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Does dose of early intervention matter for preschoolers with externalizing behavior problems? A pilot randomized trial comparing intensive summer programming to school consultation

Katie C. Hart*, Andre V. Maharaj, Paulo A. Graziano

Center for Children and Families, Department of Psychology, Florida International University, United States of America

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ABSTRACT

The goals of this study were to (a) isolate the ideal length (i.e., 4 or 8 weeks) of the Summer Treatment Program for Kindergarteners (STP-PreK) for improving school readiness and kindergarten success outcomes of preschool children with externalizing behavior problems (EBPs) during the transition to kindergarten; and (b) compare the STP-PreK model to a more standard approach in school settings (i.e., behavioral school consultation). Forty-five preschool children (82% boys; *M*age = 5.16 years; 93% Hispanic/Latino background) were randomized to one of three intervention conditions: 1) 8-week STP-PreK (8W); 2) 4-week STP-PreK (4W); or 3) school year behavioral consultation (SC). Both STP-PreK groups included an 8-week parent training component. Baseline, post-intervention, and 6-month follow-up data were collected on children's school readiness and kindergarten success outcomes including parent, teacher, and objective assessment measures. Analyses using linear mixed models indicated that children's behavioral, academic, social-emotional, and self-regulation functioning significantly improved across groups. Few significant differences were found between children receiving the 4W and 8W programs, suggesting that both programs have the potential to prepare preschool children with EBP for the transition to school. Both 4W and 8W groups experienced greater initial growth across time in most domains compared to children in the SC group. However, by the end of the kindergarten year, children in the SC group caught up to children in both 4W and 8W groups on most domains. Overall, these findings suggest that all three intervention doses are effective in improving kindergarten year functioning, with some important considerations for intervention timing in preparation for the transition to elementary school. Clinical implications for school personnel are discussed.

1. Introduction

Over the last 25 years, the transition to kindergarten and its significance for later school success has garnered increasing attention. This has been most evident in the expansion of universal prekindergarten opportunities nationwide, with 44 states now funding prekindergarten programs with a total investment over $7.5 billion (Diffay, Parker, & Atchison, 2017), and annual enrollment exceeding 1.5 million children (National Institute for Early Education Research, 2018). While some children arrive at the kindergarten door ready to succeed, others do not, often due to emotional and behavioral problems. Externalizing behavior problems (EBPs; e.g., aggression, defiance, inattention, hyperactivity/impulsivity) specifically have been found to have significant implications for

* Corresponding author at: Florida International University, Center for Children and Families, AHC-1, Room 140, 11200 SW 8th Street, Miami, FL 33199, United States of America.
E-mail address: khart@fiu.edu (K.C. Hart).

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children's school readiness and transition into the early school years (Denham, 2006; McClelland, Acock, & Morrison, 2006; Webster-Stratton, Reid, & Stoolmiller, 2008). Without intervention, EBPs in the preschool years have been found to predict later problem behaviors in the elementary school years (Angold & Egger, 2007), clinically significant levels of later disruptive behavior problems (Campbell & Ewing, 1990), academic deficits, underachievement, and school failure (Massetti et al., 2008), greater use of special services (Campbell & Ewing, 1990), and placements in special education (Redden, Ramey, Ramey, Forness, & Brezausek, 2003). As EBPs constitute one of the most prevalent classes of problems affecting preschool-age children (Egger & Angold, 2006) and with preschool expulsion rates three times greater those of K-12 students (Gilliam, 2005), it is clear that a significant proportion of young children need more than standard preschool programming in order to be ready for school.

1.1. Early intervention efforts for children with EBPs

Efforts to promote successful transitions to kindergarten for preschoolers vary dramatically across schools, districts, counties, and states. A national survey of kindergarten teachers (i.e., Pianta, Cox, Taylor, & Early, 1999) found that the most common transition practices (i.e., letters, flyers, notes, and back-to-school nights) involve contacting families after school starts, which may be too late in the transition process to do much good. There is some robust evidence from the Early Childhood Longitudinal Study – Kindergarten Sample (ECLS-K) suggesting that the number of school-based practices in the fall of kindergarten is modestly associated with more positive academic achievement scores at the end of kindergarten, even controlling for family socioeconomic status and other demographic factors (Schulting, Malone, & Dodge, 2005). However, none of these transition practices address the unique transition needs of children with EBPs.

There are four primary early intervention efforts that have been found to be effective in addressing the specific needs of preschool children with EBPs: a) behavioral parent training (see Comer, Chow, Chan, Cooper-Vince, & Wilson, 2013 for a meta-analysis); b) social-emotional training (e.g., Domitrovich, Cortes, & Greenberg, 2007); c) self-regulation training (e.g., Tominey & McClelland, 2011); and d) school-based interventions including teacher training and behavioral consultation (e.g., Raver et al., 2009; Sheridan, Clarke, Knoche, & Edwards, 2006; Webster-Stratton et al., 2008). Only recently have these approaches been adapted to address the transitional needs of preschool-aged children with EBPs during the summer before the start to kindergarten. Specifically, there have been two summer transition programs, Kids in Transition to School (KITS; Pears et al., 2013) and the Summer Treatment Program for PreKindergarteners (STP-PreK; Graziano & Hart, 2016; Graziano, Slavec, Hart, Garcia, & Pelham Jr., 2014), to our knowledge that have been developed and designed to bridge the gap between the early childhood and elementary school settings to promote school readiness in children with EBPs, both of which vary dramatically in the dose and timing of intervention provided.

The KITS program is a short-term intervention focused on promoting school readiness for children in foster care and children with developmental delays, including children with co-occurring EBPs. The KITS program occurs in two phases: a) the school readiness phase occurring the two months before kindergarten entry; and b) the transition/maintenance phase occurring in the first two months of kindergarten. In the school readiness phase, children are taught specific emotion and behavior regulation skills in 16 two-hour sessions occurring twice weekly. In the transition/maintenance phase, children participate in 8 two-hour sessions occurring once weekly. Groups of 12–15 children are led by a graduate-level lead teacher and two assistant teachers. Across phases, caregivers also learn evidence-based, positive behavior management skills that parallel those used in the children's group in eight sessions (2 h, every 2 weeks; 4 sessions in each intervention phase) as well as skills to promote involvement in early literacy and school. Caregiver groups are led by a facilitator and an assistant. Taken together, children and their parents receive 64 h of intervention in preparation for the transition to kindergarten. Results from two randomized control trials (i.e., Pears et al., 2013; Pears et al., 2014) demonstrate immediate positive effects on early literacy and self-regulatory skills, as well as reduced ineffective parenting prior to school entry leading to more parental involvement in kindergarten. In terms of dose of intervention received, on average, children in the KITS program attended 62–74% of the school readiness group sessions and caregivers attended 54–73% of the sessions.

The STP-PreK is an intensive 8-week, daily, 9-hour (376 h total) summer-only program for preschool children with EBPs who are transitioning to kindergarten. The STP-PreK has two main components: 1) a child centered intervention focused on developing children's behavioral, social-emotional, self-regulation, developmental, and academic preparedness for school; and 2) a parent centered intervention focused on promoting positive parenting using techniques from group-based Parent-Child Interaction Therapy (PCIT; Zisser & Eyberg, 2010) and parental involvement in learning to promote children's overall school readiness. Results from an open trial indicate significant improvements in children's school readiness outcomes including academic skills, parental report of EBP, adaptive functioning and overall readiness for kindergarten, as well as observational tasks of self-regulation, with maintenance of gains 6-months post-intervention (Graziano et al., 2014). Results from a small randomized trial comparing the efficacy of the child program with and without enhanced social-emotional and self-regulation training versus parent training alone demonstrate that while parent training is sufficient to address children's behavioral difficulties, an intensive summer program that goes beyond behavior modification and academic preparation by including social-emotional and self-regulation training can have incremental benefits across multiple aspects of school readiness (Graziano & Hart, 2016). Results from multiple years of implementation of the parenting program demonstrate significant improvements in parenting outcomes with maintenance of gains at 6 to 9 months post-intervention (Graziano, Ros, Hart, & Slavec, 2017). There is also evidence that a shorter 4-week version of this program is effective in both the short- and long-term for children who are both exhibiting clinically significant EBPs and who are at socioeconomic risk, with children receiving the 4-week intervention demonstrating less student-teacher conflict and fewer behavior problems at the start of kindergarten, and in the long-term having significantly higher standardized reading scores and being 8 times less likely to be retained in kindergarten (Hart et al., 2016). For the 4-week program, average percentage of attendance in the daily child program and weekly parent meetings was 89% and 58%, respectively. For the 8-week program, average percentage of attendance in the daily child

program and weekly parent meetings was 96% and 86%, respectively. However, the 4- and 8-week programs have not been compared to each other, nor have they been compared to more traditional school-based approaches (i.e., behavioral school consultation).

1.2. Does dose of early intervention matter?

As Pears et al. (2013) discuss, school readiness interventions that have shown effects into adulthood are typically intensive and long term (i.e., duration of 1 year or more; e.g., Campbel et al., 2008; Schweinhart et al., 2005), with some researchers asserting that longer term interventions may be required to prevent behavioral and academic problems (e.g., Greenberg, Domitrovich, & Bumbarger, 2001). However, improvements in our understanding of the underlying behavioral and neurobiological mechanisms central to school success (Blair & Diamond, 2008; Blair & Raver, 2015; Eisenberg, Valiente, & Eggum, 2010; Pears, Fisher, Bruce, Kim, & Yoerger, 2010) may permit the development of more precise, short-term, high intensity school readiness interventions that have long-term effects. This is an especially important area to investigate because attendance and adherence to long-term interventions is challenging for families of children with EBPs (e.g., CPPRG, 2002). Additionally, few long-term programs operate in the summer, which is a critical time period to intervene in order to reduce the summer learning loss for children at-risk, and a unique time for children and families to acquire the critical skills that may facilitate a more positive transition to kindergarten (Cooper, Charlton, Valentine, Muhlenbruck, & Borman, 2000). As other researchers (e.g., Pears et al., 2013) have asserted, to serve a wider range of children at-risk for poor school outcomes, in this case children with EBPs, research into the efficacy of intensive, shorter-term, theory-driven programs to promote school readiness is greatly needed and has the potential for tremendous cost-savings (Heckman, Grunewald, & Reynolds, 2006).

1.3. Current study

Given the need to identify the dose of early intervention needed to help promote a successful transition to kindergarten for children with EBPs, the goals of this study were to (a) isolate the ideal length (i.e., 4 or 8 weeks) of the STP-PreK for improving children's school readiness and kindergarten success outcomes; and (b) compare the STP-PreK model to a more standard approach in school settings (i.e., behavioral school consultation). Based on the presumption that greater intensity of early intervention results in greater gains, we hypothesized that (a) children attending the 8-week (8W) program would make significantly greater improvements in their school readiness skills at kindergarten entry over children attending the 4-week (4W) program; and (b) both children attending the 4W and 8W programs would experience greater improvements in school readiness skills and kindergarten success when compared to children receiving school-year behavioral consultation services, with children attending the 8W program experiencing the greatest gains in school readiness skills and kindergarten success.

