# Developing Social-emotional Vocabulary to support Self-regulation for Young Children at Risk for Emotional and Behavioral Problems

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## Abstract

The current study was designed to examine the effects of a social-emotional learning intervention using interactive storybook reading, SELF: Social-Emotional Learning Foundations, on the vocabulary growth of kindergarten and first grade students at risk for emotional and behavioral difficulties. Because SELF was intended to promote students' overall social-emotional development, the specific focus of this study was on

Vocabulary related to social-emotional learning. A pretest-posttest control group design was used to compare outcomes for 23 kindergarten students (6 classrooms) and 32 first grade students (9 classrooms) in the SELF group to 16 kindergarten students (4 classrooms) and 20 first grade students (5 classrooms) in a business as usual (BAU) control condition on three specific aspects of vocabulary knowledge using a teacher completed curriculum based measure of social-emotional learning related vocabulary.Results indicated that students at both grade levels who received the intervention had significantly higher overall scores than students in the BAU control group. Subscale analyses indicated that both kindergarten and first grade students who received the SELF intervention were better able to provide a definition of the target vocabulary and use the word in context by providing examples of when they might experience a designated feeling. Receptive vocabulary subscale scores, derived using a multiplechoice format differed for kindergarten students only. Effect sizes for significant findings ranged from 0.61 to 1.18. Students' pretest scores on a researcher administered standardized measure of expressive vocabulary and understanding spoken paragraphs were significant predictors of overall posttest social-emotional learning related vocabulary scores, but there was no evidence of a significant pretest by condition interaction.

**Keywords:** Vocabulary; Social-emotional learning; Behavior regulation; At-risk; Pretest-posttest; control group design

## Introduction

Driven by federal mandates to raise student achievement, many school professionals focus heavily on developing academic skills to the neglect of social-emotional learning, even though children's early school success depends heavily on successful social-emotional development [1,2]. An increasing number of researchers [3,4] emphasize the role that motivation, self-esteem, and self-regulation play in a child's adjustment and connection to the school setting, particularly at the critical transition from pre-school settings to the demands of kindergarten and the primary grades. With the growing consensus that students' social-emotional and academic development are interrelated [3-5], there are calls for concerted efforts to integrate development in both areas, maximizing students' potential to succeed socially and academically and prevent the onset of problematic behavior patterns [3,4].

## Language and Social-Emotional Skills

Language plays a critical role in social-emotional skill development. When children enter school, they face increased demands to sustain appropriately regulated and goal-directed activities, inhibit negative behaviors, and comply with rules [6]. Language skills support the required social-emotional adjustment by promoting the ability to

comprehend and comply with behavioral demands, cope actively with learning challenges, and relate positively to teachers and peers [7]. As children learn to interpret their environment through language, first, through interactions with adults who model language and vocabulary, and subsequently through self-talk, as they begin to internalize language and incorporate rules to guide their behavior [8]. As children learn to use self-talk, they are both strengthening and using language to regulate their emotional and behavioral responses [9]. Therefore, language and social-emotional skill development provide essential foundational support for effective school engagement.

Self-regulation, essential to social-emotional development, refers to processes related to the regulation of emotion, attentional focus, and behavior [1]. For typically developing children in literacy-rich environments, cognition, language, metacognition, and self-regulation develop together, as children use language for a variety of functions, including labeling and defining feelings [10,11]. Children who have the vocabulary to express their feelings accurately can develop emotional literacy, which is a key component of social competence [10]. Unfortunately, children living in poverty have limited language experiences and are likely to have smaller vocabularies [12], and teachers in high-poverty schools tend to provide significantly lower quality vocabulary instruction than teachers in economically advantaged schools [13]. Consequently, children living in poverty use language less frequently to direct their behavior or talk about what others may be thinking and feeling [11], and they enter school with significant delays in social-emotional readiness [1]. Over 40% exhibit

delays in social competence and communication at entry to school, and 20% demonstrate high rates of disruptive behavior that affect school adjustment [14].

