Quantitative studies

Bernard 2017

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Preschool-age follow up of a randomised clinical trial of ABC, delivered in the homes of foster families. At the time of follow up many participants had been adopted (48%), still in foster care (36.5%), or returned to their birth parents (17.3%).
Study dates	Not reported
Duration of follow-up	Approximately two years (when participants were three years old). In the randomised controlled trial from which these results were taken. Children were assessed approximately 1 month after the intervention and annually thereafter. This study reports results from the 3-year old assessment visit.
Sources of funding	National Institute of Mental Health
Inclusion criteria	Age infant-aged Care setting Referred by foster care agencies
Sample size	52

Split between study groups	24 participants received the ABC intervention, 28 received the DEF intervention
Loss to follow-up	None reported
% Female	56%
Mean age (SD)	mean 39.52 ± 2.98 months
Condition specific characteristics	Type of care All participants were referred from foster agencies. At 2-year follow up 48.1% were adopted, 17.3% were living with birth parents, 19.2% were in nonrelative foster care, and 15.4% were with a relative foster carer.
Outcome measures	Preschool developmental progress 1 Receptive language: Assessed using the Peabody Picture Vocabulary Test (third edition) at 3 years of age. This is a standardized assessment used to assess children's receptive language abilities. Children were shown a set of four pictures and were asked to point to the picture of a stated word and earned a point for every correct response. Standard scores were used in analyses, as these adjust for differences in child age and can be readily interpreted in comparison to age-based benchmarks.
Study arms	Attachment and Behavioural Catch-up (ABC) (N = 24) The ABC intervention was designed to enhance children's attachment organization. Attachment and Biobehavioral Catch-up (ABC) intervention is a 10-session, manualized parenting program aimed at enhancing young children's self-regulatory capacities by helping caregivers provide nurturing and synchronous care. These two intervention components (i.e., nurturance in response to child distress, and synchronous parent-child interactions) are targeted in a number of ways. It was designed to help parents change to: provide nurturance when children are distressed both by re-interpreting children's alienating behaviors (Sessions 1–2) and by overriding their own issues that interfere with providing nurturing care (Sessions 7–8); provide a sensitive, responsive environment by following the child's lead with delight when children are not distressed (Sessions 3–4); and behave in ways that are not frightening to children (Sessions 5–6). Interventionists describe the importance of providing nurturing and synchronous care, based on developmental research. Additionally, interventionists videotape parent-child interactions during structured activities designed to help caregivers practice being synchronous by "following the child's lead." Interventionists provide feedback using video clips that highlight times when caregivers interacted with their children in nurturing and synchronous ways versus times when they struggled to do so (e.g., directing or teaching, intruding on the child's space, or being passive and disengaged). Finally, interventionists help caregivers consider how their

	own early experiences (e.g., not receiving nurturing care themselves) may make it more difficult to provide nurturing and synchronous care to their children.
Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Preschool-age follow up of a randomised clinical trial of ABC, delivered in the homes of foster families. At the time of follow up many participants had been adopted (48%), still in foster care, or returned to their birth parents.
Study dates	Not reported
Duration of follow-up	Three years
Sources of funding	National Institute of Mental Health
% Female	62.5%
Mean age (SD)	3.34 ± 0.28 years
Condition specific characteristics	Non-white ethnicity 70.8%
Outcome measures	Preschool developmental progress 1 Receptive language, PPVT mean score: 98.08 ± 16.08 Association between being in the intervention group and receptive language score at 3 years of age: β 9.39 (0.82 to 17.96) (adjusted for gender, number of placements, low caregiver education, low caregiver income.)

Developmental Education for Families (DEF) (N = 28)

The DEF sessions were of the same duration (10-hr-long sessions) and frequency (weekly) as the ABC intervention. The educational intervention was borrowed partly from the home visitation component of the early intervention program developed by Ramey and colleagues (Ramey et al. 1982, 1984). This intervention was designed to enhance cognitive, and especially linguistic, development. The intervention has been successful in improving intellectual functioning when provided intensively and for a long duration in day care settings (Brooks-Gunn et al. 1993). Components that involve parental sensitivity to child cues were excluded in our version of the intervention so as to keep the interventions distinct. Although the intervention is manualized, specific activities take into account child's developmental level.

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Preschool-age follow up of a randomised clinical trial of ABC, delivered in the homes of foster families. At the time of follow up many participants had been adopted (48%), still in foster care, or returned to their birth parents.
Study dates	Not reported
Duration of follow-up	Three years
Sources of funding	National Institute of Mental Health
% Female	50.0%
Mean age (SD)	3.25 ± 0.21 years

	Condition specific characteristics	Non-white ethnicity 60.7%
	Outcome measures	Preschool developmental progress 1 Receptive language, PPVT mean score: 88.11 ± 14.52
Risk of Bias	Domain 1: Bias arising from the randomisation process Some concerns Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention) Low Domain 3. Bias due to missing outcome data High (More information is needed about the numbers lost to follow up and the reasons why) Domain 4. Bias in measurement of the outcome Some concerns Domain 5. Bias in selection of the reported result Some concerns Overall bias High Partially indirect (USA-based)	

Kim 2011, Smith 2011, Hu 2020

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Summer programme for girls in foster care
Study dates	Not reported (study published 2011)
Duration of follow-up	36 months
Sources of funding	National Institute of Mental Health US Public Health Service National Institute on Drug Abuse
Inclusion criteria	Age In final year of elementary school Gender Girls Care setting Relative or non-relative foster care Geography Living in one of two counties in the Pacific Northwest
Sample size	100

Split between study groups	48 randomised to intervention group; 52 randomised to control group
Loss to follow-up	3 lost to follow up in intervention group, 7 lost to follow up in control group
% Female	100%
Mean age (SD)	Not reported for total sample
Outcome measures	**Number of placement changes** Number of care placement changes from baseline to 12 months follow up. **Behavioural outcomes** Internalising and externalising symptoms defined by caregiver report using the Achenbach System of Empirically Based Assessment (ASEBA). Mean results across 12 and 24 month follow up were reported. **Behavioural outcomes 2** At 6 months (Smith 2011) internalising problems. An internalizing problems composite was computed based on five Parent Daily Report items that reflected internalizing behavior (e.g., irritable and nervous/jittery). **Behavioural outcomes 2** At 6 months (Smith 2011) externalising problems. An externalising problems composite was computed based on 18 PDR items that reflected externalizing behavior (e.g., argue and defiant). **Social outcomes** Prosocial behaviour defined by a subscale from the Parent Daily Report Checklist. A prosocial behavior composite was computed based on 11 PDR items that reflected prosocial behavior (e.g., clean up after herself and do a favor for someone). **Delinquency** Delinquent behaviour and was measured using the Self-Report Delinquency Scale (SRD). Girls association with delinquent peers was defined using a modified version of the general delinquency scale from the SRD. Delinquency was measured at 36 months. **Substance use** girls were asked how many times in the past year they had (a) smoked cigarettes or chewed tobacco, (b) drank alcohol (beer, wine, or hard liquor), and (c) used marijuana. The response scale ranged from 1 (never) through 9 (daily). Substance use was assessed at 36 months.