2. Method

2.1. Participants and recruitment

The study took place in a large urban southeastern city in the U.S. with a large Hispanic/Latino population. Children and their caregivers were recruited from local preschools and mental health agencies via brochures, radio and newspaper ads, open houses, and parent workshops. Sixty-nine families scheduled a screening appointment. The primary caregiver provided written consent prior to the start of the initial screening assessment. To qualify for the study, participants were required to (a) have an EBP composite T-score of 60 or above on the Behavior Assessment System for Children, 2nd Edition (BASC-2; Reynolds & Kamphaus, 2004) as reported by their preschool teacher ($M = 67.86$, $SD = 10.86$) or parent ($M = 63.67$, $SD = 11.35$), (b) be enrolled in preschool during the previous year, (c) have an IQ of 70 or higher ($M = 88.71$, $SD = 13.04$) based on the Wechsler Preschool and Primary Scale of Intelligence – Fourth edition (WPPSI-IV; Wechsler, 2012), (d) have no confirmed history of Autism Spectrum Disorder based on parental report as well as completion of the Social Communication Questionnaire (SCQ; Rutter, Bailey, & Lord, 2003), and (e) be able to attend the daily 4W or 8W summer program prior to the start of kindergarten or participate in school consultation meetings during the kindergarten year.

The final participating sample consisted of 45 preschool children (82% male) with at-risk or clinically elevated levels of EBP. Questionnaires, offered in the parents' preferred language, were completed primarily by mothers (80%) across all study assessments. Translation of parent questionnaires not commercially available through assessment publishers was conducted via best practice translation and back-translation methodology (Hambleton, 2001; Peña, 2007) by fully bilingual, Hispanic/Latino research study staff with expertise in clinical child psychology. See Table 1 for sample demographics including rates of diagnoses derived from administration of the disruptive disorders module of the Diagnostic Interview Schedule for Children, computerized version IV (C-DISC-IV; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000). No significant differences were found between English and Spanish speaking parents. According to parent report at intake, two children were taking psychotropic medication for Attention-Deficit/Hyperactivity Disorder (ADHD). All children were required to be fluent in English as administration of standardized IQ and academic measures could only be conducted in English.

Table 1
Participant baseline demographic variables by initial intervention assignment.

	Total Sample	8-week	4-week	School Consultation
N	45	15	15	15
Age (Mean)	5.16 (0.40)	5.08 (0.40)	5.11 (0.40)	5.31 (0.38)
Sex				
Male	37 (82%)	11 (73%)	12 (80%)	14 (93%)
Female	8 (18%)	4 (27%)	3 (20%)	1 (7%)
Child's Ethnicity				
Hispanic/Latino	42 (93.3%)	12 (80%)	15 (100%)	15 (100%)
Not Hispanic/Latino	3 (6.7%)	3 (20%)	0 (0%)	0 (0%)
Caregiver Age (Mean)	34.56 (8.03)	34.57 (7.37)	35.93 (8.84)	32.83 (8.08)
Caregiver Marital Status (%)				
Single	14.6	0	26.7	16.7
Married	63.4	57.1	66.7	66.7
Separated/Divorced	22	42.9	6.7	16.6
Primary Home Language (%)				
Spanish	36.6	50	33.3	25
English	63.4	50	66.7	75
Hollingshead SES (Mean)	44.52 (12.14)	40.67 (14.68)	44.87 (11.58)	48.92 (7.95)
Referral Source (%)				
Self-referred	17.8	13.3	20	20
Friend/family	13.3	13.3	13.3	13.3
Mental heal professional/physician	24.4	33.3	13.3	26.7
Preschool	44.4	40	53.3	40
Screening Measures				
Child IQ	88.71 (13.05)	86.47 (11.14)	92.93 (14.13)	86.73 (13.50)
BASC-2 externalizing t-score (P)	63.67 (11.35)	63.20 (11.40)	63.40 (10.25)	64.58 (13.42)
BASC-2 externalizing t-score (T)	67.87 (10.86)	67.80 (9.06)	72.27 (10.10)	63.21 (12.10)
ADHD only diagnosis (%)	20	20	20	20
ADHD + ODD diagnosis (%)	46.7	53.3	40	46.7
ODD only diagnosis	15.6	0	26.7	20

Note. Values enclosed in parentheses represent standard deviations unless otherwise specified. Tests to determine differences between intervention groups revealed no significant differences between groups on any of these variables. SES = socioeconomic status, BASC-2 = Behavior Assessment System for Children, 2nd Edition, ADHD = Attention-Deficit/Hyperactivity Disorder, ODD = Oppositional Defiant Disorder, P = parent report, T = teacher report.

2.2. Measures of feasibility and acceptability

2.2.1. Treatment fidelity

Masters or doctoral level staff completed a treatment fidelity checklist on a weekly basis for each classroom to provide supervision to staff implementing the 4W and 8W programs (as fully described in the intervention components section). Both classrooms attained excellent fidelity (M = 100%). The corresponding parenting program, The School Readiness Parenting Program (SRPP), fidelity was completed by a licensed psychologist or master's level graduate student for 4 of 8 sessions, with weekly group supervision provided by a licensed psychologist. The two graduate-level therapists conducting the SRPP attained excellent fidelity (M = 100%). For the school consultation (SC) group, the licensed clinical supervisor (first author) attended one of the consultants' initial consultation meetings to complete a treatment fidelity checklist and conducted bi-weekly supervision with all consultants to review case progress and problem-solve any barriers to treatment integrity and fidelity. All consultants attained excellent fidelity (M = 100%).

2.2.2. Attendance

Attendance for each camp day and parenting session was measured from counselors' contact notes and sign-in sheets completed by parents during drop-off and pick up. Attendance for consultation sessions was measured by consultants' contact notes.

2.2.3. Consumer/treatment satisfaction

Parents provided ratings of treatment satisfaction for the summer camp portion at post-treatment via a satisfaction questionnaire adapted for the STP-PreK. Parents indicated their degree of satisfaction across an 11-item, five-point Likert scale (1 = *Very Satisfied* to 5 = *Very Dissatisfied*) on how much they and their child benefited, whether they would recommend the program to other parents, as well as how effective the program was compared to other treatment services they had received. The mean level of satisfaction was calculated across the items. Parents also provided ratings of treatment satisfaction for the PT portion by completing the Therapy Attitude Inventory (Brestan, Jacobs, Rayfield, & Eyberg, 1999).

2.3. Measures of school readiness and kindergarten success

2.3.1. Behavioral functioning

To assess children's EBP, parents and teachers completed the BASC-2 (Reynolds & Kamphaus, 2004), a widely-used and psychometrically sound checklist that taps into emotional and behavioral domains of children's functioning. Items are rated on a four-point scale with respect to the frequency of occurrence (*never*, *sometimes*, *often*, and *almost always*). The measure yields scores on broad internalizing, externalizing, and behavior symptom domains as well as specific adaptive and social functioning skills scales. To assess this domain of school readiness, the externalizing composite T-score was used (α's = 0.80–0.92 across raters). To assess children's behavioral impairment, parents and teachers completed the Impairment Rating Scale (IRS; Fabiano et al., 2006). The IRS measures the severity of children's impairment in multiple areas rated on a 7-point Likert scale ranging from 0 = *no impairment* to 6 = *extreme impairment*. Areas of impairment included academic functioning, classroom functioning, family functioning, self-esteem, relationships with peers and parents/teachers, and overall functioning. Scores on the IRS show excellent internal consistency and convergent/divergent validity with other measures of impairment (Fabiano et al., 2006). The overall functioning item for both parents and teachers was used to examine children's behavioral impairment at home and school.

2.3.2. Academic functioning

Children were individually administered the Bracken School Readiness Assessment (BSRA; Bracken, 2002), a widely-used and psychometrically sound test consisting of five subtests assessing children's receptive knowledge of colors, letters, numbers/counting, sizes/comparisons, and shapes. For this study, the overall school readiness composite raw score was used. Children were also administered six subtests (i.e., Applied Problems, Calculation, Writing Samples, Letter-Word Identification, Passage Comprehension, and Spelling) of the Woodcock-Johnson Tests of Achievement, 3rd Edition (WJ-III ACH, Woodcock, McGrew, & Mather, 2001; 2007), a widely-used, norm-referenced measure of academic ability with excellent psychometric properties. The current study examined the mean raw scores of the derived composite scores: Brief Reading (letter-word identification, passage comprehension), Brief Math (applied problems, calculation), and Brief Writing (spelling, writing samples). However, given the high correlations among these composites (r = 0.67–0.89, $p < .001$), an overall achievement composite was used by averaging the composite scores at each assessment point.

Parents and teachers were also asked to complete the Kindergarten Behavior and Academic Competency Scale (KBACS; Hart & Graziano, 2013). The KBACS is a 23-item questionnaire measuring children's readiness for kindergarten across domains (e.g., following classroom rules, completing academic work) along a 5-point scale (*poor*, *fair*, *average*, *above average*, and *excellent*). Preliminary work indicates that scores from the KBACS show excellent test-retest reliability (ICC = 0.82) and sensitivity to treatment (Graziano et al., 2014). An overall score was derived by averaging across all items (α's = 0.89–0.99 across raters) with higher scores indicating greater kindergarten readiness.

2.3.3. Adaptive functioning and social-emotional skills

The adaptive skills T-score of the BASC-2 was used as a measure of children's adaptive functioning (α's = 0.80–0.92 across parent and teacher reports). To assess social-emotional functioning, children completed a standardized emotion knowledge task, which required children to both expressively and receptively identify 8 different emotions (sad, happy, angry, afraid, surprised, disgusted, embarrassed, guilty) as presented visually via cartoon faces (Denham, 1986). Children scored 1 point for each correct expressive and subsequent receptive answer. A total of 16 points was possible with higher scores indicative of better emotional awareness and knowledge (α's = 0.16–0.47). Scores on the emotion knowledge test show good test-retest reliability (r = 0.68 within a 1–3-week period) among preschoolers (S. Denham, personal communication, January 8, 2016). Children also completed the Challenging Situation Task (CST; Denham, Bouril, & Belouad, 1994) to assess their social problem-solving skills. In the CST, children are presented with 6 hypothetical peer provocation situations (e.g., peer knocking down the target child's block tower) and are asked to provide an affective response (i.e., *happy*, *sad*, *angry*, and *neutral/just okay*) and how they would response to that situation (i.e., *prosocial*, *aggressive*, *crying*, *avoidant*). A prosocial composite was created by subtracting the number of aggressive responses from the prosocial responses with higher scores indicative of better social-problem solving.

2.4. Measures of self-regulation (executive functioning)

2.4.1. Automated working memory assessment

Children were administered four subtests from the Automated Working Memory Assessment (AWMA; Alloway, Gathercole, & Pickering, 2004), a PC-based assessment of working memory skills for children and adults ages 4 to 22, including: (a) Word Recall (auditory short-term memory); (b) Listening Recall (auditory working memory); (c) Dot Matrix (visuo-spatial short-term memory); and (d) Mister X (visuo-spatial working memory). Raw scores are converted to standard scores using gender and age norms. Scores from the AWMA show adequate test-retest reliability and convergent validity (Alloway, Gathercole, Kirkwood, & Elliott, 2008). Given the high correlations among the subtests (r = 0.33–0.97, $p < .05$) an average standardized score was calculated and used in subsequent analyses.

2.4.2. Head-toes-knees-shoulders task

Children were administered the Head-Toes-Knees-Shoulders task (HTKS; Ponitz et al., 2008). The HTKS is a widely-used task used with preschoolers to assess executive functioning (EF). The HTKS has well-established internal consistency, reliability and

concurrent/predictive validity (McClelland et al., 2007; Ponitz, McClelland, Matthews, & Morrison, 2009). In this task, children are initially given two paired behavioral rules (e.g., *touch your head* and *touch your toes*) in which they naturally respond to and habituate. Next, children are instructed to switch and respond in a different or opposite way (e.g., touching their head when told to "touch toes") across 10 test trials. The task then switches again back to a habituation of two other verbal commands (e.g., *touch your knees* and *touch your shoulders*) followed by 10 more test trials in which the children are required to combine both set of rules with a possibility of four different responses. Two points are awarded for a correct opposite response, zero points for an incorrect response, and one point if any motion to the incorrect response is made but then self-corrected. Scores range from 0 to 40, with higher scores indicative of better EF.