Integrating Social-Emotional Skills with Literacy Development

Instruction in emotion vocabulary is emphasized in social-emotional curricula with the rationale that accurate identification and labeling of complex constructs such as "anger," "frustration," "jealousy," and "embarrassment" better enables children to understand and successfully manage situations in which these feelings arise in themselves and others [4]. To develop a firm understanding of any new vocabulary (including emotion related vocabulary), students need challenging opportunities that require deep processing [15] through activities such as thinking about and discussing words, and examining and articulating that thinking. These opportunities are provided through teacher scaffolding of students' processing by using comments and questions that help build flexible representations of selected vocabulary likely to generalize to novel contexts and real-world situations [15].

The development of social-emotional skills and related vocabulary, can be fostered simultaneously when teachers read aloud and discuss books with social-emotional content [16]. Such books often include characters who solve problems and interact with others, providing students an opportunity to connect emotionally to these experiences and to develop emotion-related vocabulary through the conversations that occur during repeated readings, both through direct instruction of word meanings [15] and incidental learning from conversation and play [10]. Moreover, discussion of storybook characters' emotions is critical for comprehension of narrative texts and supports metacognitive thinking [11]. It can also assist in the development of emotional literacy, or the ability to recognize, label, and understand one's feelings and those of others. Developing an "emotion vocabulary" allows children to (a) better discriminate among feelings, (b) communicate effectively with others about their feelings, and (c) engage in discussion about their personal experiences in and out of school [11]. In sum, this vocabulary is a critical part of social-emotional learning and emotional self-regulation.

## The Current Study

The current study was part of a project to develop and evaluate the feasibility and preliminary promise of Social-Emotional Learning Foundations (SELF), a curriculum that incorporates a cognitive-behavioral framework based on the assumption that self-control is fundamentally developed through self-talk (for a detailed description of the intervention. Integrating social-emotional learning and literacy, SELF strategically combines curricular materials and pedagogy selected specifically to support the development of language and self-regulation [17]. Because of the emphasis on self-talk, SELF lessons focus on maximizing teacher-student dialog and the development of

concepts and vocabulary associated with emotions and behavior. Thus, vocabulary instruction, interactive storybook reading, and activities that help children apply associated social-emotional learning concepts all contribute to the enhancement of skills foundational to social-emotional competence and the prevention of problematic behavior.

The focus of the current study was to explore whether the SELF intervention was effective in contributing to the development of social-emotional vocabulary fundamental to self-talk and social-emotional growth and whether specific child and/or teacher factors influenced its effectiveness. The following three research questions were addressed:

What are the effects of SELF on student learning of social-emotional vocabulary?

Does expressive language or reading comprehension at baseline predict treatment-related social-emotional vocabulary outcomes?

Are teacher demographic variables, or instructional strategies that support students' learning of targeted vocabulary, related to students' vocabulary outcomes?

## Method

### Setting and participants

This study was conducted in north central Florida in two Title 1 elementary schools with racially diverse student populations. The treatment group included six kindergarten and nine first-grade teachers, and the control group (a business as usual [BAU] condition) included four kindergarten and five first-grade teachers. All 24 participating teachers were certified. The mean number of years teaching was 19 for treatment and 15 for control teachers; 23 were female, and 20 were White. Participating teachers in both schools were selected by principal recommendation, and neither schools nor teachers were randomly assigned to condition. Informed consent was obtained from all individual participants included in the study. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Participating teachers used the Systematic Screening of Behavior Disorders-Second Edition [18] Gates 1 and 2, to identify students at risk for developing internalizing and/or externalizing behaviors relative to others in their class; the top two ranked students from the externalizing and internalizing categories were selected to participate in SELF small-group instruction. (Students with developmental delays were excluded). From the resulting sample of 108 students, 91 (84%) were available at posttest, and all student attrition was because of moving to a different school. Student characteristics of the resulting sample are presented in Table 1.