Study arms	Middle School Success intervention (N = 48)
	The MSS intervention was delivered during the summer prior to middle school entry with the goal of preventing delinquency, substance use, and related problems for girls in foster care. The intervention consisted of two primary components: (a) six sessions of group-based caregiver management training for the foster parents and (b) six sessions of group-based skill-building sessions for the girls. The groups met twice a week for 3 weeks, with approximately seven participants in each group. In addition to the summer group sessions, follow-up intervention services (i.e., ongoing training and support) were provided to the caregivers and girls in the intervention group once a week for two hr (foster parent meeting; one-on-one session for girls) during the first year of middle school. The interventionists were supervised weekly, where videotaped sessions were reviewed and feedback was provided to maintain the fidelity of the clinical model. The summer group sessions for the caregivers emphasized establishing and maintaining stability in the foster home, preparing girls for the start of middle school, and preventing early adjustment problems during the transition to middle school. The summer group sessions for the girls were designed to prepare the girls for the middle school transition by increasing their social skills for establishing and maintaining positive relationships with peers, increasing their self-confidence, and decreasing their receptivity to initiation from deviant peers. Specifically, the girls' curriculum targeted strengthening pro-social skills; practicing sharing/cooperating with peers; increasing the accuracy of perceptions about peer norms for abstinence from substance use, sexual activity, and violence; and practicing strategies for meeting new people, dealing with feelings of exclusion, and talking to friends and teachers about life in foster care.

	Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs History of special services: 46.2% % with behaviour that challenges Arrest record 2.1%; history of runaway 4.2%
	Outcome measures	Number of placement changes Mean 0.33 changes ± 1.05 Behavioural outcomes Internalising and externalising behaviour score: mean 12.77 ± 8.53 Behavioural outcomes 2 Association between being in the intervention group and foster parent and girl reported internalising problems at 6 months: β -0.28 P<0.01 (adjusted for age, maltreatment history, pubertal development, internalising behaviours at baseline) Behavioural outcomes 3 Association between being in the intervention group and foster parent and girl reported externalising problems at 6 months: β -0.21 P<0.01 (adjusted for age, maltreatment history, pubertal development, externalising behaviours at baseline)

		Social outcomes Prosocial behaviour score: mean 0.80 ± 0.12. Association between being in the intervention group and foster parent and girl reported prosocial behaviour at 6 months: β 0.15 P>0.05 Delinquency Self-Report Delinquency Scale (SRD): mean 0.30 ± 0.92; Girls association with delinquent peers score: mean -0.17 ± 0.86; Composite delinquency score: mean -0.17 ± 0.57 Substance use Tobacco use score: mean 1.49 ± 1.63; Alcohol use score: mean 1.49 ± 0.90; Marijuana use score: mean 1.29 ± 0.82; composite substance use score: mean 1.42 ± 0.93
	Control group (N = 52) The girls and caregivers in the control condition received the usual services provided by the child welfare system, including services such as referrals to individual or family therapy, parenting classes for biological parents, and case monitoring.	
	Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs History of special services: 36.6% % with behaviour that challenges Arrest record: 3.8%; History of runaway: 7.7%
	Interventions	Control 1 62% percent of girls in the control condition received individual counseling, 20% received family counseling, 22% received group counseling, 30% received mentoring, 37% received psychiatric support, and 40% received other counseling or therapy services (e.g., school counseling, academic support) during the 1st year of middle school
	Outcome measures	Number of placement changes mean 0.76 ± 1.19 Behavioural outcomes internalising/externalising behaviour score: mean 12.50 ± 8.29 Social outcomes Prosocial behaviour score: mean 0.74 ±0.14

		Delinquency Delinquent behaviour score: mean 0.95 ± 2.69; association with delinquent peers score: mean 0.17 ± 1.02; composite delinquency score: mean 0.17 ± 1.06 **Substance use** Tobacco use score: mean 2.36 ± 2.49; Alcohol use score: mean 1.80 ± 1.46; Marijuana use score: mean 2.33 ± 2.43; Composite substance use score: mean 2.16 ± 1.93
Risk of Bias	Domain 1: Bias arising from the randomisation process Some concerns Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention) Low Domain 3. Bias due to missing outcome data Low Domain 4. Bias in measurement of the outcome Low Domain 5. Bias in selection of the reported result High Overall bias and Directness Risk of bias judgement High (High for placement change, prosocial behaviour, and internalising and externalising symptoms outcomes. Some concerns for delinquency and substance use outcomes.)	

	Partially Indirect (USA-based)

Lee 2016a, Lee 2016b

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Children in non-parental care. Head start is a preschool program that provides comprehensive services (educational and health-focussed) to both low-income children and their families. Head Start is Centre-based.
Study dates	Head Start Impact Study (HSIS): based on the random assignment of children and families entering Head Start at the start of the 2002 - 03 programme year.
Duration of follow-up	HSIS recruited three to four year olds. In the current study, reading and maths scores were measured at age five to six.
Sources of funding	Not reported
Inclusion criteria	Care setting Children living with non-biological parents, including foster parents, grandparents, or other relatives Other Included in the Head Start Impact Study. The Head Start Impact Study is based on a nationally representative sample of both Head Start programs and children. First time applicants to Head Start in fall 2002 were randomly selected from a nationally representative sample of Head Start programs.
Exclusion criteria	Care setting Children living with step-parents or who were adopted
Sample size	162

Split between study groups	65 were not enrolled in Head Start, 97 were enrolled in Head Start
Loss to follow-up	Unclear how many eligible children were lost to follow up over the course of the Head Start Impact Study.
% Female	48%
Mean age (SD)	3.4 ± 0.5 years
Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs 14% Non-white ethnicity 62% Type of care relative care 90%
Outcome measures	Educational outcomes 1 Maths Scores at 5-6 years of age: the Woodcock-Johnson III Tests of Achievement, Math Reasoning. Overall measurement of mathematical knowledge and reasoning which includes: mathematical problem solving, vocabulary and analysis. Educational outcomes 2 Reading scores at 5-6 years of age: the Woodcock-Johnson III Tests of Achievement, Oral Comprehension. Test measures child's ability to comprehend a short spoken passage and provide a missing word based on syntactic and semantic clues. Educational outcomes 3 Caregiver-rated positive approach to learning at 5-6 years of age. Parents were asked to rate their child's positive approaches to learning (Achenbach, Edelbrock, & Howell, 1987). Positive approaches to learning scale addressed curiosity, imagination, openness to new tasks and challenges, and having a positive attitude about gaining new knowledge and skills. Social outcomes 1 Child-teacher relationship at 5-6 years of age. Based on the Robert Pianta scales (Pianta, 1996), teachers were also asked to rate the child–teacher relationship. Behaviour outcomes 1 Teacher-rated aggressive score at 5 to 6 years of age. Teachers rated children's aggressiveness scores based on the Adjustment Scales for Preschool Intervention (ASPI)

	Behaviour outcomes 2 Teacher-rated hyperactive score at 5 to 6 years of age. Teachers rated children's hyperactive scores based on the Adjustment Scales for Preschool Intervention (ASPI)
Study arms	**Head Start (N = 97)** Head Start is a program of the United States Department of Health and Human Services that provides comprehensive early childhood services to low-income children and families. Head Start's goal is to boost the school readiness of low income children. Based on a "whole child" model, the program provides comprehensive services that include preschool education; medical, dental, and mental health care; nutrition services; and efforts to help parents foster their child's development. Head Start services are designed to be responsive to each child's and family's ethnic, cultural, and linguistic heritage.