2.4.3. Behavior rating inventory of EF

Parents and teachers completed the Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000 or BRIEF-P; Gioia, Espy, & Isquith, 2003). Items are rated on a three-point Likert scale (*never*, *sometimes*, and *often*). Both the BRIEF-P and BRIEF are well-established, psychometrically sound measures (Mahone & Hoffman, 2007) that yield five non-overlapping but correlated clinical scales (inhibit, shift, emotional control, working memory, and plan-organize) and two validity scales. Scores on these clinical scales are summed to create composite indices of inhibitory self-control (inhibit + emotional control), flexibility (shift + emotional control), emergent metacognition (working memory + plan-organize), and an overall global executive composite. Higher scores indicate poorer EF skills. For this study, the T-score of the emergent metacognition index was used (α's across raters = 0.71–0.97).

2.5. Measures of self-regulation (emotion regulation)

2.5.1. ER checklist

Parents and teachers completed the Emotion Regulation (ER) Checklist (Shields & Cicchetti, 1997). The ER Checklist is a 23-item questionnaire that uses a 4-point Likert scale (1 = *almost always* to 4 = *never*) and yields two subscales: the Negativity/Lability scale (15 items), which represents negative affect and mood lability, with higher scores indicating greater emotion dysregulation, and the ER scale (8 items), which assesses processes key to adaptive regulation, with higher scores indicative of better ER skills. The current study examined both the Negativity/Lability (α's across raters = 0.74–0.90) and ER scale (α's across raters = 0.51–0.73).

2.6. Procedure

This study was approved by the university's Institutional Review Board. A randomized trial design was used to obtain preliminary evidence for the promise of the three different intervention programs in improving preschoolers with EBPs school readiness outcomes. See Fig. 1 for CONSORT flow chart.

The 45 children were randomized to: (1) 8W STP-PreK (n = 15), (2) 4W STP-PreK (n = 15), or (3) SC (n = 15). Prior to randomization, families participated in a pre-treatment assessment before the start of the interventions. Randomization status was concealed to all study personnel during pre-treatment assessments. After completion of all pre-treatment assessments, families met with the investigators of the study to determine study allocation using Sequentially Numbered, Opaque Sealed Envelope methodology (SNOSE; Doig & Simpson, 2005). Once study condition was determined, families received the allocated intervention (described in detail below). All families completed a post-treatment assessment two to three weeks after the summer interventions ended (mean time to complete post-treatment assessment = 1.90 weeks, SD = 1.71 weeks). Of note, three families who were randomized to the SC group withdrew participation after randomization. One other family randomized to the SC group was not able to receive treatment at school due to school-related restrictions. These families were excluded from subsequent analyses given that they did not participate in any treatment. Families completed a follow-up assessment approximately 6 months after the intervention ended (mean time to complete follow-up assessment = 7.72 months, SD = 1.34 months). Six of the families could not be contacted despite multiple efforts. The three intervention groups were compared on all demographic (e.g., child age, child sex, SES, ethnicity) and screening variables (e.g., initial EBP symptom severity, ADHD diagnosis). As seen in Table 1, there were no significant differences between the groups on any demographic or screening measures. All interventions were provided at no cost to the families. Gift cards ($50) were provided to families at each time point following completion of the intervention. Teachers (preschool teachers at pre-treatment and kindergarten teachers at post-treatment and 6-month follow-up assessments) were also given gift cards ($25) for completing questionnaires.

For pre-treatment assessments, caregivers brought their children to the clinic on two occasions in the spring prior to kindergarten. During the first visit, which lasted approximately three hours, clinicians administered a standard battery that included the WPPSI-IV, BSRA, and WJ-III ACH. While in the clinic, the caregiver completed questionnaires and participated in a structured clinical interview (C-DISC; Shaffer et al., 2000). At the time of the phone screening or during the first initial visit, caregivers provided consent for their child's preschool teacher to fill out rating scales via a secure online survey portal (REDCap) or send back hard copies of the rating scales in a sealed envelope. Eligible participants were invited to attend a second visit lasting two to three hours. The EF tasks included the AWMA (Alloway et al., 2004), and the HTKS (Ponitz et al., 2008). The social-emotional battery included an emotion knowledge test (Denham, 1986), and the challenging situation task (Denham et al., 1994). All subsequent post-treatment and 6-month follow-up assessment sessions followed the same structure lasting three to four hours given the inclusion of the academic testing.

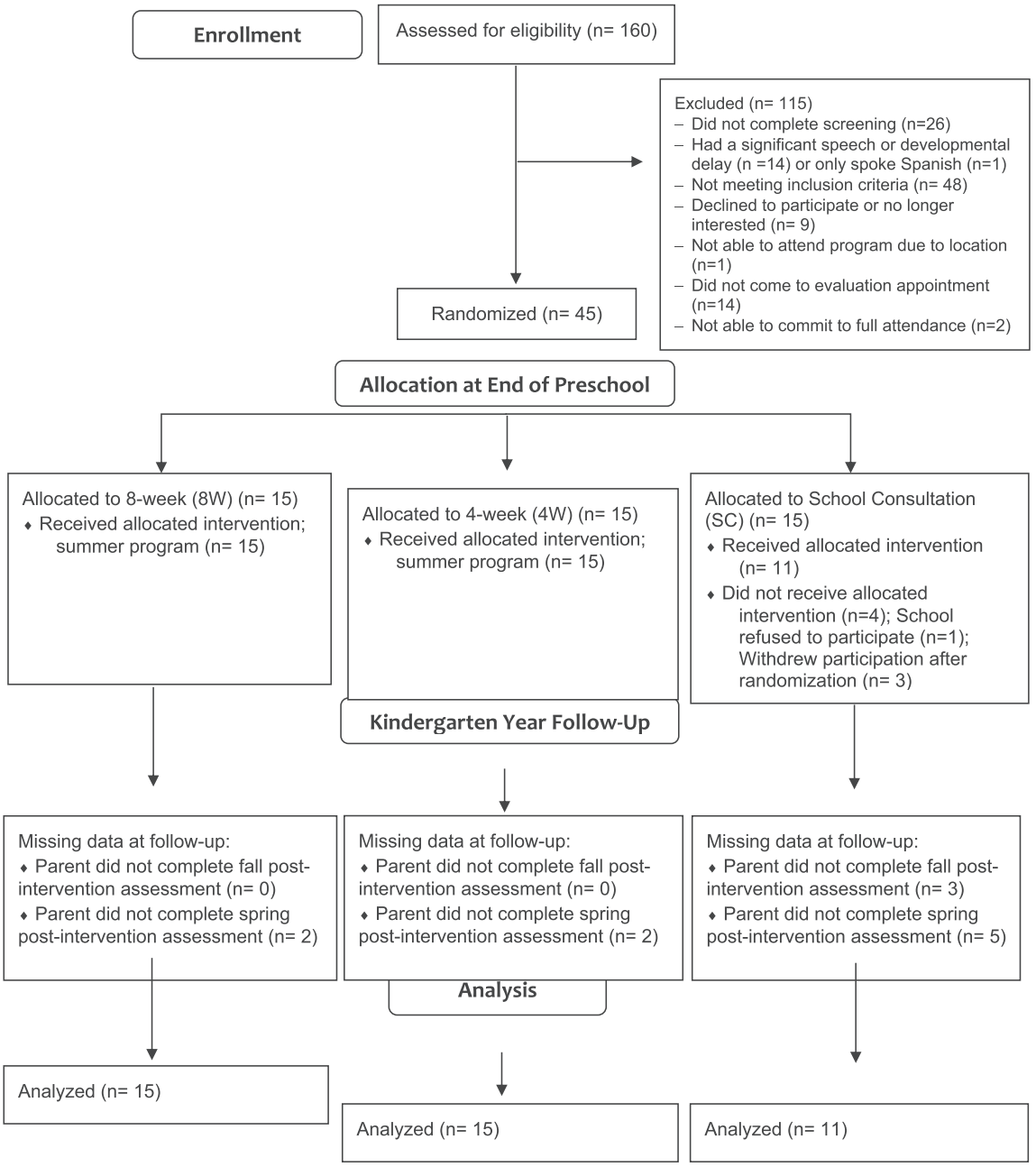

Fig. 1. CONSORT flow diagram.

2.7. Intervention components

2.7.1. Summer treatment program for PreKindergarteners (STP-PreK): overview

The STP-PreK operated daily, Monday-Friday, from 8 a.m. to 5 p.m. for either 4 or 8 weeks during the summer prior to kindergarten entry. Throughout the STP-PreK children participated in activities designed to promote a) behavioral and social-emotional skills consistent with the expectations of kindergarten, b) academic skills, c) physical activity, good sportsmanship, basic sports skills, and d) a positive attitude toward learning and school. Fifteen children were assigned to a classroom, staffed by one lead teacher, one lead counselor, and four paraprofessional developmental aides, yielding a 2:5 staff to student ratio. Lead teachers were certified early childhood or elementary teachers; Lead Counselors were clinical and counseling psychology graduate students; and developmental

aides were undergraduate and post-baccalaureate paraprofessionals. All staff completed a 10-day training in program procedures and were supervised daily by either the first or third author, licensed clinical psychologists with over 10 years of experience implementing interventions with children with EBPs. Below, we briefly describe the behavior modification program, academic enrichment curriculum, and social-emotional and self-regulation curriculum of the STP-PreK. The specifics for each component of the STP-PreK are detailed in a manual available from the authors.

2.7.2. Behavior modification program

The behavior modification program used across activities was modeled after the evidence-based system used in the STP-Elementary Academic Learning Centers (Pelham et al., 2010). The combination point and response-cost system allows for development of children's abilities to follow instructions, complete tasks accurately, comply with teacher requests, and interact positively with peers. Staff members used a public flip-card color chart in combination with the point system, where students began each activity on green and flipped their color to yellow after 5 points lost and red after 10 points lost. At the end of each activity, there was a public point check to provide feedback to the children on points earned and to receive tangible chips representing points earned for ending on green or yellow, but not red. At the start of the next activity, the flip color chart was reset to green with the opportunity to earn green the next period. Serious violations (e.g., aggression, destruction of property, repeated non-compliance) resulted in a time out from positive reinforcement using procedures from PCIT. Children exchanged points earned for daily classroom rewards and privileges (e.g., treasure box, recess). At the end of each day, parents were provided verbal and written feedback about children's behavioral and academic progress via daily report card (DRC). Parents were instructed on how to provide daily, home, DRC-contingent rewards during the first parent training session (described in more detail below). The DRC procedures used in the program were directly adapted from the STP (see Fabiano, Schatz, & Pelham, 2014 for a detailed description). The 8W and 4W groups differed only in the amount of behavior modification received (i.e., eight weeks [360 h] versus four weeks [180 h] of behavior modification).

2.7.3. Academic enrichment curriculum

Literacy Express, an evidence-based preschool curriculum (Lonigan, Clancy-Menchetti, Phillips, McDowell, & Farver, 2005), was modified for the program by the curriculum developers so that all core literacy and numeracy skills were covered sequentially for a total of 2.5 h of academic enrichment daily. Each week followed a Literacy Express theme. For example, during the week of Under the Sea all of the academic activities, centers, vocabulary of the week, seatwork, and homework, were related to the theme and followed suggested curriculum activities. The mode of instruction varied from whole- to small-group and independent activities. The 8W and 4W groups differed only in the amount of academic enrichment received (i.e., eight weeks [100h] versus four weeks [50 h] of academic enrichment).