| Grade-level | Treatment | Control |
|---|---|---|
| Kindergarten | 23 | 16 |
| First Grade | 32 | 20 |
| Sex | | |
| Male | 29 | 19 |

| | | |
|---|---|---|
| Female | 26 | 17 |
| Race | | |
| White | 39 | 27 |
| Black | 11 | 9 |
| Asian | 1 | 0 |
| Multi-racial | 4 | 0 |
| Ethnicity | | |
| Hispanic or Latino | 11 | 10 |
| Not Hispanic or Latino | 44 | 26 |
| English Language Learner | | |
| Yes | 10 | 7 |
| No | 45 | 29 |
| Receive Special Education Services | | |
| Yes | 3 | 1 |
| No | 52 | 35 |
| FRL | | |
| Yes | 43 | 30 |
| No | 12 | 6 |

Table 1: Student Characteristics.

## The SELF Intervention

The SELF curriculum provides interactive storybook readings that include targeted social-emotional vocabulary instruction and reading strategies designed to promote both social-emotional learning and reading comprehension. SELF lessons focus on five essential social-emotional learning competencies: self-awareness, self-management, social awareness, relationship management, and responsible decision-making [19]. Each topic was introduced using a storybook selected specifically for its social-emotional concepts and vocabulary (typically 3-6 words per topic); 17 topics were explored over three coordinated lessons, with a total of 51 lessons for kindergarten and 53 lessons for first grade.

Teachers in this study taught SELF lessons 2 to 3 times a week for approximately 20 minutes per lesson. Typically, the first lesson in each topic was presented in a whole-group setting and included an adapted version of dialogic reading (DR), in which the teacher reads the designated storybook, introduces key concepts and vocabulary, and prompts discussion using specific (scripted) questions. The second and third lessons were conducted in small groups of 3-4 students to maximize opportunities to promote receptive and expressive language, particularly language related to social-emotional learning. In the second lesson, the teacher re-read the storybook using DR prompts to promote discussion and provided opportunities to engage with targeted vocabulary; in the third, students applied social-emotional concepts through specific activities.

## Book selection

The books chosen for SELF consist of high-quality, authentic children's literature. Selection criteria were that narratives (a) be developmentally appropriate and high-interest, (b) be an appropriate length, (c) include a clear story structure with topics students can relate to, (d) represent culturally and ethnically diverse groups, (e) provide a rich context for vocabulary and comprehension instruction, (f) include colorful illustrations that support vocabulary and help narrate the story, and (g) facilitate discussions in which students can compare and contrast topics across books [20].

## Pedagogy

Targeted vocabulary instruction, incorporated in all SELF lessons, is designed to engage children in discussions related to the social-emotional content of selected books and foster comprehension [21]. Teachers explicitly taught three to six designated words from the selected storybook, or related to the lesson objective. These words denote concepts children can identify with and use in conversations and frequently appear in lists of social-emotional vocabulary [10]. SELF teachers were instructed to pronounce the vocabulary word, explain its meaning using words students already know, use the word in multiple contexts, and guide activities that require students to use it appropriately.

The adapted version of DR used during the first and second lessons per topic was designed to enhance students' language and comprehension [22], specifically of social-emotional learning-related

vocabulary. Interactive storybook reading, a naturally occurring socially interactive context, provides children an opportunity to learn and apply verbal and conceptual skills, participate in increasingly sophisticated conceptual conversations and increase comprehension of spoken and written language [23]. Further, as the teacher re-reads a storybook with a small group of children using DR instructional strategies, she can ask "wh" (what, where, why) questions, model mature language, affirm correct responses, and provide feedback by scaffolding partially correct or incorrect responses.