Split between study groups	65 were not enrolled in Head Start, 97 were enrolled in Head Start
Loss to follow-up	Unclear how many eligible children were lost to follow up over the course of the Head Start Impact Study.
% Female	53%
Mean age (SD)	3.4 ± 0.5 years
Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs 12% Non-white ethnicity 55% Type of care relative care 91%

	Outcome measures	**Educational outcomes 1** Maths Score (for girls): mean 97.3 ± 2.33; Maths score (for boys): mean 87.5 ± 2.49 **Educational outcomes 2** Reading scores (for girls): mean 101.7 ± 1.88; Reading scores (for boys): mean 97.7 ± 2.66 **Educational outcomes 3** Association between being in the intervention group and caregiver-rated positive approach to learning at 5 to 6 years of age: β 0.11 (-0.01 to 0.23) (adjusted for age, gender, special educational needs, lower cognitive skills at baseline, ethnicity, education, family income, relative care, parental book reading). **Social outcomes 1** Association between being in the intervention group and child-teacher relationship at 5 to 6 years of age: β -0.30 (-1.01 to 0.41) (adjusted for age, gender, special educational needs, lower cognitive skills at baseline, ethnicity, education, family income, relative care, parental book reading). **Behavioural outcomes 1** Association between being in the intervention group and teacher-rated aggressive score at 5 to 6 years of age: β -1.57 (-1.41 to 4.55) (adjusted for age, gender, special educational needs, lower cognitive skills at baseline, ethnicity, education, family income, relative care, parental book reading). **Behavioural outcomes** Association between being in the intervention group and teacher-rated hyperactive score at 5 to 6 years of age: β -3.28 (-6.26 to -0.30) (adjusted for age, gender, special educational needs, lower cognitive skills at baseline, ethnicity, education, family income, relative care, parental book reading).
		Not enrolled in Head Start (N = 65) A comparison group of children living with non-biological parents who were included in the Head Start Impact Study and were not enrolled in Head Start. Children who were placed in the control or comparison group were allowed to enroll in other non-parental care or non-Head Start child care or programs selected by their parents. They could remain at home in parent care, or enroll in a child care or preschool program. Consequently, the impact of Head Start was determined by a comparison to a mixture of alternative care settings rather than against a situation in which children were artificially prevented from obtaining child care or early education programs outside of their home.
	% Female	42%

	Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs 15% Non-white ethnicity 74% Type of care relative care 89%
	Outcome measures	Educational outcomes 1 Maths Scores (for girls): mean 92.9 ± 3.29; Maths scores (for boys): mean 95.9 ± 2.73 Educational outcomes 2 Reading scores (for girls): mean 96.9 ± 2.01; Reading scores (for boys): mean 100.9 ± 2.21
Risk of Bias	Domain 1: Bias arising from the randomisation process Some concerns Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention) High Domain 3. Bias due to missing outcome data High Domain 4. Bias in measurement of the outcome High Domain 5. Bias in selection of the reported result High Overall bias and Directness	

NICE looked-after children and young people: evidence reviews for interventions to support readiness for school in looked after children and young people FINAL (October 2021)

	Risk of bias judgement
	High
	Partially Indirect
	USA-based

Lewis-Morrarty 2012

Study type	Randomised controlled trial (RCT)
	Associated study of another trial
	See Dozier (2009) and Bernard (2012) for RQ2Bernard (
Study location	USA
Study setting	Participants with histories of foster care who had received this intervention while in foster care before age 20 months (but were now mostly adopted or reunited with birth parents (94.6%)
Study dates	Not reported
Duration of follow-up	Foster children were assessed annually up until the age of 6 years
Sources of funding	National Institute of Mental Health
Inclusion criteria	Criteria 1
	Before the age of 20 months foster children were randomly assigned to receive the ABC intervention or DEF intervention. The present study is a follow-up of a subset of children involved in this previous randomised controlled trial when children were infants and toddlers.

	Age Children between the age of 4 and 6 years **Care setting** history of foster care placement before the age of 3 years
Sample size	37
Split between study groups	17 were randomly assigned to receive the ABC intervention and 20 randomly assigned to receive the DEF intervention
Loss to follow-up	Not reported
% Female	49.2%
Mean age (SD)	60.3 ± 8.6 months
Condition specific characteristics	**Non-white ethnicity** 63.9% **Type of care** 94.6% had been adopted or reunited with their foster parents: 56.8% were placed with foster parents who had adopted them; 29.7% were placed with biological relatives who had adopted them; 8.1% were reunited with biological parents; 5.4% were placed with foster parents who had not adopted them.
Outcome measures	**Preschool developmental progress 1** Cognitive flexibility: defined by the Dimensional Change Card Sort (DCCS). This provides an index of preschool executive function. The DCCS is an experimenter administered task in which children are asked to sort a series of cards (e.g., red rabbits and blue boats) into separate piles first according to one dimension (color; "pre-switch") and then, after completing six trials, according to the other dimension (shape; "post-switch"). **Preschool developmental progress 2** Theory of mind: The penny hiding game. To administer this task, the researcher placed both hands behind her back and hid a penny in one hand. Both closed hands were then shown to the child and the child was asked to guess in which hand the penny was hidden. Three demonstration trials were presented, and then the child was asked to hide the penny for three test trials. For each of the test trials, the child earned one point each for: hiding both hands behind his or her back, presenting both hands to the researcher for guessing, and keeping the penny concealed at all times.

Study arms	Attachment and Biobehavioral Catch-up Intervention (ABC) (N = 17)
	The ABC intervention was designed to enhance children's attachment organization. Attachment and Biobehavioral Catch-up (ABC) intervention is a 10-session, manualized parenting program aimed at enhancing young children's self-regulatory capacities by helping caregivers provide nurturing and synchronous care. These two intervention components (i.e., nurturance in response to child distress, and synchronous parent-child interactions) are targeted in a number of ways. It was designed to help parents change to: provide nurturance when children are distressed both by re-interpreting children's alienating behaviors (Sessions 1–2) and by overriding their own issues that interfere with providing nurturing care (Sessions 7–8); provide a sensitive, responsive environment by following the child's lead with delight when children are not distressed (Sessions 3–4); and behave in ways that are not frightening to children (Sessions 5–6). Interventionists describe the importance of providing nurturing and synchronous care, based on developmental research. Additionally, interventionists videotape parent-child interactions during structured activities designed to help caregivers practice being synchronous by "following the child's lead." Interventionists provide feedback using video clips that highlight times when caregivers interacted with their children in nurturing and synchronous ways versus times when they struggled to do so (e.g., directing or teaching, intruding on the child's space, or being passive and disengaged). Finally, interventionists help caregivers consider how their own early experiences (e.g., not receiving nurturing care themselves) may make it more difficult to provide nurturing and synchronous care to their children.

% Female	76.5%
Mean age (SD)	Not reported
Condition specific characteristics	Non-white ethnicity 58.8%
Outcome measures	**Preschool developmental progress 1** Cognitive flexibility: Dimensional Change Card Sort (DCCS) post-switch score: mean number correct 5 ± 2.03 **Preschool developmental progress 2** Theory of mind score: mean 8.76 ± 0.44

Developmental Education for Families (DEF) (N = 20)

	The DEF sessions were of the same duration (10-hr-long sessions) and frequency (weekly) as the ABC intervention. The educational intervention was borrowed partly from the home visitation component of the early intervention program developed by Ramey and colleagues (Ramey et al. 1982, 1984). This intervention was designed to enhance cognitive, and especially linguistic, development. The intervention has been successful in improving intellectual functioning when provided intensively and for a long duration in day care settings (Brooks-Gunn et al. 1993). Components that involve parental sensitivity to child cues were excluded in our version of the intervention so as to keep the interventions distinct. Although the intervention is manualized, specific activities take into account child's developmental level.
% Female	not reported
Mean age (SD)	not reported
Condition specific characteristics	Non-white ethnicity 70.0% african american
Outcome measures	Preschool developmental progress 1 Cognitive flexibility: Dimensional Change Card Sort (DCCS) post-switch score: mean 2.40 ± 2.87 Preschool developmental progress 2 Theory of mind score: 6.80 ± 2.51

Risk of bias	Domain 1: Bias arising from the randomisation process High (Randomisation may have been broked since a subsample of previous randomised controlled trial used) Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention) High (very poorly reported) Domain 3. Bias due to missing outcome data

High

(No information about missing data provided)

Domain 4. Bias in measurement of the outcome

Some concerns

Domain 5. Bias in selection of the reported result

High

Overall bias and Directness

Risk of bias judgement

High

Partially Indirect

(USA-based)

Lind 2017

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Conducted in foster family homes
Study dates	Not reported

