SELF Intervention for K-1 Students At-Risk: Mediation Effects of Social-Emotional Learning on School Adjustment

Objectives

Although researchers confirm that social-emotional growth and academic learning are inextricably connected (Blair & Diamond, 2008; Downer & Pianta, 2006), school professionals continue to emphasize academic skills over social-emotional learning (SEL; Bassok, Latham, & Rorem, 2016). An increasing number of researchers (Hemmeter, Ostrosky, & Fox, 2006; Riggs et al., 2006) emphasize the role that related attributes such as self-esteem and self-regulation play in students' adjustment and connection to school, particularly at critical transitions such as the progression from pre-school to Kindergarten and the primary grades. Amidst the current press to demonstrate continuous academic progress, it is practically and theoretically sound to integrate SEL within English Language Arts instruction to enable teachers to address both SEL and academics simultaneously and feasibly within the classroom setting. As such, we designed the Social-Emotional Learning Foundations (SELF) curriculum to promote the development of language-supported self-regulation, specifically for primary grade children at early risk for emotional and behavioral disorders (EBD), whether because of internalizing or externalizing behavioral concerns. SELF lessons promote children's use of SEL related vocabulary, self-talk, and critical thinking through discourse maximized in small-group instructional settings. SELF lessons build an essential foundation for successful school-related outcomes, as risk for both internalizing and externalizing behaviors is associated with academic difficulty and diminished quality of life (Fite et al., 2008; Masten et al., 2005). Through a rigorous efficacy study, we found that SELF had a significant direct impact on multiple outcomes for K-1 students at risk for EBD; outcomes included SEL competency, SEL related knowledge and vocabulary, self-regulation, and school adjustment. Building on these findings, we wanted to explore underlying mechanisms through which the SELF intervention might have resulted in positive effects on outcomes more distally related to SELF curriculum content. Hypothesizing that SEL is a critical component for successful school adjustment, we examined whether a proximal measure of the competencies taught in SELF served to mediate treatment effects on a more distal measure of school adjustment.

Theoretical Framework

Successful social-emotional growth requires the development of self-regulatory skills that underlie healthy social, emotional, and behavioral functioning (Blair & Diamond, 2008; Riggs et al., 2006). When these processes are under-developed, children may exhibit a variety of maladaptive behavior, particularly related to skills needed for successful adjustment to school. Self-regulatory skill development is thought to contribute significantly to a child's social-cognitive and behavioral functioning (Greenberg et al., 2004; Zelazo & Cunningham, 2007; McClelland & Cameron, 2012). Moreover, being able to verbally identify and label feelings can have a powerful effect on emotional and behavioral self-regulation. When children have the opportunity to talk about emotional experiences, the neural integration that contributes to self-regulation is strengthened (Greenberg, Kusche, & Riggs, 2004). SELF lessons are grounded in this conceptual framework. In small group settings, children at risk for EBD learn SEL concepts

and vocabulary that enables them to express their feelings more accurately. In addition, they are provided multiple opportunities to do so in dialogue with their teacher and peers.

Method

Sample and setting

Our findings are from data aggregated across a three-year federally funded efficacy study to evaluate the effects of SELF for students identified by their classroom teacher as at risk for either internalizing or externalizing behavior problems. Specifically, the sample included 318 teachers from 52 schools (primarily Title 1) within one southeastern state. The student sample consisted of 1,154 K-1 students, with 53% of students participating in the SELF condition and 47% in a Business as Usual (BAU; comparison) condition. Teachers identified students at-risk using the *Systematic Screening for Behavior Disorders* (SSBD; Walker & Severson, 1992).

Intervention description

SELF consists of a carefully coordinated set of materials and pedagogy to promote the development of language supported self-regulation, specifically for Kindergarten and first grade children at early risk for EBD. SELF lessons (approximately 50 for each grade level) are organized around 16 SEL topics within five critical competencies: self-awareness, social-awareness, self-management, relationship skills, and decision making. Lessons incorporate instructional strategies that promote children's use of SEL related vocabulary, self-talk, critical thinking, and application of learned concepts. SELF includes whole-group lessons (the first lesson in each of the 16 topics) to introduce vocabulary and SEL concepts to all students in the classroom, providing a context within which the teacher can reinforce learning throughout the school day. The 2nd and 3rd lessons in each SELF topic are taught to at risk students in a small group setting to maximize opportunities for language interactions and teacher modeling that help build self-regulation skills. Structured as such, the SELF intervention offers a feasible and substantial opportunity within the classroom setting to provide social-emotional learning integrated with K-1 literacy-related instruction for students at risk for EBD.