In the third lesson per topic, students engaged in application activities such as role-plays and scenarios that required social decision-making and encouraged generalization of learning to other contexts [24]. During these activities, students engaged in authentic discourse using social-emotional vocabulary, practiced using social conventions of conversation (i.e., turn taking, making eye contact), and apply emotional and behavioral self-regulation strategies (e.g., Breathe and Think) to "real-life" situations.

## Pre-Post Assessments

All students were individually assessed by members of the research team pre- and post-intervention on the following measures: the SELF Vocabulary Measure (SVM), the Expressive Vocabulary and Understanding Spoken Paragraphs subtests of the Clinical Evaluation of Language Fundamentals-4, and the Passage Comprehension subtest of the Woodcock Reading Mastery Tests-Revised, as described below.

## SELF Vocabulary Measure (SVM)

Standardized vocabulary measures do not specifically target social-emotional vocabulary and may not be sensitive to short-term changes in students' vocabulary development [24]. Thus, the NRP strongly recommends using assessments specifically created for a given intervention. Based on similar work [25-27], we developed the SVM to assess short-term gains in social-emotional vocabulary. Following expert review and field-testing with six K-1 students, the measure used in the current study targets 20 words. For each word, the assessor asks the child to (a) provide a definition, (b) use the word in context, and (c) indicate receptive understanding. Mean scores are calculated for each response category. Expressive definition responses are scored on a scale of 0-2. For questions in which students are asked to use the target word in context, i.e., to provide examples of when they may have experienced the feeling or behavior denoted by the targeted word (e.g., Tell me about a choice you've made), responses are also scored on a

scale of 0 - 2. To assess receptive knowledge, students are read a prompt and provided with three options from which to choose. Responses are scored as either correct (1) or incorrect (0). Target words for each grade level are presented in Table 2.

| Kindergarten | | First Grade | |
|---|---|---|---|
| angry | frustrated | ability | emotions |
| body language | grumpy | angry | excited |
| choice | jealous | body language | frustrated |
| consequences | kind | bullying | grumpy |
| cooperated | nervous | challenge | jealous |
| delighted | pleased | choice | nervous |
| difference | react | consequence | pleased |
| emotions | responsible | cooperate | react |
| excited | shy | delighted | responsible |
| expectations | similar | embarrassed | unhappy |

**Table 2:** SELF Vocabulary Measure Target Words per Grade Level.

Two members of the research team individually scored approximately 30% of randomly selected SVM pre- and post-test data, yielding inter-rater reliabilities of 0.96 for kindergarten and 0.94 for first grade at pre, and 0.96 for kindergarten and 0.95 for first grade at post. Pretest Cronbach's alphas for SVM subscales (definition, use in context, and receptive understanding) were 0.73, 0.84, and 0.77, respectively, for kindergarten, and 0.70, 0.87, and 0.78, respectively, for first grade. Correlations between SVM scores and scores on related measures to establish concurrent validity are presented in Table 3. Generally, SVM scores were highly correlated with standardized measures of both expressive and receptive language, with the highest correlation (0.78) for first graders between SVM scores for word use and standardized expressive language scores, and the lowest correlation (0.38) between scores on the same two measures for kindergarten students. SVM scores were also moderately correlated with a standardized measure of reading comprehension, with higher correlations for first grade students. Thus, SVM evidenced acceptable concurrent validity with related standardized language and reading measures at both grade levels.

| Kindergarten | | | | | | |
|---|---|---|---|---|---|---|
| **Definition** | 1.00 | | | | | |
| **Use** | 0.60 | 1.00 | | | | |
| **Receptive** | 0.61 | 0.54 | 1.00 | | | |
| **Expressive** | 0.55 | 0.38 | 0.48 | 1.00 | | |
| **Underst Spk Lang** | 0.48 | 0.48 | 0.58 | 0.65 | 1.00 | |
| **Passage Comp** | 0.29 | 0.33 | 0.26 | 0.12 | 0.12 | 1.00 |
| **First Grade** | | | | | | |
| **Definition** | 1.00 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Use** | 0.62 | 1.00 | | | |
| **Receptive** | 0.54 | 0.76 | 1.00 | | |
| **Expressive** | 0.62 | 0.78 | 0.64 | 1.00 | |
| **Underst Spk Lang** | 0.43 | 0.66 | 0.65 | 0.73 | 1.00 |
| **Passage Comp** | 0.58 | 0.48 | 0.46 | 0.51 | 0.32 | 1.00 |