Duration of follow-up	Postintervention follow-up assessments included a home visit approximately 1 month after completion of the intervention and yearly postintervention research visits completed at the time of the child's birthday continuing until age 60 months (i.e., a 36-month visit, a 48-month visit, and a 60-month visit). Data for the present study were collected during the preintervention visit and the first available postintervention visit that included the relevant measures.
Sources of funding	National Institutes of Mental Health
Inclusion criteria	Care setting Foster families (no other inclusion criteria described)
Sample size	121
Split between study groups	63 foster families randomly assigned to receive ABC-T. 58 foster families randomly assigned to receive DEF.
Loss to follow-up	Not reported
% Female	Not reported for total study population
Mean age (SD)	Not reported for total study population
Outcome measures	Preschool developmental progress 1 Attention regulation problems: assessed using the Attention Problems Scale in the preschool version of the Child Behaviour Checklist (CBCL) Preschool developmental progress 2 Cognitive flexibility: as assessed by the Dimensional Change Card Sort (DCCS) task developed for preschoolers. The DCCS requires children to use rules flexibly to sort cards. Children must attend to a relevant dimension and sort cards based on that dimension (i.e., color). The rule is then switched, and children are required to inhibit their attention to the original dimension that is no longer relevant and attend to the dimension that was ignored in the previous phase (i.e., shape). Thus, task switching on the DCCS requires the formulation and use of a higher order rule for selecting which rules to use (i.e., color or shape) on any particular trial
Study arms	ABC-T (N = 63)

	ABC-T was developed to enhance parenting behaviors relevant to the developmental changes occurring during toddlerhood. ABC-T seeks to enhance children's regulatory capabilities by (a) increasing parents' nurturing behaviors in response to children's distress, (b) increasing parents' responsiveness to children's nondistress signals (i.e., "following the lead"), and (c) encouraging parents to serve as coregulators for their children under challenging conditions. ABC-T focuses on teaching parents strategies for serving as coregulators to their children when children become dysregulated. the ABC-T intervention is conducted in families' homes, and consists of 10 manualized sessions. The goals of the intervention are communicated through discussion of child development research, showing videos clips, pointing out times when parents successfully engage in one of the targeted behaviors, and explaining the importance of following the lead, nurturing, and calming behaviors	
	Study location	USA
	Study setting	Conducted in foster family homes
	Study dates	Not reported
	Duration of follow-up	Postintervention follow-up assessments included a home visit approximately 1 month after completion of the intervention and yearly postintervention research visits completed at the time of the child's birthday continuing until age 60 months (i.e., a 36-month visit, a 48-month visit, and a 60-month visit). Data for the present study were collected during the preintervention visit and the first available postintervention visit that included the relevant measures.
	Sources of funding	National Institutes of Mental Health
	Sample size	121
	Split between study groups	63 foster families randomly assigned to receive ABC-T. 58 foster families randomly assigned to receive DEF.

	Loss to follow-up	Not reported
	% Female	42.9%
	Mean age (SD)	age at intervention 29.9 ± 9.5 months. Age post-intervention 48.6 ± 9.0 months.
	Condition specific characteristics	**% who are babies or young children** 100% **% who are victims of exploitation or trafficking** 15.9% removed from parents for reasons of physical or sexual abuse. 7.9% for domestic violence. **Type of foster care** Nonrelative 82.5%, relative 17.5% **Non-white ethnicity** 71.4%
	Outcome measures	**Preschool developmental progress 1** Attention Problems Scale: mean score 2.73 ± 2.11 **Preschool developmental progress 2** Cognitive flexibility score: mean 23.67 ± 13.06
	Developmental Education for Families (DEF) (N = 58) Developmental Education for Families (DEF), focused on directly enhancing children's motor, cognitive, and language skills. The DEF intervention taught parents how to integrate activities designed to support their children's development in the targeted areas with play activities (e.g., exercises aimed at gross motor development that are presented to the child as playing with a ball). Both the DEF and the ABC interventions were manualized, 10 sessions, and conducted in families' homes. Thus, the DEF intervention controlled for nonspecific effects of therapy, receiving parent coaching in the home, and monetary compensation for participation.	
	Study location	USA

	Study setting	Conducted in foster family homes
	Study dates	Not reported
	Duration of follow-up	Postintervention follow-up assessments included a home visit approximately 1 month after completion of the intervention and yearly postintervention research visits completed at the time of the child's birthday continuing until age 60 months (i.e., a 36-month visit, a 48-month visit, and a 60-month visit). Data for the present study were collected during the preintervention visit and the first available postintervention visit that included the relevant measures.
	Sources of funding	National Institutes of Mental Health
	Sample size	121
	Split between study groups	63 foster families randomly assigned to receive ABC-T. 58 foster families randomly assigned to receive DEF.
	Loss to follow-up	Not reported
	% Female	51.7%
	Mean age (SD)	age at intervention: 31.8 ± 8.7 months, age at post intervention 48.0 ± 8.8 months
	Condition specific characteristics	% who are victims of exploitation or trafficking 25.9% removed from home for reasons of physical or sexual abuse; 12.1% for reasons of domestic violence Non-white ethnicity

		77.6%
		Type of care
		nonrelative: 79.3%; relative 20.7%
	Outcome measures	Preschool developmental progress 1
		Attention Problems Scale: mean score 3.63 ± 2.13
		Preschool developmental progress 2
		Cognitive flexibility score: mean 18.54 ± 12.88
Risk of bias	Domain 1: Bias arising from the randomisation process	
	Some concerns	
	Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	
	High	
	(poor reporting with regard to loss to follow up)	
	Domain 3. Bias due to missing outcome data	
	Some concerns	
	Domain 4. Bias in measurement of the outcome	
	Low	
	Domain 5. Bias in selection of the reported result	
	High	
	Overall bias and Directness	
	Risk of bias judgement	

	High
	Directness
	Partially indirect (USA-based)

Lipscomb 2013

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Children in non-parental care. Head start is a preschool program that provides comprehensive services (educational and health-focussed) to both low-income children and their families.
Study dates	Head Start Impact Study (HSIS): based on the random assignment of children and families entering Head Start at the start of the 2002 - 03 programme year
Duration of follow-up	HSIS recruited three- to four- year olds. In the current study, pre-academic skills, teacher-child relationship, and behaviour problems were measured at one year follow up.
Sources of funding	None reported
Inclusion criteria	Care setting Children living with non-biological parents Other Included in the Head Start Impact Study. The Head Start Impact Study is based on a nationally representative sample of both Head Start programs and children. First time applicants to Head Start in fall 2002 were randomly selected from a nationally representative sample of Head Start programs.
Exclusion criteria	Care setting Children living with biological, adoptive, or step-parents
Sample size	253
Split between study groups	154 assigned to the Head Start group, 99 to the community control group (not enrolled in Head Start)