Research procedures

After recruiting participating teachers and prior to random assignment to treatment or BAU, we asked each teacher to identify and rank eight students, four with internalizing and four with externalizing behaviors, using the SSBD. We solicited parental consent for four students per class to participate in the SELF project and informed parents about assessment and the possibility of small-group instruction in the SELF curriculum. We trained all teachers and research project staff on the informed consent process to assure compliance with human subject protection, and we followed our institution's participant consent protocols.

Study design

The overall study design was a pretest-posttest cluster-randomized efficacy trial with one fixed between-subjects factor to test treatment effects versus the effects of BAU. We randomly assigned schools to condition. Randomization at the school level addressed potential contamination among classrooms within schools, as most elementary schools operate with grade-level teams who interact on a regular basis. In addition, teachers were nested in schools and were a second random factor. We collected pretest and posttest data for all outcomes.

Research Question

As stated earlier, SELF was found to have a significant, direct, positive impact on school adjustment related outcomes. To explore potential mechanisms of change (Marsh et al., 2014), we used mediation analyses in the current study to examine whether the SELF intervention also had an indirect effect on school adjustment (i.e., internalizing, externalizing, social skills, competence) through its effect on social-emotional development.

Data sources used in mediation analyses

The distal outcome variable for the current study was the *Clinical Assessment of Behavior Teacher Rating Form* (CAB-T; Bracken & Keith, 2004). The measure of the hypothesized mediator was the Devereux Student Strengths Assessment (DESSA; LeBuffe, Shapiro, & Naglieri, 2008). Both are described below.

o The *Clinical Assessment of Behavior Teacher Rating Form* (CAB-T; Bracken & Keith, 2004) consists of 70 questions that comprise three clinical scales (internalizing, critical, and externalizing behavior), three adaptive scales (social skills, competence, and adaptive behavior), and four educationally related clinical clusters including EF. CAB subscales have demonstrated adequate internal reliability, and the measure is particularly well suited to our project because of its scales and sensitive item gradients (Bracken, personal communication, 9-30-06). We included scores from four CAB subscales: internalizing, externalizing, social skills, and competence. Descriptive statistics for CAB subscale scores are given in Table 1; missing data rates were 3.6% at pretest and 12.1% at posttest.

o The Devereux Student Strengths Assessment (LeBuffe, Shapiro, & Naglieri, 2008) is a 72-item, standardized, norm-referenced behavior rating scale measuring the social-emotional competencies that serve as protective factors for children in grades K - 8. Items rated on a 5-point scale indicating how often the child engaged in a specified behavior over the previous four weeks are organized into eight conceptually derived scales corresponding to key social-emotional competencies. A convergent and divergent validity study supported convergent validity across raters (e.g., parents, teachers) and measures (e.g., BASC2, BERS2) and divergent validity for the Total Protective Factor scale/subscales with the BASC2 Behavioral Symptoms Index and clinical subscales (Nickerson & Fishman, 2009). We assessed students on the five competencies that correspond to those taught in SELF: self-awareness, social-awareness, self-management, relationship skills, and decision making. We report DESSA total

score descriptive statistics in Table 2; missing data rates were 4.1% at pretest and 12.5% at posttest.

Data analyses and results

We conducted three-level mediation analyses using M*plus* 8.4. Figure 1 depicts the level-1 or level-2 aspect of the model. Figure 2 depicts the level-3 aspect of the model in which the SELF intervention can indirectly affect the CAB scores through the DESSA total score. Both outcome and mediator pretest scores are centered around observed means (i.e., level-1 scores are centered around the level-2 cluster mean, level-2 around the level-3 cluster mean, and level-3 around the grand mean, given that the mediation of the intervention effect goes through the school-level component of the mediator). Pretest variables in the model addressed missing data; however, using all available cases increased the number of parameters to be estimated, resulting in model warnings for the trustworthiness of standard errors. Thus, we reported results both for all available cases and for complete cases. The results were consistent, and the model estimation with the complete cases terminated normally. Table 3 reports the results along with the Standardized Root Mean Square Residual (SRMR) for each level as an indicator of the model fit, estimated coefficients, standard errors, and p-values. Consistent with earlier findings, we found statistically significant direct intervention effects on the four CAB subscale scores using the model depicted in Figure 2. The direct effect estimates were 4.30, 5.11, 4.29 and 5.50 for competence, externalizing behavior, internalizing behavior, and social skills variables, respectively, with $p < .01$. Our results also indicated indirect intervention effects on the Competence and Internalizing subscales of the CAB through effects on DESSA subscales. Indirect effect estimates were 2.36 for Competence, with $p < .01$; and 1.00 for Internalizing behavior, with $p = .03$.