**Table 3:** Correlation Matrix for SELF Vocabulary Measure Scores and Scores on Standardized Subtests of Language and Comprehension.

## Woodcock Reading Mastery Tests – Revised

We used the Passage Comprehension subtest of the WRMT-T [28] (Forms G and H) to determine whether baseline passage comprehension scores predicted posttest performance on the SVM. This subtest uses a modified cloze procedure to evaluate a student's silent reading comprehension; picture clues are faded as the reading progresses in difficulty. The split-half reliability for WRMT-R subtests ranged from 0.68 to 0.98 and from 0.87 to 0.98 for subtest clusters (Woodcock).

## Clinical Evaluation of Language Fundamentals (CELF)

4th edition [29]. We administered the Expressive Vocabulary and Understanding Spoken Paragraphs subtests of the CELF-4 to determine whether baseline scores on these subtests predicted posttest vocabulary scores. To assess Expressive Vocabulary, students are asked to identify 27 pictures from a stimulus book, and responses are scored on a scale of 0-2. In the Understanding Spoken Paragraphs subtest, students are read three age appropriate test paragraphs, each followed by five questions that evaluate the ability to understand the main idea, recall details, sequence events, and make inferences and predictions. Responses are scored as 0 (incorrect) or 1 (correct) [27] reported test-retest reliability ranging from 0.71 to 0.86 for subtests and from 0.88 to 0.92 for composite scores. Cronbach's alpha ranged from 0.69 to 0.91 for subtests and from 0.87 to 0.95 for composite scores.

## Teacher Observation Protocol (TOP)

We developed the TOP to examine the relation of teacher implementation of instructional strategies to students' social-emotional vocabulary scores at post. The observation protocol includes seven instructional strategies determined effective for improving children's vocabulary: (a) saying the target word aloud, (b) prompting students to repeat the target word, (c) providing a student-friendly explanation (d) incorporating and reviewing previously taught words, (e) providing examples of the target word in multiple contexts, (f) providing multiple exposures of the target word and (g) engaging students in discussions about the target word [17,26,30,31]. Teacher instruction is rated on a scale of 0-4: 0 if no targeted vocabulary is presented, 1 for saying the target word and using one additional strategy, 2 for saying the word and using more than one additional strategy, 3 for saying the word and using more than one additional strategy including lesson directed discussion, and 4 for saying the word, using more than one additional strategy including lesson directed discussion and extending the discussion beyond the lesson script. Inter-rater agreement on 30% of videotaped lessons averaged 97%.

## Treatment Fidelity

We assessed treatment fidelity using in vitro or videotaped observations of approximately 20% of all lessons taught across kindergarten and first grade. Scores on lesson-specific fidelity checklists indicated that kindergarten teachers included all curriculum elements 91%, 90%, and 85% of the time for the introductory, DR, and application lessons, respectively. First grade teachers included all curriculum elements 97%, 96%, and 95% of the time for the three lesson types, respectively. Lessons averaged 18 minutes. The inter-rater agreement calculated on 38% of lessons was 95%. SELF teachers completed two days of professional development; teachers in the control condition were not provided any of the books or materials used in the SELF curriculum and conducted "business as usual," teaching kindergarten and first grade social-emotional learning strategies typically used at the school.

## Analyses and Results

The words targeted on the SVM differed for kindergarten versus first grade; thus, we conducted separate analyses by grade level to determine the effects of the SELF intervention on vocabulary related to social-emotional learning (Research Question 1). Despite the nesting of students within classrooms, we did not use multilevel modeling because of the small number of classrooms at each grade level.