Loss to follow-up	Unclear how many eligible children were lost to follow up over the course of the Head Start Impact Study
% Female	47.4
Mean age (SD)	4.0 (0.6) years
Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs 20.93% Non-white ethnicity 53 - 57% Type of care 13% foster care, 11% informal kinship care, 76% kinship care Number of placements 30.9% experienced a change in placement over the study year
Outcome measures	Educational outcomes 1 Pre-academic skills. A composite cluster of three Woodcock-Johnson III subtests – Letter-Word Identification, Spelling, and Applied Problems – was used to assess a broad constellation of children's pre-academic skills, including pre-reading and letter and word identification skills, developing mathematics skills, and early writing and spelling skills Behavioural outcomes Externalising behavior problems. Behavior problems were assessed by teacher report using the Adjustment Scales for Preschool Intervention. The following dimensions of child behavior were reported: aggressive (22 items), oppositional (11 items), and inattentive/hyperactive (10 items). To complete the ASPI, teachers were asked to select individual behavior descriptions for each child in relation to 24 classroom situations that match descriptors of both typical and problem classroom behaviors. For example, one classroom situation was, "How is this child at free play/individual choice?" The teacher then matched each child to any of the behavior descriptions that apply, such as (a) engages in appropriate activities, (b) disturbs others' fun, (c) wants to dominate and have his/her own way, and/or (d) starts fights and rough play. Raw scores for each dimension were based on the sum of the checked items that were associated with each subscale and were standardized according to the developer's original standardization sample. Social outcomes Teacher-child relationship. Children's relationships with their teachers were assessed with the total positive relationship scale of the Student–Teacher Relationship Scale. Teachers rated the children on 15 items, such as "If upset, this child will seek comfort from me" or "This child easily becomes angry at me." The teachers rated the children on each item using a five-point response format ranging from 1 (definitely does not apply) to 5 (definitely applies). Total scores ranged from 15 to 75, with higher scores reflecting more positive relationships
Study arms	**Head Start (N = 154)** Head Start is a program of the United States Department of Health and Human Services that provides comprehensive early childhood services to low-income children and families. Head Start's goal is to boost the school readiness of low income children. Based on a "whole child" model, the program provides comprehensive services that include preschool education; medical, dental, and mental health care; nutrition services; and efforts to help parents foster their child's development. Head Start services are designed to be responsive to each child's and family's ethnic, cultural, and linguistic heritage. Mean age (SD) 4.02 (0.56)

	Condition specific characteristics	Non-white ethnicity 57%
	Outcome measures	**Educational outcomes 1** Association between Head Start enrolment and pre-academic skills at follow up: β 0.16 (0.02 to 0.30). Adjusted for Baseline preacademic skills, baseline behaviour problems, age, SEN, gender, family income to needs ratio, authoritarian caregiving, parent child reading, change in caregiver over prior year. **Behavioural outcomes** Association between Head Start enrolment and externalising behavior problems at 1 year follow up: β -0.18 (-0.36 to 0.00). Adjusted for baseline preacademic skills, baseline behaviour problems, age, SEN, gender, family income to needs ratio, authoritarian caregiving, parent child reading, change in caregiver over prior year **Social outcomes** Association between Head Start enrolment and Teacher-child relationship at 1 year follow up: β 0.30 (0.12 to 0.48). Adjusted for Baseline preacademic skills, baseline behaviour problems, age, SEN, gender, family income to needs ratio, authoritarian caregiving, parent child reading, change in caregiver over prior year

Not enrolled in Head Start (N = 99)

A comparison group of children living with non-biological parents who were included in the Head Start Impact Study and were not enrolled in Head Start. Children who were placed in the control or comparison group were allowed to enroll in other non-parental care or non-Head Start child care or programs selected by their parents. They could remain at home in parent care, or enroll in a child care or preschool program. Consequently, the impact of Head Start was determined by a comparison to a mixture of alternative care settings rather than against a situation in which children were artificially prevented from obtaining child care or early education programs outside of their home

	Mean age (SD)	3.98 (0.61)
	Condition specific characteristics	Non-white ethnicity 53%

Domain 1: Bias arising from the randomisation process
Some concerns
(Study did not provide information about differences between comparison groups for baseline characteristics other than for age and ethnicity)

Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)
High
(No information regarding whether any participants deviated from their planned intervention. No information about the approach to missing data or loss to follow up.)

Domain 3. Bias due to missing outcome data
High
(unclear whether there was significant missing data and how this varied between comparison groups)

Domain 4. Bias in measurement of the outcome
High
(Outcomes could have been influenced by knowledge of the intervention group. Unclear that blinding was performed.)

Domain 5. Bias in selection of the reported result
Some concerns
(Insufficient information provided about methods and analysis plan. No explanation of why certain covariables were included in the final model)

Overall bias and Directness
Risk of bias judgement
High
Directness
Partially indirect (USA-based)

Pears 2007

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Foster children entering second grade (7-8 years) through kindergarten (5-6 years). Children attended playgroups over this transitional summer.
Study dates	Autumn 2002

Duration of follow-up	2 week follow up
Sources of funding	National Institute on Drug Abuse National Institute of Mental Health Office of Research on Minority Health
Inclusion criteria	Age Entering second grade through kindergarten Geography Foster children in Lane County, Oregon
Sample size	24
Split between study groups	11 in intervention group; 13 in control group
Loss to follow-up	1 lost to follow up in intervention group, 3 lost to follow up in control group
% Female	54.2%
Mean age (SD)	Not reported for total group
Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs 20.8% had received special education services Type of foster care 41.7% in non-relative foster care
Outcome measures	Behavioural and social functioning at school

Child Behavior Checklist (parent reported, mean difference reported 2 weeks before and after intervention): foster parent-rated social competence, externalising behaviors, internalising behaviors; Teacher Report Form (elementary school teacher-reported, post-intervention score reported one month following the start of school only): teacher-rated social problems, externalising behaviors, internalising behaviors

Emotional regulation
Emotion Regulation Checklist (parent-, teacher-, and laboratory assessors-reported, 2-week pre and post-intervention mean difference reported for foster parents and laboratory assessors, mean score one month following the start of school for teacher-reported outcomes): Foster parent-rated lability and emotional regulation, assessor-rated lability, teacher-rated lability and emotional regulation

Study arms	Therapeutic playgroups (N = 10)
	Intervention group children attended 2-hr therapeutic playgroups twice weekly for 7 weeks during the summer. Two components of social emotional readiness were targeted by the intervention: social competence (including sharing, initiating and maintaining interactions, cooperating and problem solving with peers, and recognizing emotions) and emotional and behavioral self-regulation (including problem solving, managing negative emotions, and using work-related skills). The curriculum manual for the playgroup was developed by the authors (and others) and outlined the activities for each of the playgroup sessions. The basic routine included a welcoming activity, a craft project, a snack, two circle times, projects, and group games. Each session focused on a single social skill (e.g., sharing), and skills were taught using instructional techniques that included preteaching, modeling, opportunities to practice skills, and immediate positive reinforcement. Skills were introduced and modeled during circle time, and opportunities to practice skills were embedded within subsequent classroom activities. Specific social skills included in the curriculum were sharing, initiating and maintaining interactions, cooperating, problem solving, and recognizing emotions. A small student-to-staff ratio (3:1) made it possible for teachers to shape the children's skills and to reward the children when they were successful.

	Study type	Randomised controlled trial (RCT)
	Study location	USA
	Study setting	Foster children entering second grade (7-8 years) through kindergarten (5-6 years). Children attended playgroups over this transitional summer.
	Study dates	Autumn 2002

	Duration of follow-up	2 week follow up for parent and assessor-related outcomes. Follow up one month after the start of school for teacher-related outcomes
	Sources of funding	National Institute on Drug Abuse National Institute of Mental Health Office of Research on Minority Health
	Sample size	24
	Split between study groups	11 in intervention group; 13 in control group
	Loss to follow-up	1 lost to follow up in intervention group, 3 lost to follow up in control group
	% Female	45.5%
	Mean age (SD)	6.49 ± 0.86 years
	Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs 18% had received special education services Type of foster care 46% in non-relative foster care
	Outcome measures	Behavioural and social functioning at school foster parent-rated social competence: mean difference 1.09 ± 1.20; foster-parent rated externalising behaviors: mean difference -2.10 ± 3.87; foster parent-rated internalising behaviors: mean difference -1.40 ± 5.64. teacher-rated social problems, post-intervention score: mean 2.10 ± 1.73; teacher-rated externalising behaviors, post-intervention score: mean 10.60 ± 8.09; teacher-rated internalising behaviors, post-intervention score: mean 6.50 ± 7.75.