2.7.4. Social-emotional and self-regulation curriculum

The social-emotional curriculum consisted of social skills (i.e., participation, communication, cooperation, and encouragement) and emotional awareness (i.e., happy, sad, mad, scared, surprised, disgusted, embarrassed, and guilty) training (30 min daily) modified for developmental appropriateness via the use of puppets, videos, and in-vivo reinforcement of skills throughout the day. Children learned how to cope with negative emotions via the Turtle Shell Technique (Schneider, 1974). The self-regulation curriculum consisted of children participating in a game period (30 min daily) in which they engaged in various executive functioning games (e.g., Red Light/Green Light) adapted from a series of circle time games shown to improve preschoolers' EF (Tominey & McClelland, 2011). Lastly, children also participated in a daily 15-min computerized working memory training (Cogmed JM; http://www.cogmed.com). The 8W and 4W groups differed only in the amount of social-emotional and self-regulation training received (i.e., eight weeks [50 h] versus four weeks [25 h] of social-emotional/self-regulation training).

2.7.5. Parent training

The School Readiness Parenting Program (SRPP; Graziano et al., 2017) was conducted weekly lasting between 1.5 and 2 h for 8 sessions (16 h total). The first half of each SRPP session involved traditional aspects of behavioral parent training (e.g., improving parent-child relationship, discipline strategies such as time out) delivered in a group format via a Community Parent Education Program (COPE; Cunningham, Bremner, & Secord-Gilbert, 1998) style modeling approach. The behavior management content was based on PCIT (Eyberg et al., 2001) with four sessions focused on child-directed skills (e.g., labeled praise, description, reflection, enthusiasm) during “special time”, while another four sessions focused on parent-directed skills (e.g., effective commands, time out). Subgroup activities entailed parents practicing the newly acquired skills with their own children while the other parents in the subgroup observed and provided positive feedback. During the second half of each SRPP session, parents participated in group discussions on several school readiness topics including: how to manage behavior problems during homework time and in public settings, how to promote early literacy (i.e., parents practiced and received feedback on using dialogic reading) and math skills, how to implement a home-school communication plan with kindergarten teachers (i.e., DRC), and how to prepare for the kindergarten transition. Sessions were held after the end of the camp day with dinner and childcare provided to increase engagement. Both the 8W and 4W groups received the same dose of parent training with the only difference being the 4W group started to receive parent training two weeks prior to the start of camp and continued for two weeks after the end of camp.

2.7.6. School consultation (SC)

For children assigned to the SC group, intervention began at the start of the kindergarten year. Each family was assigned a behavioral consultant. Consultants were clinical or counseling psychology graduate students who were supervised bi-weekly by the

first author, a licensed clinical psychologist with over 10 years of experience in school consultation. Prior to the start of consultation activities, consultants completed a three-hour training module led by the clinical supervisor, which included discussion of assigned readings regarding consultation theory, training in the manualized consultation approaches to be used in the study, and active role plays of consultation sessions with feedback. For treatment integrity and fidelity purposes, consultants were observed at least once over the course of the school year conducting a consultation session and received bi-weekly supervision to review case progress and problem-solve any barriers to treatment implementation.

Consultation sessions (approximately 30–45 min in length) followed a manualized approach developed for use in the current study and modeled after those employed in Conjoint Behavioral Consultation (Sheridan, 1997), and those employed in a recently completed multiple-randomization study of adaptive medication and behavioral interventions for childhood Attention-Deficit/Hyperactivity Disorder (Pelham et al., 2016). Parents were invited to attend each meeting with the consultant and teacher. If parents were unable to attend the scheduled meeting, consultants conducted a phone session with the parent to review the plans developed between the teacher and consultant. Each consultation session followed a specific set of session activities with consultants completing a session checklist for each scheduled session. Prior to scheduling consultation activities in the school setting, consultants conducted a "Get to Know You" session with each assigned family via phone at the start of the school year to establish the consultant-family relationship and discuss any parent concerns regarding the child's school functioning and transition to kindergarten. After completion of the introductory session, consultants began scheduling the initial school consultation visit with the teacher and parent. Consultation activities included an initial review of the teacher's classroom management practices, discussion of basic classroom management, including praising appropriate behavior, planned ignoring, and appropriate commands, as well as procedures related to implementing a Daily Report Card (DRC; Volpe & Fabiano, 2013), if needed. If developed, DRCs were sent home each day and parents provided daily and weekly rewards for good performance at school. The number of sessions received was based on the child's level of impairment, as monitored monthly using a modified version of the IRS (Pelham et al., 2016), which asked whether, given the current supports in school, the child needed additional supports, with responses ranging from 1 (*definitely not*) to 5 (*definitely yes*). If a rater responded *probably yes* or *definitely yes* in any domain, the consultant asked follow-up questions about the child's impairment to ascertain whether the rating indicated true need for additional services, and to ensure that the impairment could be addressed with the available interventions. If no impairment was indicated in the initial meeting, follow-up sessions were not scheduled. However, progress was monitored monthly to ensure positive progress until the end of the kindergarten year and if impairment was indicated at any time during the kindergarten year, a consultation meeting was scheduled to problem-solve any challenges. A follow-up meeting was scheduled for approximately three weeks after creation of the DRC to consult and refine (as needed) target behaviors and criteria for the DRC; answer teacher questions and address any problems with the DRC; assess for additional intervention need using the IRS; and ensure parent reward of the DRC. Recommendations for additional intervention included additional school-based reinforcer periods for the child, classroom behavior management strategy consultation with the teacher (e.g., teacher use of praise, acknowledgement of rule violations, consequences implemented for acknowledgement of rule violations, use of appropriate commands), and/or establishing group contingency programs in the classroom (e.g., the Good Behavior Game). At the end of the year, all families received a final consultation meeting to plan ahead for the child's transition to first grade. At minimum, families received two consultation sessions (one at the beginning of the year and one at the end), with a maximum of seven sessions.

2.8. Data analysis plan

Data were analyzed using SPSS version 24. Pre- and post-treatment data were available for 100% of participants. Six-month follow-up data were available for 83% of participants. Individual linear mixed models were fit for each domain's measure. Fixed effects for all models included the group assignments (SC, 4W, and 8W), the time of measurement (pre-test, post-test, and 6-month follow-up), and the interaction between these variables. Time^2, and its interaction with the group variable, were also included in selected models to examine possible non-linearity/changes in the relationships for the dependent variables at each time point. To allow for individual differences in starting points, random intercepts were included for each model.

All models were estimated using maximum likelihood to retain the largest possible number of observations (i.e., all cases that had at least one observation were included in the analyses). Dummy coding was employed in order to acquire direct effects for each intervention group. Academic scores, the emotion knowledge task, and the HTKS executive function measure, were evaluated as linear models as it was hypothesized that these effects would not be reversible. Main effects and interaction effects for these models are reported. For all other models, likelihood ratio testing was employed to examine the appropriateness of including the quadratic polynomial and its interaction with the group variable. Due to limitations of space, only the main effects and interaction effects with the time/time squared variables are reported. To assess differences between time points for each intervention group, and differences between intervention groups at each time point, pairwise comparisons of estimated marginal means were performed with a Sidak correction (Field, 2009). Effect sizes (ES) with confidence intervals were computed for each comparison; as the sample size within each group was < 20, we reported the bias-corrected Hedge's g, which can be interpreted similarly to the traditional Cohen's d (Durlak, 2009).

3. Results

3.1. Feasibility and acceptability

3.1.1. Attendance

A *t*-test was conducted to examine the difference in the percentage of days attended between the 4W group and the 8W group. No significant difference was found, $t(23.64) = -1.28$, $p = .21$, with children in the 4W group attending approximately 94% of all camp days, and children in the 8W group attending approximately 91%. Mean number of SRPP sessions attended for the 8W and 4W groups was 5.93 ($SD = 1.53$) and 5.93 ($SD = 1.91$), respectively. For children assigned to the SC group, the mean number of sessions received was 3.82 ($SD = 1.60$, range = 2–7). The mean percentage of sessions attended by a parent was 47.27% ($SD = 37.94\%$).

3.1.2. Consumer/treatment satisfaction

No significant differences in treatment satisfaction as measured by both the adapted STP-PreK satisfaction questionnaire, $t(27) = -1.03$, $p = .31$, and the TAI, $t(27) = -0.97$, $p = .34$, were found between the 8W and 4W groups. Treatment satisfaction as measured on the STP-PreK satisfaction questionnaire was high for both 8 W ($M = 4.43$, $SD = 0.18$) and 4W ($M = 4.49$, $SD = 0.12$) groups. Treatment satisfaction as measured on the TAI was also high for both 8 W ($M = 4.54$, $SD = 0.37$) and 4 W ($M = 4.65$, $SD = 0.27$) groups.

3.2. Behavioral functioning

3.2.1. Externalizing behavior problems: BASC-2

For parent report, there was a significant interaction between group and time^2 (see Fig. 2) which indicated significant differences in the curve of behavioral impairment between: (1) children in the 8W and SC groups ($b = 22.39$, $SE = 6.25$, $p = .001$), and (2) children in the 4 W and SC groups ($b = 20.76$, $SE = 6.19$, $p = .001$), but not between (3) children in the 8 W and 4W groups ($b = 1.63$, $SE = 5.44$, $p = .77$). Large ES were indicated from baseline to post-assessment for both the 8 W and 4W groups; however, these were not maintained at the 6-month follow-up assessment (see Table 2). Significant differences at post-treatment were found between the 8W and SC groups ($p < .001$), and between the 4W and SC groups ($p < .001$), but not between the 4W and 8 W groups ($p = .998$). At follow-up, there was no difference among the groups. There were no significant interactions with time^2 for teacher reported scores among any of groups, however, all three groups displayed large effect size differences from baseline to post-assessment. These were not maintained at the 6-month follow-up, and in the case of the SC group, a significant increase in behavior problems were indicated by a large effect size (see Table 2).

3.2.2. Overall impairment: IRS

There was a significant interaction between group and time^2, indicated by significant differences in the curve of overall impairment between: (1) children in the 8W and SC groups ($b = 2.07$, $SE = 0.61$, $p = .001$) and (2) children in the 4W and SC groups ($b = 2.21$, $SE = 0.61$, $p = .001$), but not between (3) children in the 8W and 4W groups ($b = -0.15$, $SE = 0.54$, $p = .79$). Large ES were indicated from baseline to post-treatment for both the 8W and 4W groups, and these were maintained at the 6-month follow-up assessment (see Table 2). Significant differences at post-treatment were found between the 8W and SC groups ($p = .002$), and between the 4W and SC groups ($p < .002$), but not between the 4 W and 8 W groups ($p = .999$). There were no significant time^2 and group interactions for teacher reported scores among the groups. While there were no overall significant differences among the time points, teachers reported a significant ($p < .001$) drop in impairment at post assessment with a large effect size for children in the 8 W group (see Table 2). There was no difference between post-assessment and follow-up for this group, suggesting that overall impairment remained reduced.

3.3. Academic functioning

3.3.1. School readiness composite: Bracken

For the school readiness composite, there was a significant interaction between group and time (see Fig. 2) that indicated differences in the slope of school readiness improvement between: (1) children in the 8W and SC groups ($b = 4.42$, $SE = 2.00$, $p = .03$) and (2) children in the 4W and SC groups ($b = 5.24$, $SE = 2.00$, $p = .01$), but not between (3) children in the 8W and 4W groups ($b = -0.82$, $SE = 1.73$, $p = .64$). Large ES were indicated from baseline to post-assessment for both the 8 W and 4 W groups, and these were maintained at the 6-month follow-up assessment (see Table 3). Further, there was a significant improvement among those groups from post-assessment to follow-up ($p < .001$).