Analyses conducted using R software [32] to determine baseline differences between conditions for each subscale are reported in Table 4. There were no significant differences for the kindergarten sample; significant differences for first grade were found for Use, $t(35.68) = -2.50$, $p = 0.02$, and Receptive, $t(44.61) = -3.18$, $p < 0.01$, such that treatment students scored lower than controls on using the target word in context and recognizing the correct definition.

| Kindergarten | | | | First grade | | | |
|---|---|---|---|---|---|---|---|
| BAU (n = 16) | Treatment (n = 23) | | | BAU(n = 20) | Treatment (n = 32) | | |
| Variable | M (SD) | M(SD) | t | $r_{pre,post}$ | M (SD) | M(SD) | t | $r_{pre,post}$ |
| Definition | 4.13(3.07) | 6.13(4.28) | 1.70 | 0.66 | 9.70(4.16) | 8.38(4.28) | -1.09 | 0.55 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Use | 10.31(7.12) | 13.13(7.81) | 1.17 | 0.62 | 20.60(8.77) | 14.69(7.48) | -2.50* | 0.64 |
| Receptive | 6.44(3.60) | 8.09(4.18) | 1.32 | 0.49 | 13.80(3.47) | 10.47(3.98) | -3.18* | 0.70 |

Note: *p<.05, BAU: Business As Usual, M: Mean, SD: Standard Deviation, t:Welch's t-statistic, r: Person correlation coefficient.

**Table 4:** Baseline Means (M), Standard Deviations (SD), Welch's t, and Pretest-Posttest Score Correlations.

To test for treatment effects on vocabulary measure scores, we conducted a series of analysis of covariance (ANCOVA) models for each subscale, with pretest score as a covariate. We investigated model assumptions and computed effect sizes and adjusted mean estimates to control for baseline differences. In addition, we used the False Discovery Rate (FDR) procedure to control the expected proportion of falsely rejected hypotheses and adjusted ANCOVA p values for the treatment effect [33] for each grade.

To test the assumption of equal slopes, ANCOVA models initially included the pretest by condition interaction. Results indicated that this assumption was not violated in any case; hence, the interaction term was removed from subsequent models. Table 5 includes F values and FDR adjusted p values, two effect size estimates, and adjusted means and associated standard errors. Effect sizes were computed with R package compute.es [34] for Cohen's d and Hedges' g, whereby estimates around 0.2 are considered small, 0.5 are considered medium, and 0.8 are considered large. Adjusted mean estimates and their standard errors were computed with R package effects [35].

| Subscale | | | Adjusted Posttest Means | | | |
|---|---|---|---|---|---|---|
| **Kindergarten** | **F** | **p value*** | **Cohen's d** | **Hedge's g** | **BAU** | **Treatment** |
| Definition | 21.72 | < 0.01 | 1.14 | 1.12 | 7.93 (1.08) | 14.57 (0.90) |
| Use | 21.20 | < 0.01 | 1.18 | 1.15 | 17.65 (1.43) | 26.27 (1.19) |
| Receptive | 15.49 | < 0.01 | 1.12 | 1.09 | 9.21 (0.80) | 13.33 (0.66) |
| First Grade | | | | | | |
| Definition | 6.81 | 0.02 | 0.62 | 0.61 | 11.64 (0.95) | 14.82 (0.75) |
| Use | 26.80 | < 0.01 | 1.14 | 1.12 | 21.46 (1.24) | 29.84 (0.97) |
| Receptive | 0.50 | 0.48 | 0.14 | 0.14 | 14.39 (0.59) | 14.94 (0.46) |
| Note: *FDR adjusted p values. (Standard errors in parentheses.) | | | | | | |