Emotional regulation
Foster parent-rated lability score: mean difference -0.20 ± 0.21; foster parent-rated emotional regulation score: mean difference -0.04 ± 0.22; Assessor-rated lability score: mean difference -0.01 ± 0.31; teacher-rated lability score: mean 1.85 ± 0.53; teacher-rated emotional regulation, post-intervention score: mean 3.11 ± 0.52

Control group (N = 10)

Controls received foster care services as usual from the child welfare agency, which sometimes included early childhood special education services. They did not attend playgroups. playgroups.

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Foster children entering second grade (7-8 years) through kindergarten (5-6 years). Children attended playgroups over this transitional summer.
Study dates	Autumn 2002
Duration of follow-up	2 week follow up
Sources of funding	National Institute on Drug Abuse National Institute of Mental Health Office of Research on Minority Health
Sample size	24

	Split between study groups	11 in intervention group; 13 in control group
	Loss to follow-up	1 lost to follow up in intervention group, 3 lost to follow up in control group
	% Female	38.5%
	Mean age (SD)	6.61 ± 1.16
	Condition specific characteristics	% with disabilities; speech, language and communication needs; or special education needs 23% had received special education services Type of foster care 39% in non-relative foster care
	Outcome measures	Behavioural and social functioning at school foster parent-rated social competence score: mean difference -0.44 ± 0.82; foster parent-rated externalising behaviors score: mean difference 0.10 ± 3.87; foster parent-rated internalising behaviors score: mean difference -2.70 ± 2.50; teacher-rated social problems post-intervention score: mean 2.10 ± 4.04; teacher-rated externalising behaviors post-intervention score: mean 9.70 ± 10.09; teacher-rated internalising behaviors post-intervention score: mean 6.40 ± 7.79. Emotional regulation Foster parent-rated lability score: mean difference -0.06 ± 0.24; foster parent-rated emotional regulation score: mean difference -0.01 ± 0.16; assessor-rated lability score: mean difference 0.40 ±0.51; teacher-rated lability, post-intervention score: mean 1.63 ± 0.56; teacher-rated emotional regulation, post-intervention score: 3.29 ± 0.63
Risk of bias	Domain 1: Bias arising from the randomisation process Some concerns Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention) High	

Domain 3. Bias due to missing outcome data

Some concerns

Domain 4. Bias in measurement of the outcome

High

Domain 5. Bias in selection of the reported result

Some concerns

Overall bias and Directness

Risk of bias judgement

High

Directness

Partially indirect (USA-based)

Pears 2012, Pears 2013, Pears 2016, Lynch 2017

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Foster care. KITS intervention took place in centre- or school-based classrooms

Study dates	Not reported (study published 2012)
Duration of follow-up	Children and their caregivers participated in center-based assessments that employed standardized testing, questionnaires, and structured interviews at the beginning of the summer before kindergarten prior to the intervention, at the end of the summer just prior to kindergarten entry (5 years old), and at the ends of the kindergarten year (6 years old) and subsequent school years through third grade (9 years old).
Sources of funding	National Institute on Drug Abuse
Inclusion criteria	Care setting Nonkinship or kinship foster care at time of intervention Other English speaking; not involved with another treatment protocol closely related to the KITS intervention
Sample size	219
Split between study groups	113 were assigned to the KITS intervention, 106 were assigned to FCC
Loss to follow-up	11 in the KITS intervention, 16 in the FCC group
% Female	not reported for total study population
Mean age (SD)	Not reported for total study population
Outcome measures	Educational outcomes 1 Early Literacy Skills. Observer and caregiver report. Letter naming and letter–sound awareness were measured using the Letter Naming Fluency and Initial Sound Fluency subtests of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). For the former subtest, the child is asked to identify as many letters as possible from a randomly ordered array of uppercase and lowercase letters. The score is the number of correct letters identified in 1 min. For the latter subtest, the child is asked to orally produce the initial sound of a word that corresponds to a stimulus picture. The total score is the number of correct initial sounds produced in 1 min; Understanding of concepts about print was measured using the 24-

item Concepts About Print test, which assesses such print conventions as reading left to right, matching spoken to written words, and distinguishing pictures from text. The children received 1 point for each correct answer, summed to produce a total score. For the final indicator of early literacy skills, a caregiver rating of prereading skills was used. The caregivers were asked whether the child could recognize the letters of the alphabet and write his or her first name. Caregiver responses were standardized and averaged to produce a composite caregiver rating of prereading skills with higher scores indicating greater reading skills.

Physical health outcomes

Positive attitudes towards alcohol use in the third grade. Child-reported. Questions were adapted from the Monitoring the Future National Survey Questionnaire. The positive alcohol belief construct included three items: how many adults they believed used alcohol ("none" to "all"), whether they believed that it would be okay for people to drink alcohol ("no", "sometimes", "yes"), and how likely it was that they would use alcohol when they were teens ("definitely not", "probably not", "probably", "definitely"). For each item, children were provided with pictorial representations of the answer choices. In general, the "smallest" answer was depicted as a small block with other blocks increasing in size to the "largest" answer. Responses were standardized and averaged to form the positive attitudes towards alcohol use construct with higher scores indicating more positive attitudes.

Behavioural outcomes

Positive attitudes towards antisocial behavior in third grade. Child reported. two questions; "What are some of the things you think teenagers do for fun with their friends?" and "What are some of the things you think teenagers do when their moms or dads are not there?" Children could provide up to six answers for these open-ended questions, which were then classified into one of several categories of antisocial and prosocial activities. Antisocial activities included smoking, using marijuana or other drugs, sexual activities (but not dating), rule breaking (such as swearing, "getting in trouble"), and delinquent behaviors (such as hurting others, getting arrested). The alcohol use category was left out of this construct to avoid overlap with the positive attitudes towards alcohol use construct. For the question about what teenagers do when their parents are not there, "partying" was also considered an antisocial response. Examples of prosocial responses were playing games, sports, spending time with family, eating, and in-home recreation (like watching TV or movies). The child's total number of answers to each question was computed as well as the number of antisocial answers. The total antisocial answers for the two questions were significantly positively correlated and were thus summed as were the total answers for both questions. The total number of antisocial answers to both questions was then divided by the total number of answers to produce a rate of endorsement of antisocial behaviors.

Social outcomes

Involvement with deviant peers in third grade. Child and teacher-reported. children answered a series of questions about whether "none", "some", or "all" of their friends were involved in five rule-breaking or deviant behaviors ("cheat on tests", "ruin or damage something that doesn't belong to them", "talk back to adults", "hit or threaten to hit someone", "suggest that you do something that could get you into trouble"). All children were given a card with a pictorial representation of the answer choices. "None"was shown as the smallest block and "all" as the largest with "some" in the middle. Items were averaged to forma scale of involvement with deviant peers (standardized). Teachers completed a series of questions about the child's social skills, including questions about how well the child was liked and accepted, how often the child associated with peers who misbehave, how often the child exerted a negative influence on peers, and how influenced by peers the child was compared to other peers of his or her age. These four items showed good internal reliability and so were averaged to produce a teacher rating of deviant peer association. This was significantly positively correlated with the child report of negative peer association and thus the two scores were standardized and averaged to produce an involvement with deviant peers construct. Higher scores indicate higher involvement.

Emotional regulation

inhibitory control, behavior regulation, and emotion regulation. Inhibitory control. Scores from four measures were combined to create the inhibitory control composite. First, the caregivers completed the Children's Behavior Questionnaire. Scores on the Inhibitory Control subscale and the Attentional Focusing subscale were averaged. Second, the caregivers completed the Inhibit subscale from the Brief Rating Inventory of Executive Function–Preschool Version. Third and fourth, the children completed two computer-administered tasks shown to activate specific regions of the prefrontal cortex and anterior cingulate gyrus.

Confidence and self-esteem outcomes

Self-competence in third grade. Child reported. Children answered six questions on their self-competence (e.g., whether they liked the person they were) on the Global Self-Worth Scale (standardized) of the Self-Perception Profile for Children.