3.3.2. Mean academic achievement: WJ-III ACH

There was no time by group interaction for academic achievement, and no significant differences in the slopes among the groups. All groups significantly improved from baseline to follow-up, as well as from post-assessment to follow-up, with large ES indicated at each interval (see Table 3).

3.3.3. Kindergarten readiness: KBACS

No time by group interaction was present for parent-reported kindergarten readiness, and no significant slope differences were found among the groups. Large ES were indicated from baseline to post-assessment for both the 8W and 4W groups, but these were not maintained at the 6-month follow-up assessment (see Table 3). There was also a significant decrease in the 8W group between

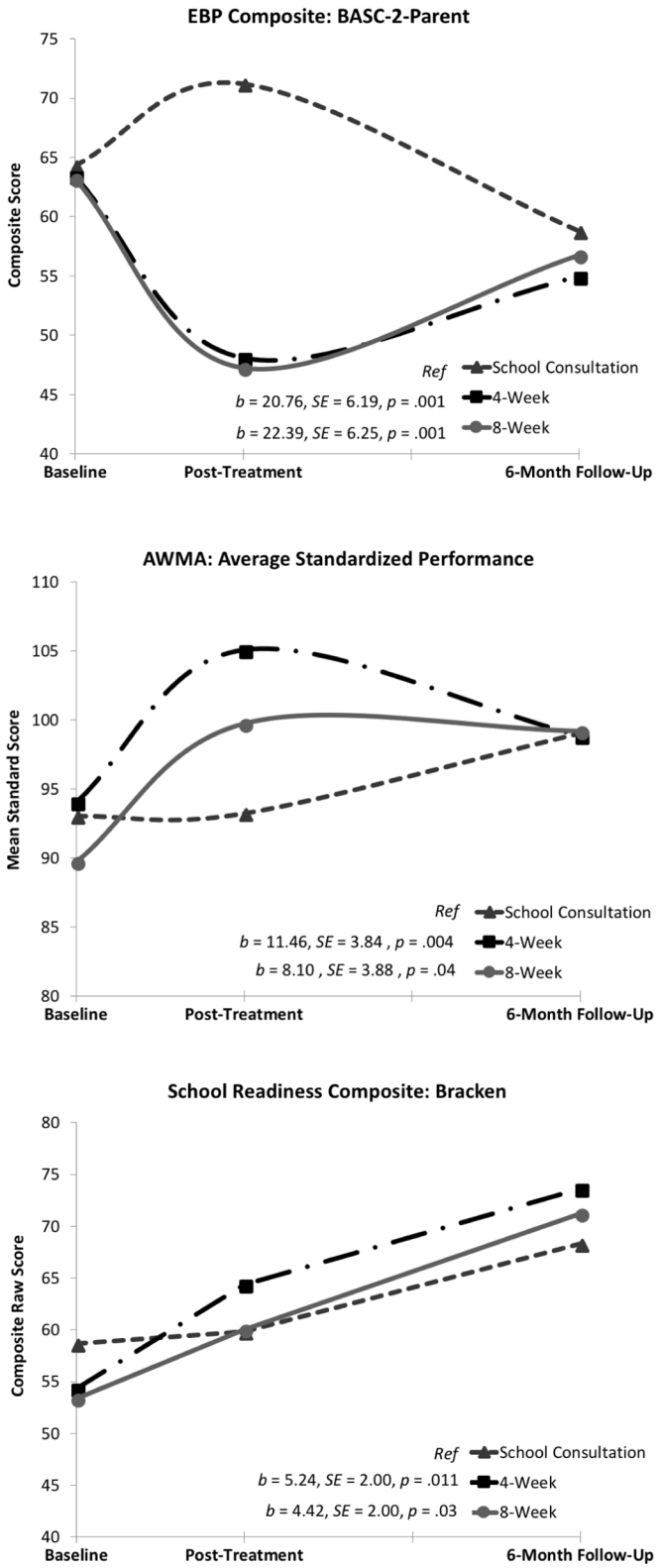

Fig. 2. Behavioral functioning, executive functioning, and academic outcomes for children across intervention group. Note. Behavioral and executive functioning outcomes were modeled with time^2, while academic outcomes included only linear time.

Table 2
Behavioral functioning.

	Baseline (T1) *M* (*SE*)	Post-test (T2) *M* (*SE*)	Follow-up (T3) *M* (*SE*)	Time Effect *F*	Time x Group *F*	Time x Group *F*	T1-T2 *g* [95% CI]	T1-T3 *g* [95% CI]	T2-T3 *g* [95% CI]
EBP composite: BASC-2-Parent		-	-	Q-19.20***	-	-	-	-	-
School Consultation	64.31 (4.38)	71.20 (4.17)	58.80 (4.94)	-	ref	-	0.47[-0.38,1.32]	-0.35[-1.19,0.50]	-0.79[-1.66,0.09]
4-Week	63.40 (3.41)	48.07 (3.41)	54.95 (3.65)	-	11.23***	ref	-1.13[-1.90,-0.36]**	-0.61[-1.34,0.14]	0.49[-0.24,1.22]
8-Week	63.20 (3.41)	47.24 (3.53)	56.75 (3.65)	-	12.84***	0.09	-1.16[-1.93,-0.39]**	-0.46[-1.19,0.27]	0.67[-0.07,1.41]
Intercept Variance: Var (u_{0j}) = 33.85 [8.52, 134.47], Wald Z = 1.42, p = .155									
EBP composite: BASC-2-Teacher		-	-	Q-12.00***	-	-	-	-	-
School Consultation	66.47 (3.50)	52.85 (3.67)	69.91 (3.35)	-	ref	-	-1.11[-2.00,-0.21]**	0.30[-0.55,1.14]	1.41[0.48,2.35]***
4-Week	72.27 (2.87)	58.04 (3.18)	65.23 (3.87)	-	0.74	ref	-1.18[-1.96,-0.41]***	-0.52[-1.25,0.21]	0.51[-0.22,1.24]
8-Week	67.80 (2.87)	56.63 (3.07)	59.13 (3.86)	-	2.61	0.60	-0.95[-1.70,-0.19]**	-0.65[-1.38,0.10]	0.19[-0.54,0.90]
Intercept Variance: Var (u_{0j}) =26.81, [8.52, 84.93], Wald Z = 1.71, p = .09									
Overall Impairment: IRS-Parent		-	-	Q-8.10***	-	-	-	-	-
School Consultation	4.30 (0.49)	4.57 (0.47)	2.09 (0.55)	-	ref	-	0.17[-0.68,1.00]	-1.24[-2.15,-0.32]***	-1.41[-2.35,-0.48]***
4-Week	3.93 (0.39)	2.32 (0.40)	2.43 (0.41)	-	13.01***	ref	-1.03[-1.79,-0.27]***	-0.95[-1.70,-0.19]**	0.07[-0.65,0.79]
8-Week	4.19 (0.40)	2.41 (0.40)	2.01 (0.41)	-	11.34***	0.08	-1.12[-1.89,-0.35]***	-1.36[-2.15,-0.56]***	-0.25[-0.97,0.48]
Intercept Variance: Var (u_{0j}) = 0.96 [0.47, 1.95], Wald Z = 2.74, p = .006									
Overall Impairment: IRS-Teacher		-	-	Q-0.25	-	-	-	-	-
School Consultation	5.11 (0.51)	4.51 (0.51)	4.21 (0.54)	-	ref	-	-0.35[-1.19,0.51]	-0.50[-1.35,0.36]	-0.17[-1.01,0.68]
4-Week	4.77 (0.44)	4.13 (0.42)	3.80 (0.55)	-	0.00	ref	-0.38[-1.10,0.35]	-0.49[-1.22,0.24]	-0.17[-0.89,0.55]
8-Week	5.10 (0.42)	3.95 (0.45)	3.12 (0.55)	-	0.00	0.00	-0.67[-1.40,0.08]	-1.02[-1.78,-0.26]**	-0.42[-1.14,0.31]
Intercept Variance: Var (u_{0j}) = 1.03 [0.48, 2.22], Wald Z = 2.57, p = .01									

Note. Means and SEs are marginal estimates. Q = quadratic, L = Linear. ***$p \leq .001$, **$p \leq .01$, *$p \leq .05$, BASC= Behavior Assessment System for Children, 2nd Edition, IRS = Impairment Rating Scale. Ref = Reference group for time X group comparisons. Hedge's *g* is reported for group x time effects, and significance values refer to within-group comparisons.

Table 3
Academic outcomes.

	Baseline (T1) *M* (*SE*)	Post-test (T2) *M* (*SE*)	Follow-up (T3) *M* (*SE*)	Time Effect *F*	Time x Group *F*	Time x Group *F*	T1-T2 *g* [95% CI]	T1-T3 *g* [95% CI]	T2-T3 *g* [95% CI]
School Readiness Composite: Bracken		-	-	L-114.67***	-	-	-	-	-
School Consultation	58.64 (3.42)	59.82 (3.42)	68.33 (3.81)	-	ref	-	0.11[-0.74,0.94]	0.78[-0.10,1.65]***	0.69[-0.18,1.55]*
4-Week	54.33 (2.93)	64.33 (2.93)	73.62 (3.02)	-	6.89**	ref	0.86[0.11,1.61]***	1.63[0.81,2.46]***	0.79[0.05,1.53]***
8-Week	53.33 (2.93)	60.00 (2.93)	71.19 (3.02)	-	4.90*	0.23	0.58[-0.16,1.31]**	1.51[0.70,2.32]***	0.95[0.19,1.70]***
Intercept Variance: Var (u_{0j}) = 89.50 [53.66, 149.30], Wald Z = 3.81, $p \leq .001$									
Mean Academic Achievement: WJ-III ACH	-		-	L-96.74***	-	-	-	-	-
School Consultation	7.46 (1.13)	8.26 (1.13)	12.84 (1.71)	-	ref	-	0.21[-0.64,1.05]	1.08[0.19,1.98]***	0.92[0.04,1.80]***
4-Week	7.71 (0.97)	8.29 (0.97)	12.74 (0.98)	-	0.03	ref	0.16[-0.57,0.87]	1.30[0.51,2.09]***	1.15[0.38,1.92]***
8-Week	6.30 (0.97)	7.19 (0.97)	10.48 (0.98)	-	0.95	0.73	0.24[-0.49,0.95]	1.08[0.32,1.85]***	0.85[0.10,1.60]***
Intercept Variance: Var (u_{0j}) = 12.07 [7.55, 19.29], Wald Z = 4.18, $p \leq .001$									
Kindergarten Readiness: KBACS-Parent	-		-	L-4.31*	-	-	-	-	-
School Consultation	1.96 (0.23)	1.82 (0.21)	2.22 (0.23)	-	ref	-	-0.19[-1.03,0.66]	0.33[-0.52,1.18]	0.53[-0.33,1.38]
4-Week	2.02 (0.18)	2.62 (0.18)	2.35 (0.18)	-	0.18	ref	0.84[0.09,1.59]***	0.46[-0.27,1.19]	-0.38[-1.10,0.35]
8-Week	1.86 (0.18)	2.58 (0.18)	2.04 (0.18)	-	0.004	0.66	1.01[0.25,1.76]***	0.26[-0.47,0.97]	-0.76[-1.50,-0.02]**
Intercept Variance: Var (u_{0j}) = 0.27 [0.15, 0.50], Wald Z = 3.25, p=.001									
Kindergarten Readiness: KBACS-Teacher	-		-	L-0.56	-	-	-	-	-
School Consultation	1.63 (0.20)	1.45 (0.20)	1.54 (0.19)	-	ref	-	-0.27[-1.11,0.58]	-0.14[-0.98,0.71]	0.14[-0.71,0.98]
4-Week	1.87 (0.17)	1.49 (0.17)	1.61 (0.20)	-	1.13	ref	-0.57[-1.29,0.17]*	-0.36[-1.08,0.37]	0.17[-0.56,0.88]
8-Week	1.61 (0.17)	1.96 (0.18)	2.11 (0.20)	-	6.03*	12.10***	0.51[-0.23,1.23]	0.68[-0.06,1.42]*	0.20[-0.52,0.92]
Intercept Variance: Var (u_{0j}) = 0.27 [0.16, 0.46], Wald Z = 3.71, $p \leq .001$									
	M (SD)	*M (SD)*	*M(SD)*						
School Readiness Composite: Bracken Standard Score									
School Consultation	97.13 (8.14)	93.33 (12.56)	92.56 (11.08)	-	-	-	-	-	-
4-Week	91.87 (16.15)	97.53 (13.14)	98.31 (12.91)	-	-	-	-	-	-
8-Week	91.67 (8.86)	89.47 (11.56)	94.04 (8.84)	-	-	-	-	-	-
Mean Academic Achievement: WJ-III ACH Standard Score							-	-	-
School Consultation	96.79 (14.22)	95.56 (15.99)	103.20 (17.09)	-	-	-	-	-	-
4-Week	100.14 (16.97)	100.42 (15.18)	103.46 (19.33)	-	-	-	-	-	-
8-Week	95.36 (11.20)	97.04 (8.84)	97.95 (13.40)	-	-	-	-	-	-

