.11, SD = 0.61$ ),  $F(3, 96) = 2.21, p = .092$ ; child Hispanic ethnicity (Hispanic:  $M = 3.39, SD = 0.47$ ; non-Hispanic:  $M = 3.37, SD = 0.44$ ),  $t(98) = -0.16, p = .871$ ; or parent gender (female:  $M = 3.39, SD = 0.45$ ; male:  $M = 3.15, SD = 0.33$ ),  $t(98) = 1.17, p = .245$ . Perceived attachment security ratings also did not vary based on whether children were living with a caregiver who did not receive ABC or DEF during infancy (received ABC or DEF:  $M = 3.38, SD = 0.45$ ; did not receive ABC or DEF:  $M = 3.23, SD = 0.34$ ),  $t(98) = -1.05, p = .298$ . Table 3 presents correlations among perceived attachment security ratings and other demographic characteristics at the follow-up assessment at age nine.

### Focal analyses

An independent samples *t*-test revealed that children who received the ABC intervention had higher perceived attachment security ratings than children who received the DEF intervention (ABC:  $M = 3.49, SD = 0.38$ ; DEF:  $M = 3.28, SD = 0.47$ ),  $t(98) = 2.31, p = .023, d = 0.49, 95\% CI [0.03, 0.38]$ . This intervention effect was also observed when the 10 children living with caregivers who did not receive ABC or DEF during infancy were removed from the

analyses (ABC:  $M = 3.50, SD = 0.37$ ; DEF:  $M = 3.30, SD = 0.49$ ),  $t(88) = 2.16, p = .033, d = 0.47, 95\% CI [0.02, 0.39]$ . According to Cohen (1992), this difference represents a medium effect size.

An ANCOVA examined intervention differences in Kerns Security Scale scores, controlling for whether or not parents reported receiving financial assistance from the government. Intervention groups differed in Security Scale scores,  $F(2, 97) = 5.370, p = .023$  ( $M_{ABC} = 3.49, SD_{ABC} = 0.38$ ;  $M_{DEF} = 3.28, SD_{DEF} = 0.47$ ), while controlling for financial assistance.

### Discussion

The goal of the current study was to examine whether children whose parents had received ABC as infants reported more secure attachment perceptions at age nine than children whose parents had received a control intervention. To the best of our knowledge, this represents the first study to examine whether an intervention developed to promote caregiving quality in infancy promotes attachment security in middle childhood. As expected, children who received ABC demonstrated higher ratings of perceived attachment security at age nine than children who received a control intervention.

These findings are consistent with a larger body of work demonstrating positive effects of ABC on child outcomes across a range of domains (e.g., Bernard et al., 2012; Bick et al., 2019; Dozier & Bernard, 2019; Grube & Liming, 2018; Lind, Raby, Caron, Roben, & Dozier, 2017; Raby et al., 2019; Tabachnick, Raby, Goldstein, Zajac, & Dozier, 2019). In addition to promoting secure and organized attachments during infancy (Bernard et al., 2012), ABC is effective in reducing children's expression of negative affect (Lind, Bernard, Ross, & Dozier, 2014) and enhancing executive functioning (Lind et al., 2017), physiological regulation (Bernard, Hostinar, & Dozier, 2015), and receptive vocabulary (Raby et al., 2019) in early childhood for children involved in the child welfare system. During middle childhood, ABC has been shown to positively affect physiological regulation (Tabachnick et al., 2019) and brain development (Bick et al., 2019). Given that several studies demonstrate that children with secure perceptions of their parents show more competent adaptation in school contexts (Brumariu, Giuseppone et al., 2018; Brumariu, Madigan et al., 2018), exhibit more emotional and peer social competence (Brumariu, Giuseppone et al., 2018; Brumariu & Kerns, 2008; Brumariu & Kerns, 2010; Brumariu, Kerns, & Seibert, 2012; Brumariu, Madigan et al., 2018; Kerns et al., 1996; Madigan et al., 2016), have higher self-esteem (Brumariu, Giuseppone et al., 2018; Brumariu, Madigan et al., 2018), and exhibit fewer behavioral problems than children with insecure perceptions (Brumariu, Giuseppone et al., 2018; Brumariu, Madigan et al., 2018; Madigan