Behavioural outcomes 2

Oppositional and aggressive classroom behaviors. Teacher reported. The child's oppositional and aggressive behaviors in school were measured via the teacher report using the raw scores from the aggressive and delinquent behavior subscales of the Teacher Report Form. Additionally, the oppositional subscale of the Conners' Teacher Ratings Scales-Revised: Short version (CTRS:S) was used.

Behavioural outcomes 3
Days free from internalising symptoms. Used symptom reports from caregivers on the Child Behavior Checklist (CBCL) to create days that had significant internalizing symptoms or externalizing behaviors. Specifically, the CBCL scores at each assessment point were used to categorize days with greater levels of internalizing or externalizing behavior. Scores were then interpolated using quadratic weighting between the symptom-free days and those with greater symptoms to assign a value to each day in the interval. Authors then calculated the number of IFDs and EFDs as the number of days in the study period minus the days with significant internalizing or externalizing behavior.

Behavioural outcomes 4
Days free from externalising symptoms. Used symptom reports from caregivers on the Child Behavior Checklist (CBCL) to create days that had significant internalizing symptoms or externalizing behaviors. Specifically, the CBCL scores at each assessment point were used to categorize days with greater levels of internalizing or externalizing behavior. Scores were then interpolated using quadratic weighting between the symptom-free days and those with greater symptoms to assign a value to each day in the interval. Authors then calculated the number of IFDs and EFDs as the number of days in the study period minus the days with significant internalizing or externalizing behavior.

Behavioural outcomes 5
Behaviour regulation. Three measures were used to form a composite score of behavior regulation. First, reversed scores on the Activity Level subscale and Impulsivity subscale of the CBQ were averaged. Second, the reversed score on the Externalizing subscale of the CBCL was used. Third, the reversed score on the Lability subscale of the Emotion Regulation Checklist (ERC) was used. The CBQ, CBCL, and ERC indicators were standardized and averaged to produce the behavior regulation composite score.

Social outcomes 2
Prosocial skills. Caregivers completed the Preschool Penn Interactive Peer Play Scale. Play interaction, Play distruption, and play disconnection subscales. The Play Interaction scale asks caregivers to report the frequency with which children engage in prosocial behaviors such as helping, sharing, encouraging others to join play, and settling conflicts. Because prosocial skills were foci of the intervention, the Play Interaction scale was used in the present analyses. The raw Social Competence score from the caregiver-completed Child Behavior Checklist (CBCL) was also used as an indicator of prosocial skills.

Emotional outcomes 2
Emotional understanding. emotion understanding was measured directly using eight short vignettes describing situations that would typically be expected to elicit happiness, sadness, anger, or fear. The children were asked to select the picture that best represented the emotional state of the protagonist in each vignette. The vignettes were scored as follows: 2¼correctly identified the targeted emotion depicted in the story, 1=selected an emotion of the same valence as the targeted emotion, and 0=did neither. Scores were summed across the eight vignettes.

Emotional regulation 2
Emotion regulation. To measure emotion regulation, authors used the reversed scores on the Anger subscale and the Reactivity/Soothability subscale of the CBQ. These indicators were averaged and combined. he Emotion Regulation scale from the ERC was also utilized in this composite. Finally, the reversed score on the Emotion Control subscale of the BRIEF–P was included in the composite score. indicators were standardized and averaged to create an emotion regulation composite score.

Study arms	Kids In Transition to School (KITS) programme (N = 102)

	The KITS intervention occurs during the 2 months of summer prior to kindergarten entry and the first 2 months of kindergarten in the fall. It consists of two primary components: child school readiness groups and caregiver groups. The 24-session school readiness groups for the children (2 h, twice weekly in the summer, 16 sessions; 2 h, once weekly in the autumn, 8 sessions) focus on promoting early literacy, prosocial, and self-regulatory skills. The caregiver groups meet for 8 sessions total, every other week during the summer and autumn (2 h), and focus on effective parenting techniques as well as promoting caregiver involvement in early literacy and school. Caregiver group meetings coincide with the children's school readiness group meeting times. The KITS school readiness group sessions are held in center- or school-based classrooms and have a highly structured, consistent routine similar to that of a typical kindergarten classroom. The manualized curriculum covers three critical skill areas: (1) self-regulatory skills (e.g., handling frustration and disappointment, paying attention, following multistep directions, and making appropriate transitions); (2) prosocial skills (e.g., reciprocal social interaction, social problemsolving, and emotion recognition); and (3) early literacy skills (e.g., letter names, phonological awareness, conventions of print, and comprehension).
% Female	48%
Mean age (SD)	5.26 ± 0.33
Condition specific characteristics	**% who are victims of exploitation or trafficking** 16% with histories of sexual abuse, and 17% with history of physical abuse **Type of foster care** 62% nonkinship care; 38% kinship care **Non-white ethnicity** 45% **Number of placements** mean 3.10 ± 1.75
Outcome measures	**Educational outcomes 1** DIBELS, initial sound fluency score: mean 7.68 ± 7.41; DIBELS, letter naming fluency score: mean 8.75 ± 11.04. Concepts About Print score: 7.10 ± 3.28; Caregiver Rating of Pre-reading skills score: mean -0.06 ± 0.87. Association between being in the intervention group and early literacy skills (composite of standardised means from indicators of early literacy skills, above): β 0.10 P<0.05 (adjusted for general cognitive ability at baseline, early literacy skills at baseline) **Physical health outcomes**

Positive attitudes towards alcohol score: mean -0.13 ± 0.58. Association between being in the intervention group and positive attitudes towards alcohol: β -0.34   P<0.05 (adjusted for gender, general cognitive ability at baseline, kinship foster care, child oppositional and aggressive behaviour at baseline, placement changes during study, other psychological/ educational services)

Behavioural outcomes
Positive attitudes towards antisocial behaviours score: mean 0.22 ± 0.26. Association between being in the intervention group and positive attitudes towards attitudes: β -0.11   P<0.05 (adjusted for gender, general cognitive ability at baseline, kinship foster care, child oppositional and aggressive behaviour at baseline, placement changes during study, other psychological/ educational services)

Social outcomes
Involvement with deviant peers score: mean -0.07 ± 0.88

Emotional regulation
Inhibitory control score: mean -0.01 ± 0.69

Confidence and self-esteem outcomes
Self-competence score: mean 20.55 ± 3.45. Association between being in the intervention group and greater self-competence: β 1.95   P<0.01 (adjusted for gender, general cognitive ability at baseline, kinship foster care, child oppositional and aggressive behaviour at baseline, placement changes during study, other psychological/ educational services)

Behavioural outcomes 2
Teacher report aggressive behaviour subscale: mean score 9.53 ± 10.46; Teacher report form delinquent behaviour subscale: mean score 1.99 ± 2.01; Conner's Teacher's Rating Scale oppositional behaviours subscale: 1.92 ± 3.24

Behavioural outcomes 3
Days free from internalising symptoms: mean 310.5 ± 78.8

Behavioural outcomes 4
Days free from externalising behaviour: mean 218.6 ± 102.4. Association between being in the intervention group and child oppositional and aggressive behaviours: β -0.17   P<0.05 (adjusted for oppositional and aggressive behaviours at baseline, gender, overall level of disruptiveness in classroom)

Behavioural outcomes 5
Behavioural Regulation score: mean 0.07 ± 0.84.

Social outcomes 2
Preschool PIPPS Score: mean 2.73 ± 0.40; CBCL Social Competence score: mean 4.77 ± 1.99. Association between being in the intervention group and prosocial skills score: β 0.4 P>0.05 (adjusted for gender, kinship foster care, prosocial skills at baseline).