Note. Means and SEs are marginal estimates, excluding means for standard scores. Q = Quadratic, L = Linear. ***$p \leq .001$, **$p \leq .01$, *$p \leq .05$. WJ-III ACH = Woodcock-Johnson Tests of Achievement, 3rd Edition, KBACS = Kindergarten Behavior and Academic Competency Scale. Ref = Reference group for time X group comparisons. Hedge's *g* is reported for group x time effects, and significance values refer to within-group comparisons. Means and SDs are provided for standard scores on the Bracken and the WJ-III ACH at all time points to facilitate comparisons with other standard scores.

Table 4
Adaptive functioning and social-emotional skills.

	Baseline (T1) *M* (*SE*)	Post-test (T2) *M* (*SE*)	Follow-up (T3) *M* (*SE*)	Time Effect *F*	Time x Group *F*	Time x Group *F*	T1-T2 *g* [95% CI]	T1-T3 *g* [95% CI]	T2-T3 *g* [95% CI]
Adaptive Skills: BASC-2-Parent		-	-	Q-67.19***	-	-	-	-	-
School Consultation	44.28 (2.49)	46.32 (2.39)	49.09 (2.72)	-	ref	-	0.25[-0.60,1.09]	0.54[-0.32,1.39]	0.32[-0.53,1.16]
4-Week	48.73 (1.99)	63.67 (1.99)	48.25 (2.08)	-	30.76***	ref	1.89[1.03,2.75]***	-0.06[-0.78,0.66]	-1.91[-2.77,-1.04]***
8-Week	42.67 (1.99)	61.35 (2.04)	47.65 (2.09)	-	34.29***	0.17	2.33[1.41,3.26]***	0.62[-0.12,1.35]*	-1.67[-2.50,-0.84]***
Intercept Variance: Var (u_{0j}) = 31.51 [17.33, 57.28], Wald Z = 3.39, p = .001									
Adaptive Skills: BASC-2-Teacher		-	-	Q- 0.64	-	-	-	-	-
School Consultation	45.42 (2.45)	45.68 (2.55)	44.64 (2.37)	-	ref	-	0.04[-0.81,0.87]	-0.10[-0.94,0.75]	-0.13[-0.96,0.72]
4-Week	45.47 (2.03)	43.94 (2.20)	42.66 (2.59)	-	0.06	ref	-0.19[-0.90,0.54]	-0.31[-1.03,0.42]	-0.14[-0.86,0.59]
8-Week	45.00 (2.03)	46.62 (2.14)	43.17 (2.57)	-	0.36	0.38	0.20[-0.53,0.92]	-0.20[-0.92,0.52]	-0.37[-1.09,0.36]
Intercept Variance: Var (u_{0j}) = 28.51 [14.72, 55.22], Wald Z = 2.97, p = .003.									
Emotion Knowledge		-	-	L-45.30***	-	-	-	-	-
School Consultation	8.18 (0.49)	9.18 (0.49)	10.70 (0.55)	-	ref	-	0.60[-0.27,1.45]	1.41[0.48,2.34]***	0.85[-0.03,1.72]*
4-Week	9.47 (0.42)	10.20 (0.42)	11.02 (0.44)	-	1.63	ref	0.44[-0.29,1.16]	0.91[0.16,1.66]**	0.48[-0.25,1.21]
8-Week	8.27 (0.42)	10.33 (0.42)	11.00 (0.44)	-	0.17	3.58	1.23[0.45,2.01]***	1.60[0.78,2.42]***	0.40[-0.34,1.12]
Intercept Variance: Var (u_{0j}) = 1.26 [0.68, 2.31], Wald Z = 3.21, p = .001									
Challenging Situation Task		-	-	Q-0.31	-	-	-	-	-
School Consultation	0.46 (0.98)	-0.36 (0.98)	0.24 (1.09)	-	ref	-	-0.25[-1.09,0.60]	-0.07[-0.90,0.78]	0.17[-0.67,1.01]
4-Week	0.87 (0.84)	0.60 (0.84)	1.74 (0.88)	-	0.00	ref	-0.09[-0.80,0.64]	0.26[-0.47,0.98]	0.34[-0.39,1.06]
8-Week	0.20 (0.84)	0.27 (0.84)	0.06 (0.88)	-	0.58	0.69	0.03[-0.70,0.74]	-0.05[-0.76,0.68]	-0.07[-0.78,0.66]
Intercept Variance: Var (u_{0j}) = 5.61 [3.15, 10.03], Wald Z = 3.38, p = .001									

Note. Means and SEs are marginal estimates. Q = Quadratic, L = Linear. ***$p \leq .001$, **$p \leq .01$, *$p \leq .05$. BASC= Behavior Assessment System for Children, 2nd Edition. Ref = Reference group for time X group comparisons. Hedge's *g* is reported for group x time effects, and significance values refer to within-group comparisons.

post-assessment and follow-up, with a medium to large effect size (see Table 3). At post-assessment, both the 4W and 8W groups had significantly higher scores ($p = .02$, and $p = .02$, respectively) than the SC group. There was a significant interaction between group and time for teacher-reported kindergarten readiness, that indicated differences in the slopes between: (1) children in the 8W and SC groups ($b = 0.30$, $SE = 0.12$, $p = .02$), and (2) children in the 8W and 4W groups ($b = 0.43$, $SE = 0.12$, $p = .001$), but not between (3) children in the 4W and SC groups ($b = -0.13$, $SE = 0.12$, $p = .29$).

3.4. Adaptive functioning and social-emotional skills

3.4.1. Adaptive skills: BASC-2

A significant quadratic effect for time, as well as an interaction effect with group, was indicated for adaptive skills as reported by parents (see Table 4). These results indicated significant differences in the slopes between: (1) children in the 8W and SC groups ($b = -16.55$, $SE = 2.83$, $p < .001$), and (2) children in the 4W and SC groups ($b = -15.54$, $SE = 2.80$, $p \leq .001$), but not between (3) children in the 8W and 4W groups ($b = -1.01$, $SE = 2.43$, $p = .68$). Large ES were indicated from baseline to post-treatment for both the 8W and 4W groups (see Table 4). Additionally, there was a significant increase between baseline and follow-up for the 8W group ($p < .05$). However, there were also significant declines for the 4W and 8W groups between post-assessment and follow-up. Differences at post-treatment were found between the 8W and SC groups ($p < .001$), and between the 4W and SC groups ($p < .001$), but not between the 4W and 8W groups ($p = .80$). No time by group interaction was present for teacher-reported adaptive skills, and no significant slope differences were found among the groups.

3.5. Emotion knowledge and challenging situation task

A significant linear effect for time on emotion knowledge was noted, however, no interaction effect was present. Only the 8W group demonstrated an improvement with a large effect size from baseline to post-assessment, however, all groups demonstrated a large increase between pre-assessment and follow-up (see Table 4). The SC group improved significantly between post-treatment and follow-up, but the effect size interval for this difference was unreliable. There was no significant effect of time^2, or time by group effect, on the challenging situation task for any of the groups, and no significant differences within time points, or between groups at each time point (see Table 4).

3.6. Self-regulation: executive functioning

3.6.1. Average standardized performance: AWMA

A significant time^2 effect and interaction with group was found on the AWMA (see Table 5a and Fig. 2), which indicated differences in the curves between: (1) children in the 8W and the SC groups ($b = -8.10$, $SE = 3.88$, $p = .04$), and (2) children in the 4W and SC groups ($b = -11.46$, $SE = 3.84$, $p = .004$), but not between (3) children in the 8W and 4W groups ($b = 3.36$, $SE = 3.53$, $p = .34$). Large ES were noted from baseline to post-assessment for both the 8W and the 4W groups, and the 8W group maintained this effect at the 6-month follow-up assessment (see Table 5a).

3.6.2. Executive functioning: HTKS

A linear effect for time was found on the HTKS task, although no interaction effect was indicated (see Table 5a). Similar to the AWMA, large ES were indicated between baseline and post-assessment for the 4W and 8W groups. At follow-up, both groups maintained this increase. The 4W group had significantly higher scores compared to the SC group at post-assessment ($p = .03$), as well as at follow-up ($p = .03$).

3.6.3. Metacognitive problems: BRIEF

A quadratic effect of time, and its interaction with group, was noted for parent report of EF difficulties. These results indicated that, according to parents, there were significant differences in the curves between: (1) children in the 8W and SC groups ($b = 14.26$, $SE = 4.75$, $p = .004$), (2) children in the 4W and SC groups ($b = 15.65$, $SE = 4.71$, $p = .001$), but not between (3) children in the 8W and 4W groups ($b = -1.39$, $SE = 3.98$, $p = .73$). Between baseline and post-treatment, both the 4W and 8W groups showed a large improvement, as indicated by large ES (see Table 5a). This appeared to be maintained at follow-up for the 8W group, but as the effect size confidence intervals included zero, we can not be certain about the magnitude of the difference. The 4W group had significantly higher scores than the SC group at post-treatment ($p = .001$), and so did the 8 W group ($p = .03$). However, there was no difference among the groups at follow-up (see Table 5a). No time by group interaction was present for teacher-reported difficulties, and no significant curve differences were found among the groups or within time points (see Table 5a).

3.7. Self-regulation: emotion regulation

3.7.1. Regulation: ER checklist

For parent report of child ER, there was no significant interaction between group and time^2, which indicated no differences among the groups. Although significant differences were found between baseline and follow-up for the SC group, and between baseline and post-assessment for the 8W group, confidence intervals for the ES crossed zero. Model fit improved when incorporating time^2, but not its interaction with group. When the linear model was examined, time was found to be a significant predictor ($b = 0.19$, $SE = 0.08$, $p = .023$). With the inclusion of time^2, linear time remained significant ($b = 0.65$, $SE = 0.25$, $p = .011$). However, there was no

Table 5a
Self-regulation: executive functioning.