Scientific or scholarly significance of the study or work

Findings from prior analyses and from the current study indicate that the SELF intervention had positive direct effects on measures of SEL and school adjustment regardless of whether students were identified as having risk for externalizing or internalizing behavior problems. This is noteworthy, as there is a need for effective school-based programming for children with internalizing problems as well as disruptive behaviors that typically draw more attention from teachers (Neil & Christensen, 2009; Weist et al., 2018). Findings from studies of SELF to date thus provide evidence that this intervention, and potentially others that explicitly teach social-emotional language and SEL related competencies, may offer a proactive approach to fostering successful school adjustment for all primary grade children at risk for EBD, regardless of behavior type. The mediation findings from the current study, in particular, can help guide future research about how gains in SEL competence affect the impact of SEL interventions on more distal outcomes (e.g., behavioral issues and adjustment related skills) that are critical to long-term success in school. Such studies can contribute to more effective and efficient services for students with social-emotional needs.

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Table 1. *Descriptive Statistics for Teacher Reported Student Behavior on CAB Subscales*

	Condition	INT_{pre}	INT_{pst}	EXT_{pre}	EXT_{pst}	SOC_{pre}	SOC_{pst}	COM_{pre}	COM_{pst}
N	BAU	532	480	532	480	532	480	532	480
	SELF	580	533	580	533	580	533	580	533
Missing	BAU	9	61	9	61	9	61	9	61
	SELF	33	80	33	80	33	80	33	80
Mean	BAU	53.85	56.42	62.70	64.80	57.00	59.58	53.09	57.00
	SELF	52.33	59.84	61.96	68.98	55.03	63.64	51.40	60.81
SD	BAU	12.13	12.05	19.54	19.32	14.46	14.95	15.33	16.10
	SELF	11.48	11.35	19.11	17.90	14.06	14.42	14.70	15.30
Minimum	BAU	18	21.00	18	18.00	21.00	20.00	19.00	18.00
	SELF	16	24.00	18	18.00	19.00	22.00	18.00	18.00
Maximum	BAU	80	80.00	90	90.00	89.00	90.00	90.00	90.00
	SELF	78	80.00	90	90.00	89.00	90.00	87.00	90.00

Note. .CAB = Clinical Assessment of Behavior; COM = Competence; EXT = Externalizing Behaviors; INT = Internalizing Behaviors; SOC = Social Skills; SELF = SELF intervention group.

Table 2. *Descriptive Statistics for DESSA Total Scores*

	Condition	DESSA$_{pre}$	DESSA$_{pst}$
N	BAU	532	479
	SELF	574	529
Missing	BAU	7	60
	SELF	38	83
Mean	BAU	141.38	158.82
	SELF	129.59	177.16
SD	BAU	50.84	57.56
	SELF	43.09	54.41
Minimum	BAU	0.00	0.00
	SELF	0.00	7.00
Maximum	BAU	277.00	284.00
	SELF	266.00	288.00

Table 3. *Three-level mediation model results using observed mean centering*

| | | | | | Complete Cases | | | | | All Available Cases[a] | | | |
| | | SRMR | | | Direct Effect | | Indirect Effect | | | Direct Effect | | Indirect Effect | |
	n	L1	L2	L3	Est.(SE)	p	Est.(SE)	p	n	Est.(SE)	p	Est. (SE)	p
Communication	1007	.00	.00	.01	4.30(0.76)	.00*	2.36(0.78)	.00*	1146	4.29(0.76)	.00*	2.35(0.78)	.00*
Externalizing	1007	.00	.01	.01	5.11(0.83)	.00*	0.35(0.59)	.55	1146	5.13(0.82)	.00*	0.36(0.59)	.55
Internalizing	1007	.00	.00	.05	4.29(0.66)	.00*	1.00(0.47)	.03*	1146	4.26(0.66)	.00*	1.01(0.47)	.03*
Social Skills	1007	.00	.01	.01	5.50(0.78)	.00*	0.86(0.60)	.15	1146	5.51(0.78)	.00*	0.87(0.60)	.15