Emotional outcomes 2
Emotional understanding score: mean 10.80 ± 2.86

		Emotional regulation 2 Emotional regulation score: mean -0.01 ± 0.79 Association between being in the intervention group and self-regulatory skills: β 0.11 P<0.05 (adjusted for gender, Latino ethnicity, self-regulatory skills at baseline, daycare attendance)
	Foster care as usual (FCC) (N = 90) Children in this group received services commonly offered by the child welfare system. These could include individual child psychotherapy, participation in Head Start or another early childhood education program, and services such as speech therapy. No attempt was made to influence the type or amount of services received by children or their families in either the comparison or the KITS groups.	
	Split between study groups	113 were assigned to the KITS intervention, 106 were assigned to FCC
	Loss to follow-up	11 in the KITS intervention, 16 in the FCC group
	% Female	54%
	Mean age (SD)	5.25 ± 0.35
	Condition specific characteristics	**% who are victims of exploitation or trafficking** 21% with history of physical abuse, 18% with history of sexual abuse **Type of foster care** Nonkinship care 61%, kinship care 39% **Non-white ethnicity** 49% **Number of placements** 3.22 ± 1.96

	Outcome measures	**Educational outcomes 1** DIBELS, Initial Sound Fluency score: mean 6.87 ± 6.93; DIBELS, Letter Naming Fluency score: mean 8.52 ± 10.43; Concepts About Print score: mean 6.45 ± 3.85; Caregiver Rating of Prereading Skills score: mean 0.07 ± 0.81 **Physical health outcomes** Positive attitudes towards alcohol score: mean 0.17 ± 0.82 **Behavioural outcomes** Positive attitudes towards antisocial behaviours score: mean 0.31 ± 0.31 **Social outcomes** Involvement with deviant peers score: mean 0.12 ± 0.89 **Emotional regulation** Inhibitory control score: mean -0.04 ± 0.76 **Confidence and self-esteem outcomes** Self-competence score: mean 18.64 ± 4.18 **Behavioural outcomes 2** Teacher Report Form aggressive behaviour subscale: mean 11.37 ± 10.48; Teacher report Form delinquent behaviour subscale: mean 2.57 ± 2.38; Conner's Teacher Rating Scale oppositional behaviours subscale: mean 2.73 ± 3.58 **Behavioural outcomes 3** Overall level of disruptiveness in the classroom score: mean 0.04 ± 0.85 **Behavioural outcomes 4** Days free from internalising symptoms: mean 284.5 ± 101.5 **Behavioural outcomes 5** Days free from externalising behaviours: 192.0 ± 104.6 **Social outcomes 2** Preschool PIPPS Score: mean 2.78 ± 0.42; CBCL Social Competence score: mean 4.87 ± 2.03 **Emotional outcomes 2** Emotional understanding score: mean 11.01 ± 2.82 **Emotional regulation 2**

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		Emotional regulation score: mean -0.01 ± 0.77 **Behavioural outcomes 6** Behavioural regulation score: mean -0.07 ± 0.89
Risk of bias	Domain 1: Bias arising from the randomisation process Some concerns Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention) Some concerns Domain 3. Bias due to missing outcome data High Domain 4. Bias in measurement of the outcome Low Domain 5. Bias in selection of the reported result High Overall bias and Directness Risk of bias judgement High Directness Partially indirect (USA-based)	

Raby 2019

Study type	Randomised controlled trial (RCT)
Study location	USA
Study setting	Interventions were conducted in the homes of foster families
Study dates	Not reported (published 2019)
Duration of follow-up	Post-intervention assessments were completed approximately 1 month after finishing the intervention as well as annually until the child reached 60 months of age (5 years).
Sources of funding	National Institutes of Mental Health
Inclusion criteria	Age Parents fostering a child between the ages of 24 and 36 months old Care setting Foster care Other completed an assessment of receptive vocabulary during post-intervention visits
Sample size	178 foster children were allocated to interventions
Split between study groups	93 participants were allocated to ABC-T, 85 participants were allocated to DEF
Loss to follow-up	50 participants were lost to follow up in ABC-T group.

	29 participants were lost to follow up in the DEF group
% Female	Not reported for total sample
Mean age (SD)	age at the point of assessment: 28.5 ± 9.25 months
Condition specific characteristics	% who are babies or young children 100% Type of care Initially, all participants were in foster care
Outcome measures	Preschool developmental progress 1 Receptive language: Assessed using the Peabody Picture Vocabulary Test (PPVT third edition). Administered when children were approximately 36, 48, and 60 months of age. Children were shown a set of four pictures and were asked to point to the picture of a stated word and earned a point for every correct response. Standard scores were used in analyses, as these adjust for differences in child age and can be readily interpreted in comparison to age-based benchmarks. Since not all children completed the research visits at each time point a composite measure of receptive vocabulary skills was created by averaging the standardised PPVT scores collected at three ages (36 months, 48 months, and 60 months).
Study arms	Attachment and Biobehavioral Catch-up for Toddlers (ABC-T) (N = 45) ABC-T was developed to enhance parenting behaviors relevant to the developmental changes occurring during toddlerhood. ABC-T seeks to enhance children's regulatory capabilities by (a) increasing parents' nurturing behaviors in response to children's distress, (b) increasing parents' responsiveness to children's nondistress signals (i.e., "following the lead"), and (c) encouraging parents to serve as coregulators for their children under challenging conditions. ABC-T focuses on teaching parents strategies for serving as coregulators to their children when children become dysregulated. the ABC-T intervention is conducted in families' homes, and consists of 10 manualized sessions. The goals of the intervention are communicated through discussion of child development research, showing videos clips, pointing out times when parents successfully engage in one of the targeted behaviors, and explaining the importance of following the lead, nurturing, and calming behaviors

% Female	46.7%
Mean age (SD)	Age when removed from birth parents: 13.8 ± 12.7 months

		Age at PPVT assessment: 52.1 ± 9.1 months
	Condition specific characteristics	**% who are babies or young children** 100% **% who are victims of exploitation or trafficking** 66.7% were removed from birth parents as a result of physical or sexual abuse. 50% for reasons of domestic violence. (not mutually exclusive) **Non-white ethnicity** 68.1% **Type of care** 27.9% in relative foster care, 72.1% in nonrelative foster care **Number of placements** mean 2.2 ± 0.8
	Outcome measures	**Preschool developmental progress 1** Receptive vocabulary, PPVT mean score: 99.4 ± 15.9
	Developmental Education for Families (DEF) (N = 43) Developmental Education for Families (DEF), focused on directly enhancing children's motor, cognitive, and language skills. The DEF intervention taught parents how to integrate activities designed to support their children's development in the targeted areas with play activities (e.g., exercises aimed at gross motor development that are presented to the child as playing with a ball). Both the DEF and the ABC interventions were manualized, 10 sessions, and conducted in families' homes. Thus, the DEF intervention controlled for nonspecific effects of therapy, receiving parent coaching in the home, and monetary compensation for participation.	
	% Female	51.2%
	Mean age (SD)	Age when first removed from birth parents: 13.6 ± 13.5 months Age at PPVT assessment: 51.4 ± 8.7

	Condition specific characteristics	% who are babies or young children 100% % who are victims of exploitation or trafficking 33.3% were removed from home as a result of physical or sexual abuse. 50% for reasons of domestic violence (not mutually exclusive). Non-white ethnicity 74.4% Type of care 75.6% in nonrelative foster care. 24.4% in relative foster care. Number of placements mean 2.2 ± 0.8
	Outcome measures	Preschool developmental progress 1 Receptive vocabulary, PPVT mean score: 92.3 ± 16.5
Risk of bias	Domain 1: Bias arising from the randomisation process Low Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention) High Domain 3. Bias due to missing outcome data Some concerns Domain 4. Bias in measurement of the outcome High Domain 5. Bias in selection of the reported result High	

	Overall bias and Directness
	Risk of bias judgement
	High
	Directness
	Partially indirect (USA based)