	Baseline (T1) *M* (*SE*)	Post-test (T2) *M* (*SE*)	Follow-up (T3) *M* (*SE*)	Time Effect *F*	Time x Group *F*	Time x Group *F*	T1-T2 *d* [95% CI]	T1-T3 *d* [95% CI]	T2-T3 *d* [95% CI]
AWMA Average standardized performance				Q-15.68***	-	-	-	-	-
School Consultation	93.05 (3.70)	93.25 (3.70)	99.06 (4.05)	-	ref	-	0.02[-0.83,0.86]	0.45[-0.40,1.30]	0.44[-0.42,1.29]
4-Week	94.02 (3.17)	105.08 (3.17)	98.83 (3.29)	-	8.91**	ref	0.87[0.13,1.62]***	0.38[-0.36,1.10]	-0.49[-1.21,0.25]
8-Week	89.70 (3.17)	99.74 (3.24)	99.19 (3.17)	-	4.36*	0.91	0.79[0.04,1.53]**	0.75[0.01,1.49]**	-0.05[-0.76,0.68]
Intercept Variance: Var (u_{0j}) = 91.70 [53.81, 156.27], Wald Z = 3.68, $p \leq .001$									
HTKS Total Score				L-47.46***	-	-	-	-	-
School Consultation	9.64 (3.40)	13.46 (3.40)	17.29 (3.87)	-	ref	-	0.33[-0.52,1.17]	0.61[-0.25,1.47]	0.31[-0.54,1.15]
4-Week	13.20 (2.91)	25.07 (2.91)	30.13 (3.08)	-	2.90	ref	1.02[0.26,1.78]***	1.41[0.61,2.21]***	0.43[-0.31,1.15]
8-Week	6.33 (2.91)	20.76 (3.00)	23.28 (3.10)	-	2.94	0.00	1.22[0.44,2.00]***	1.41[0.61,2.21]***	0.21[-0.52,0.93]
Intercept Variance: Var (u_{0j}) = 47.41 [23.28, 96.55], Wald Z = 2.76, p = .006									
BRIEF: Metacognitive Problems - Parent				Q-20.04***	-	-	-	-	-
School Consultation	68.28 (4.13)	70.54 (4.13)	60.69 (4.52)	-	ref	-	0.16[-0.68,1.00]	-0.51[-1.36,0.35]	-0.66[-1.52,0.20]
4-Week	63.60 (3.30)	50.93 (3.30)	57.46 (3.45)	-	11.05***	ref	-0.96[-1.72,-0.21]***	-0.46[-1.18,0.28]	0.49[-0.25,1.21]
8-Week	69.33 (3.30)	56.38 (3.38)	59.83 (3.46)	-	9.02**	0.12	-0.97[-1.73,-0.22]***	-0.71[-1.44,0.04]*	0.26[-0.47,0.97]
Intercept Variance: Var (u_{0j}) = 88.66 [49.57, 158.57], Wald Z = 3.37, p = .001									
BRIEF: Metacognitive Problems - Teacher				Q-0.32	-	-	-	-	-
School Consultation	72.74 (4.12)	74.95 (4.12)	67.70 (4.12)	-	ref	-	0.16[-0.69,1.00]	-0.36[-1.2,0.49]	-0.52[-1.36,0.34]
4-Week	67.07 (3.41)	71.41 (3.60)	72.50 (4.38)	-	0.34	ref	0.31[-0.42,1.03]	0.35[-0.38,1.07]	0.07[-0.65,0.79]
8-Week	74.20 (3.50)	67.80 (3.62)	70.48 (4.39)	-	3.06	1.45	-0.45[-1.18,0.28]	-0.24[-0.96,0.49]	0.17[-0.56,0.89]
Intercept Variance: Var (u_{0j}) = 75.91 [39.03, 147.62], Wald Z = 2.95, p = .003									

Note. Means and SEs are marginal estimates. Q = quadratic, L = Linear. ***$p \leq .001$, **$p \leq .01$, *$p \leq .05$. AWMA = Automated Working Memory Assessment, HTKS = Head-Toes-Knees-Shoulders Task, BRIEF = Behavior Rating Inventory of Executive Function. Ref = Reference group for time X group comparisons. Hedge's *g* is reported for group x time effects, and significance values refer to within-group comparisons.

Table 5b
Self-regulation: emotion regulation.

	Baseline (T1) *M* (*SE*)	Post-test (T2) *M* (*SE*)	Follow-up (T3) *M* (*SE*)	Time Effect *F*	Time x Group *F*	Time x Group *F*	T1-T2 *g* [95% CI]	T1-T3 *g* [95% CI]	T2-T3 *g* [95% CI]
Parent Regulation: ER Checklist		-	-	Q-6.10**	-	-	-	-	-
School Consultation	3.15 (0.13)	3.30 (0.12)	3.53 (0.14)	-	ref	-	0.35[-0.50,1.19]	0.83[-0.05,1.70]*	0.52[-0.34,1.37]
4-Week	3.26 (0.11)	3.44 (0.10)	3.40 (0.11)	-	0.98	ref	0.43[-0.30,1.16]	0.32[-0.41,1.04]	-0.10[-0.82,0.63]
8-Week	3.07 (0.10)	3.35 (0.11)	3.21 (0.11)	-	2.74	0.60	0.67[-0.08,1.40]*	0.34[-0.39,1.06]	-0.32[-1.04,0.41]
Intercept Variance: Var (u_{0j}) = 0.07 [0.04, 0.14], Wald Z = 2.99, p = .003									
Parent Negativity/Lability: ER Checklist		-	-	Q-16.50***	-	-	-	-	-
School Consultation	2.44 (0.13)	2.11 (0.13)	2.14 (0.15)	-	ref	-	-0.74[-1.61,0.13]*	-0.62[-1.48,0.24]	0.07[-0.78,0.90]
4-Week	2.13 (0.11)	1.78 (0.11)	1.93 (0.11)	-	0.19	ref	-0.80[-1.54,-0.05]**	-0.46[-1.18,0.28]	0.34[-0.39,1.07]
8-Week	2.34 (0.11)	1.89 (0.11)	1.99 (0.11)	-	0.39	0.05	-1.02[-1.78,-0.26]***	-0.80[-1.54,-0.05]**	0.23[-0.50,0.95]
Intercept Variance: Var (u_{0j}) = 0.10 [0.05, 0.17], Wald Z = 3.38, p = .001									
Teacher Regulation: ER Checklist		-	-	Q-2.76	-	-	-	-	-
School Consultation	2.77 (0.13)	2.93 (0.13)	2.92 (0.12)	-	ref	-	0.36[-0.49,1.21]	0.35[-0.50,1.19]	-0.03[-0.86,0.82]
4-Week	2.97 (0.11)	2.58 (0.11)	2.66 (0.13)	-	4.10*	ref	-0.89[-1.64,-0.14]**	-0.65[-1.39,0.09]	0.17[-0.56,0.89]
8-Week	2.96 (0.11)	2.94 (0.11)	2.94 (0.13)	-	0.40	2.13	-0.05[-0.77,0.68]	-0.05[-0.76,0.68]	0.00[-0.72,0.72]
Intercept Variance: Var (u_{0j}) = 0.08 [0.05, 0.16], Wald Z = 3.10, p = .002									
Teacher Negativity/Lability: ER Checklist		-	-	Q-6.21*	-	-	-	-	-
School Consultation	2.42 (0.15)	2.39 (0.15)	2.56 (0.14)	-	ref	-	-0.06[-0.90,0.78]	0.29[-0.56,1.13]	0.35[-0.51,1.19]
4-Week	2.46 (0.12)	2.29 (0.13)	2.33 (0.16)	-	0.002	ref	-0.35[-1.07,0.38]	-0.24[-0.95,0.49]	0.07[-0.65,0.79]
8-Week	2.42 (0.12)	1.90 (0.13)	2.12 (0.16)	-	1.85	1.82	-1.06[-1.82,-0.29]**	-0.54[-1.27,0.20]	0.39[-0.35,1.11]
Intercept Variance: Var (u_{0j}) = 0.08 [0.04, 0.18], Wald Z = 2.67, p = .008									

Note. Means and SEs are marginal estimates. Q = quadratic, L = Linear. ***$p \leq .001$, **$p \leq .01$, *$p \leq .05$. ER = Emotion regulation. Ref = Reference group for time X group comparisons. Hedge's g is reported for group x time effects, and significance values refer to within-group comparisons.

interaction with the group variable in either case, and time^2 was not a significant predictor. This suggested that a linear model might be better for describing the relationship among these variables. A significant interaction between time^2 and group was observed for the measure of teacher report of child ER. This indicated a significant difference in the growth between: (1) children in the 4W and SC groups ($b = 0.31$, $SE = 0.15$, $p = .05$), but not between (2) children in the 8W and SC groups ($b = 0.10$, $SE = 0.15$, $p = .53$), or (3) children in the 8W and 4W groups ($b = -0.22$, $SE = 0.15$, $p = .15$). As seen in Table 5b, there was a significant decrease from baseline to post-treatment in the 4 W group, with a large effect size. However, this difference was not maintained at follow-up.

3.7.2. Negativity/lability: ER checklist

Although time^2 was a significant predictor of parent report of child negativity/lability, there was no interaction with group, suggesting that there were no differences in the curves among the 8W, 4W, and SC groups. Large ES were noted for a decrease in parent negativity/lability in the 4W and 8W groups, from baseline to post-assessment (see Table 5b). Only the 8W group maintained this decrease at follow-up. Although the SC group also showed a statistically significant decrease from baseline to post-assessment, the effect size was unreliable. Finally, based on teacher-reported scores, there was no interaction between time^2 and group, suggesting that there were no differences in the curves among the groups. A large effect size was noted for the decrease between baseline and post-assessment in the 8W group, however, this was not maintained at follow-up (see Table 5b). When the linear model was examined, an interaction between time and group was found, indicating a difference between the 8W and SC groups ($b = -0.27$, $SE = 0.13$, $p = .04$). This difference was maintained ($b = -0.24$, $SE = 0.12$, $p = .05$) when time^2 was included, which was also a significant predictor ($b = 0.20$, $SE = 0.08$, $p = .02$), suggesting that all groups had similar increases in growth over time.

4. Discussion

These findings demonstrate preliminary evidence that both doses of the STP-PreK program (8W and 4W) are feasible, acceptable, and effective for improving school readiness skills in preparation for kindergarten entry for young children with EBPs. Contrary to our hypotheses, we found few significant differences between 8W and 4W groups, suggesting relatively equal advantages of both doses of intervention, although as we discuss below it is important to note that both programs received the same dose of parent training. Our data also indicate that aspects of children's behavioral, academic, social-emotional, and self-regulation functioning significantly improved across groups, including the SC group, suggesting that all three interventions are effective in improving kindergarten success for children with EBPs. However, the timing of intervention may have significant implications for the initial transition to kindergarten. Specifically, our findings demonstrate that both 4W and 8W groups experienced greater growth across time in certain aspects of behavioral functioning, academic readiness, adaptive skills, and executive functioning compared to children in the SC group. These findings suggest that while school consultation may address some aspects of kindergarten success during the kindergarten year, there may be some advantages to providing programming during the summer prior to the kindergarten year in preparation for the transition to elementary school. We will discuss these findings each in turn below.

Within the behavioral functioning domain, our findings demonstrate that children in the 8W and 4W groups had significantly greater growth in their behavioral readiness per parent report at the start of the kindergarten year than children in the SC group. This is not surprising given that both children in the 8W and 4W groups received active intervention prior to the start of the kindergarten year and children in the SC group did not. Although there were no significant differences between the 8W and 4W groups at any time point, the 8W group had large improvements in teacher reported behavioral impairment from baseline to the 6-month follow-up, suggesting continued improvement in school functioning after completion of the intervention. The lack of significant differences between the 8W and 4W groups on measures of behavioral functioning may in part be due to the fact that both groups received eight sessions of the SRPP and there were no differences in rates of attendance between groups in terms of parent treatment received. Parent training may then be a huge driver of early intervention success during the transition to kindergarten, which is in line with the American Academy of Pediatrics guidelines for the treatment of EBPs in the preschool years (AAP, 2011). It does appear that children in the SC group experienced significant improvement in their parent-reported behavioral impairment across the kindergarten year, which suggests that the intervention received during the kindergarten year was effective in improving the behavioral functioning for children in this group. This is consistent with previous studies demonstrating the effectiveness of SC approaches for children with EBPs (Sheridan, 1997). As such, although the 4W and 8W groups started the kindergarten year off on a stronger behavioral foot than children in the SC group, all three interventions were ultimately effective in impacting kindergarten success outcomes in the behavioral domain.