**Table 3** Correlations among perceived attachment security and demographic characteristics at age 9 years

	1	2	3	4	5	6
1. Perceived attachment security	–					
2. Child age	–.06	–				
3. Parent age	.03	.11	–			
4. Parent education	.12	.19	.08	–		
5. Household income	.12	–.07	.04	.27*	–	
6. Financial assistance from government <sup>a</sup>	–.05	.05	.08	–.38**	–.43**	–

<sup>a</sup>Dichotomously coded such that 0 = parent does not report receiving financial assistance from the government; 1 = parent does report receiving financial assistance from the government.

\* $p < .05$

\*\* $< .01$

et al., 2016), it is encouraging that ABC's effects on attachment are sustained in middle childhood.

Future research is needed to explore potential mediators of ABC's effect on perceived attachment security in middle childhood. One possibility is that ABC's positive effect on child attachment, which is observed as early as infancy (Bernard et al., 2012), remains stable over the course of development. Other possible mediators to consider include changes to parent-specific factors, such as psychopathology and attachment-related representations, and changes to parent-child interactions at different developmental periods, including parenting behaviors (e.g., sensitivity, nurturance, frightening, or harsh behaviors), parent-child separations, and experiences of maltreatment. Given the transactional nature of parent-child interactions, particularly during middle childhood, it is also important to consider child-specific factors, such as children's emotional and behavioral regulatory capabilities, cognitive and language abilities, and physiological regulation.

Strengths of the current study include the 9-year longitudinal design, use of a randomized clinical trial design to assess intervention efficacy, use of a well-validated measure of perceived attachment security, and the focus on a sample of CPS-referred families. In addition to exploring possible mediators of ABC's effect on perceived attachment security, future research should assess whether ABC effects on attachment security in middle childhood are demonstrated in other high-risk samples. Positive effects of ABC have been observed in samples of children who have experienced other forms of adversity, including institutionalization and removal from birth parents' homes (see Dozier & Bernard, 2019 for a review). For

example, ABC has been shown to promote vocabulary among children in foster care (Bernard, Lee, & Dozier, 2017), and these effects are mediated by changes in parental sensitivity (Raby, Freedman, Yarger, Lind, & Dozier, 2019). Future research might also examine whether ABC effects on attachment outcomes are observed among parents and when using other measures of attachment among children, including measures that capture disorganized attachment patterns in addition to insecure ones. In summary, our findings underscore the importance of intervening early to promote caregiving quality among at-risk families and demonstrate the efficacy of a brief 10-session intervention in promoting attachment security over the span of eight years in a sample of CPS-referred children.

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### Correspondence

Lindsay Zajac, Department of Psychological and Brain Sciences, University of Delaware, 108 Wolf Hall, Newark, DE 19711, USA; Email: lazajac@udel.edu

### Key points

- Interventions have been developed to promote the development of secure and organized attachments during early childhood among children who have experienced early adversity. Yet, little is known about whether the effects of these early interventions are sustained beyond 12 months postintervention.
- We examined whether receiving the Attachment and Biobehavioral Catch-Up (ABC) intervention during infancy led to improvements in perceived attachment security in middle childhood among children referred to Child Protective Services.
- Children whose parents received ABC reported higher levels of attachment security at age nine than children whose parents had received the control intervention.
- Findings underscore the benefits of intervening early to promote caregiving quality and demonstrate the efficacy of ABC, a 10-session intervention, in promoting attachment security over the span of eight years.

### Note

1. Trial Registry Name: Intervening Early with Neglected Children; Registry ID: NCT02093052; URL for registry: <https://clinicaltrials.gov/ct2/show/NCT02093052?term=dozier&rank=1>

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