**Table 5:** ANCOVA Results for SELF Vocabulary Measure Scores.

The condition main effect was significant in each case except for the Receptive subscale for first graders, indicating that treatment students demonstrated greater ability than control students following intervention. Residual plots produced for each ANCOVA model indicated no substantial departures from normality and linearity assumptions; Levene's test indicated the homogeneity of variance assumption was also met. To determine whether baseline scores on the CELF-4 and WRMT-R predicted treatment-related growth on the SVM (Research Question 2), we conducted multiple regression analyses with condition, CELF-4, and WRMT-R baseline scores as independent variables and overall vocabulary score as the outcome variable. Baseline score on the CELF subtests of expressive vocabulary and understanding spoken paragraphs was a significant predictor of posttest vocabulary, $R^2=0.60$, $F(4,86)=32.73$, $p<0.001$. Baseline scores on the WRMT-R passage comprehension subtest did not predict SVM outcomes; moreover, there were no significant interactions between condition and pretest language or comprehension scores, indicating that treatment was positively related to vocabulary outcomes regardless of baseline scores on these measures.

To answer Research Question 3—whether teacher demographic variables or implementation of specific instructional strategies were related to students' vocabulary outcomes—we conducted a multiple regression analysis with the average TOP score and teacher demographic variables (certification area, years teaching, years teaching in current grade level) as covariates and overall SVM score as the outcome. Neither average TOP score nor teacher demographic variables were significant predictors of students' social-emotional vocabulary outcomes.

## Discussion

In light of the growing consensus that students' social and emotional development is an essential aspect of learning that enhances academic development [3], we investigated a curriculum that integrates social-emotional learning and literacy by teaching vocabulary using storybooks carefully selected for social-emotional content. As such, SELF is designed to maximize the potential to succeed socially and academically and acts as a preventive intervention for students at developmental risk for emotional and behavioral difficulties. The current study specifically examined the effects of SELF on the social-emotional vocabulary development of kindergarten and first grade children at risk. We discuss our findings in the following sections.

## Social-Emotional Vocabulary Learning

Results from the SVM indicated that kindergarten and first-grade children who received the SELF intervention demonstrated significantly greater knowledge of targeted social-emotional vocabulary words than children in the control condition. Further, students who were taught SELF lessons had significantly more ability to define targeted words and use them in context, two specific measures of expressive vocabulary, regardless of baseline knowledge. During SELF instruction, teachers provided student-friendly explanations and used each targeted word repeatedly, providing students with multiple opportunities to hear and engage with the social-emotional vocabulary. Teachers also provided multiple exposures in varying contexts and engaged students in discussions in which they made personal connections with targeted vocabulary, e.g., asking students, "When might you be delighted?" Thus, student-friendly explanations, multiple exposures, and engagement in discussion may all contribute to students' deeper word knowledge. Social-emotional vocabulary may provide a particularly effective springboard for conversations that allow students to connect to experiences in their lives that have relevance to social-emotional development.

Receptive knowledge of targeted words requires less depth of knowledge than the ability to supply a definition or use a word in context [21,36]. The significant pretest by condition interaction found in the current study indicated that students with lower SVM Receptive baseline scores benefitted more following treatment, whereas students with relatively high baseline scores performed well on receptive knowledge regardless of condition. One explanation may be that the multiple-choice format for Receptive knowledge enabled students in both treatment and control conditions to guess at a response and thus might have been less effective for determining differences due to intervention.

The positive effects of SELF on social-emotional vocabulary growth are consistent with previous research indicating gains in vocabulary knowledge from explicit vocabulary instruction through storybook readings [17] and student engagement in discussions using targeted vocabulary [37]. Our study extends this literature by providing findings from an intervention that explicitly combines social-emotional learning and targeted vocabulary instruction using storybooks with social-emotional content. The results suggest that young children at-risk for emotional and behavior difficulties can benefit from direct instruction of social-emotional vocabulary within the context of storybook read-alouds.