Within the academic domain, our findings show a similar pattern of results demonstrating an initial advantage of the 4W and 8W groups over the SC groups at the start of the kindergarten, but ultimately a significant impact of all three interventions on academic kindergarten success outcomes. This is clearly demonstrated in review of the academic achievement outcomes. Specifically, although all groups significantly improved in their academic achievement (as measured by the Bracken and WJ-III ACH) across time, children in the 4W and 8W groups experienced greater growth in their academic school readiness skills (as measured by the Bracken), as well as significantly higher scores on average, when compared to children in the SC group, with large effects maintaining across the kindergarten year. However, children in the SC group significantly improved their achievement scores (on both the Bracken and WJ-III ACH) once the kindergarten year had begun, with medium to large ES from the start of the kindergarten year to 6-month follow-up. Surprisingly, there was not a significant difference between the 8W and 4W groups considering that children in the 8W group received four additional weeks of academic skills instruction over the summer. However, this may be due to the timing of the intervention (i.e., the 4W program was provided in the middle of the summer) and the nature of the parent training that both groups received (i.e., both groups of parents received direct instruction on how to facilitate academic readiness at home). Alternatively, given that most early childhood academic curricula (e.g., Lonigan et al., 2005) and academic intervention programs for young

children span the course of an entire school year (see Scammacca, Vaughn, Roberts, Wanzek, & Torgesen, 2007 for a review), there may only be so much expected improvement in a relatively brief amount of time (i.e., four or eight weeks). Furthermore, although we accounted for individual variances at starting points, it is possible that there may be a qualitative difference between children who begin intervention below grade level versus those who begin intervention at or above grade level that may account for differential growth in academic skills. As such, future studies may want to examine the extent to which there are differential impacts of the 4W, 8W, and SC interventions on academic readiness outcomes for children with EBPs who are also performing below grade level.

Across the adaptive functioning and social-emotional skills domains, results demonstrate that while there is significant growth across groups, there is a significant advantage of the 8 W and 4 W groups over the SC group at the start of the kindergarten year; however, these differences do not maintain over time. For example, there appears to be significant growth in parent-reported adaptive skills across groups, with children in the 8W and 4W groups improving significantly more than children in the SC group from baseline to the start of the kindergarten year. However, by the end of the kindergarten year, no differences were found between groups and there was a significant worsening from the beginning of the kindergarten year to 6-month follow-up of adaptive functioning for children in the 8W and 4W groups. Similarly, there was significant improvement across groups on emotion knowledge, but only a slight advantage of the 8W group over both the 4W and SC groups. This suggests that while there appear to be some initial benefits of the 8W and 4W interventions, our findings indicate that continued intervention into the kindergarten year may still be needed to maximize results in these domains.

Within the self-regulation domain, results also demonstrate a significant advantage of the 8W and 4W groups on both direct and parent-report assessments of executive functioning and emotion regulation over the SC group at the start of the kindergarten year with maintenance of gains across the kindergarten year. This is the one domain where there is a clear advantage of the 8W and 4W groups over the SC group as only one of the eight self-regulation outcomes, specifically parent-reported emotion regulation, improved from baseline to the end of the kindergarten year for children in the SC group. This is not surprising as there was no direct training of self-regulation skills for children in the SC group. Therefore, our findings demonstrate the potential for self-regulation training in this critical developmental period, which may have later implications for children's academic (Clark, Pritchard, & Woodward, 2010; Graziano, Reavis, Keane, & Calkins, 2007; McClelland et al., 2007) and social (Hill & Taylor, 2004) functioning. Interestingly, similar to the other domains assessed, there were relatively few differences between children in the 4W and 8W groups. This suggests that children's self-regulation abilities appear to respond as early as four weeks. Perhaps, similar to what we discussed with regard to our academic results, there are differential response rates to the applied self-regulation training. Future studies may want to examine how baseline levels of self-regulation affect overall response to intervention.

With regard to feasibility and acceptability of the program, parents were highly satisfied with both 4W and 8W programs. Although we did not collect satisfaction ratings on intervention services received by the SC group, it is important to note that 3 of the 15 participants withdrew participation after they were randomized to the SC group because they reported wanting their child to receive a summer program. Additionally, parents attended only 47.2% of consultation sessions, which perhaps reflects some barriers to full participation (e.g., time needed during afterschool hours to meet with teachers) with this treatment approach. Therefore, there may be some consumer preferences that may need to be considered. Additionally, we had to remove one family from analyses because they were assigned to the SC group and the school refused to permit the intervention team to work with the school. This raises an important issue related to the school preferences for intervention and generally the provision of mental health services in schools.

Putting these findings in context with previous findings from the KITS program (Pears, Kim, Healey, Yoerger, & Fisher, 2015), the only other early intervention transition to kindergarten program, it appears that the attendance rates for both the 4W and 8W STP-PreK child and parent programming are higher than those for KITS, which may have implications for the development of transition programming in the future. Specifically, offering a full day summer program for children (STP-PreK model), instead of twice weekly two-hour sessions for children (KITS model), prior to the start of kindergarten, in conjunction with parent training, may be more conducive to greater treatment engagement, reducing practical barriers related to daily childcare, for families of children with EBPs. An examination of ES across studies also suggests potentially greater impact on school readiness outcomes of the STP-PreK model over the KITS program. However, it is important to note that our ES were calculated within group, while the KITS program ES were calculated relative to a control group.

4.1. Limitations and future directions

There were some limitations to the current study that need to be addressed. First, although findings were significant with medium to large ES, the small sample size of the current randomized trial is a significant limitation. It is important that these results be replicated in a larger randomized trial with a longer follow-up period given the rapid growth of children's self-regulation skills that occur within the preschool period (Carlson, 2005). Second, programmatically it is possible that there were few differences between the 8W and 4W groups because both groups received the same amount of parent training. This may indicate that the improvements seen in the 8W and 4W groups could be largely attributed to the parent training component. Future research should examine the effects of a shortened SRPP for the 4W program, and the extent to which the child program alone, without parent training, impacts outcomes in the transition to kindergarten. In designing future examinations of intervention dose, the feasibility and acceptability of the intervention, considering possible barriers to care (e.g., practical issues related to family work schedules, cost of intervention, timing of intervention, funding of services), as well as a cost analysis to determine the extent to which different doses of early intervention are most likely to lead to the greatest gains in student outcomes for the lowest cost, should be considered. Third, given that parents did not attend the majority of SC sessions, the extent to which a true conjoint behavioral consultation was implemented is an important consideration. However, despite the lack of parent participation in SC sessions, the intervention received is in line with other behavioral consultation approaches utilized for children with externalizing behavior problems (Evans, Owens, Wymbs, & Ray, 2018). Fourth, it is important for future research to also examine the continued effects of the program after the transition to first

grade. It would also be important to examine how this program prepares children to meet their third grade academic benchmarks.

Finally, a fifth limitation is the homogeneity of the sample, which was largely Hispanic/Latino (93%) due to the study's geographical location. However, this limitation may be viewed as a strength as one in four children entering kindergarten in the United States is of Hispanic or Latino origin, representing the fastest-growing minority group (U.S. Census Bureau, 2014), but are understudied in the child intervention research (La Greca, Silverman, & Lochman, 2009). Although not specifically examined within this study, there has been some research conducted with Mexican- and Central-American children and families (e.g., Farver, Xu, Eppe, & Lonigan, 2006; Gamble & Modry-Mandell, 2008; McCabe, Yeh, Garland, Lau, & Chavez, 2005; Reese, Balzano, Gallimore, & Goldenberg, 1995) that points to potentially relevant cultural values, attitudes, and beliefs that may be important to understand in relation to parent participation in intervention components and thereby child outcomes. For example, the values of *familism* (i.e., attitudes toward family solidarity, family integration, intra- and inter-generational support, and a commitment to family members that supersedes attention to the individual; Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987), *simpatía* (i.e., cultural value that encourages avoiding interpersonal conflict, emphasizing positive behaviors in agreeable situations and de-emphasizing negative behaviors in conflictual circumstance; Triandis, Marin, Lisansky, & Betancourt, 1984), and *educación* (i.e., a childrearing goal of raising socially competent children who will become *un persona de bien* (a good person) or *bien educado* (well brought up), respectful of adults, who behaves appropriately with others, and therefore is on *el buen camino* (the good path); Reese et al., 1995) have been found to be connected to parent involvement in education and children's academic achievement (Reese et al., 1995), and highly influential in seeking mental health treatment and decisions on how to handle a child's behavior problems (McCabe, 2002; Yeh, McCabe, Hough, Dupuis, & Hazen, 2003). These values and beliefs have not been examined specifically in Caribbean- or South-American families, which was the majority of families participating in this study. However, future research should examine the extent to which these cultural values and beliefs, as well as the level of acculturation, may mediate or moderate participation in early intervention programming and thereby the school readiness skills of young children with EBPs.

4.2. Clinical implications

Overall, it appears that both doses (4W and 8W) of intensive summer programming provided before the start of the kindergarten year demonstrate short-term potency in improving the initial transition into the kindergarten years with some maintenance of gains through the kindergarten year without any continued clinician-implemented support after summer program end. Brief school-year consultation provided after the initial start to kindergarten also had a positive impact on kindergarten year functioning. For practitioners, the findings of our study therefore suggest that all three intervention options are potentially viable in improving children with EBPs transition to kindergarten. There does appear to be some initial advantage to providing intensive summer programming prior to kindergarten entry over school consultation after the start of school. However, by the end of the school year, children across intervention groups were performing similarly across most domains. Practitioners should then carefully consider the timing of intervention and the extent to which the behavioral challenges of the child, if present before the transition to kindergarten, can wait to be addressed until after the initial start of the school year. Parent preferences (e.g., the desire for services during the summer prior to the transition to kindergarten) for early intervention programming, as well as the presence of impairment across both home and school settings, during this transition may also play a role in the intervention recommended and/or received. We would argue that behavioral parent training is key to these early intervention efforts for children with EBPs and that any school readiness programming include this in some way to maximize both short- and long-term gains. Certainly, access to intensive summer programming and the cost of providing intensive summer programming may be a barrier to this early intervention approach. As such, it is quite promising that a brief, school-year model of early intervention did improve several aspects of children's kindergarten success. Although there may be challenges in coordinating early intervention efforts with schools and parents using a collaborative approach, our findings support the notion that training school personnel (e.g., school psychologists, school counselors) in the provision of early consultation with teachers to develop and monitor a DRC during the kindergarten year may be an important avenue to support a more positive transition to kindergarten for children with EBPs. Given newer life-course models of service delivery (Evans, Owens, Mautone, DuPaul, & Power, 2014) it is likely that a one-and-done intensive early intervention is not going to be sufficient to address the new challenges inherent at each stage of development, especially for children with EBPs. Alternatively, there may be subgroups of children for whom one intensive dose of early intervention may be sufficient for a positive and sustained transition to kindergarten and the later elementary years. For example, given increased interest in the sequencing of interventions (Almirall & Chronis-Tuscano, 2016), as well as interest in cost-benefit/cost-effectiveness of early interventions (Heckman et al., 2006; Page et al., 2016), future research should examine if it is more cost-effective to begin with behavioral parent training or brief school consultation during the preschool year, and then, based on levels of clinical impairment, increase the dose of intervention received.

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