Note: n = number of observations; L = level; Est. = Estimate; SE= Standard error; *$p < .05$
[a] This model resulted in warnings on the trustworthiness of the standard errors
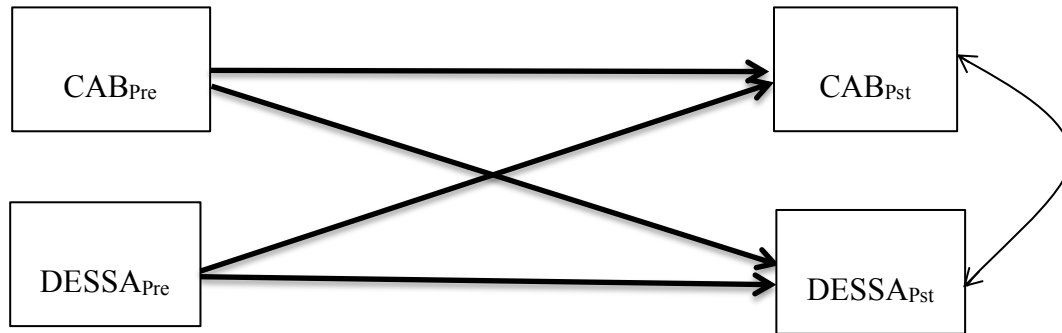
Figure 1. Level-1 and level-2 aspect of the mediation model
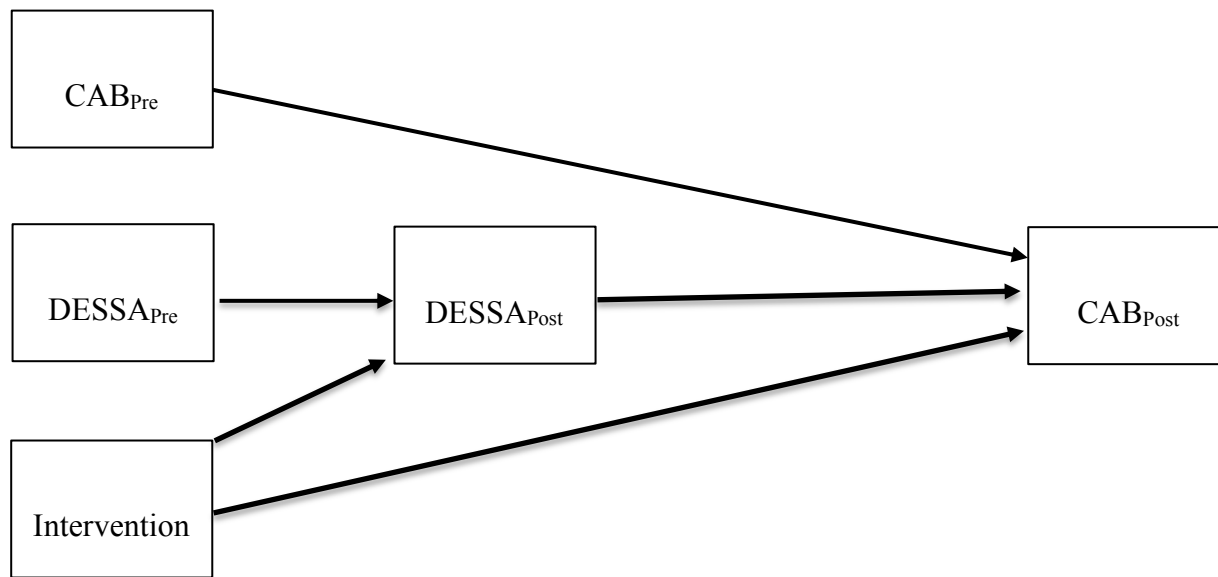
Figure 2. Level-3 aspect of the mediation model