## Relation of Language and Comprehension to Vocabulary Outcomes

Our second research question concerned whether student receptive language, expressive language, and/or passage comprehension at baseline predicted treatment-related social-emotional vocabulary outcomes. We found that pretest scores on expressive and receptive language were significant predictors of posttest SELF vocabulary scores regardless of condition, and there were no significant interactions between condition and language (or comprehension) scores. This is notable, as it indicates that the SELF intervention was positively related to social-emotional vocabulary learning regardless of language ability prior to intervention, consistent with findings of Justice, Meier, and Walpole [38]. One reason for this result may be that social-emotional vocabulary involves words to which students can easily relate. Children can make stronger and more personal connections to these words than to those that, for example, provide a more sophisticated label for familiar concepts or objects. This is a promising finding, given that students at risk for emotional and behavioral difficulties have a particular need to develop social-emotional vocabulary, specifically, to help them understand their emotions and how their feelings and actions affect others and their social relationships [10].

## Relation of Teacher Demographic and Instructional Variables to Vocabulary Outcomes

We hypothesized that students of teachers who incorporated recommended instructional strategies would have higher posttest social-emotional vocabulary scores, but this finding was not confirmed. It is possible that the TOP may not be sensitive enough to distinguish "exemplary" from adequate instruction, with most teachers in both conditions scoring a 2 or 3 (out of 5). Similarly, results of the multiple regression analysis indicated that teacher demographic data were not significant predictors of students' social-emotional vocabulary outcomes. Similar to TOP scores, demographic characteristics among teachers were highly similar, with the exception of years of teaching experience.

The fact that teacher demographic and instructional factors were not related to student outcomes is not necessarily an undesirable finding. It is possible that the structure of the SELF curriculum provided treatment group teachers with scripted supports for implementing lessons, limiting the variance among scores within that condition. Thus, teachers with "average" scores were still able to influence student growth in social-emotional learning related vocabulary, as compared to the growth of students in the control condition. A question for future research would be whether there is a potential interaction between skill on specific instructional strategies and experimental condition, such that teachers with stronger skills who teach SELF have a greater positive impact on student outcomes than those with less skill. Another possible question would be whether years of experience or area of certification are related to scores on specific instructional factors. These investigations were beyond the scope of the current study.

## Limitations

Some limitations of the study design and analysis are noteworthy. We were constrained by the relatively small sample size of the larger SELF study, whose primary focus was on curriculum development rather than efficacy. Thus, sample size prevented us from taking into account the nested data structure. Second, we could not randomly assign teachers/classrooms to conditions, because recommended teachers had previously volunteered to participate in treatment development and piloting. While acknowledging that these factors warrant a cautious interpretation of findings, the substantial effect sizes obtained for social-emotional vocabulary learning indicate that the integration of social-emotional learning with literacy instruction shows promise. It would be expected that students who were taught specific words would show more knowledge of them than students who did not receive such instruction. However, the words targeted in the SELF curriculum (e.g., jealous, embarrassed, choice) are commonly used to express feelings and behaviors that are fundamental to emotional and behavioral self-regulation and thus are important for all kindergarten and first grade children to learn.

## Conclusion

Children enter school with significant differences in their understanding of emotions and their ability to express them. Findings from this study indicate that interventions like SELF have the potential to help all children build on their prior knowledge and experiences to develop a corpus of social-emotional vocabulary. This growth in vocabulary and depth of knowledge allows them to express their feelings and desires more precisely and to better understand emotions and the contexts in which they occur. It thus serves as a preventive measure, as learning emotion-related words is key to the development of the self-talk that is fundamental to emotional and behavioral self-regulation. Empowering students with social-emotional learning related vocabulary is an important foundation for enhancing adjustment and improving both social and academic outcomes for all children, and particularly for children at risk. The promising findings from this study warrant further investigations of programs that deliberately integrate social-emotional learning and academic (literacy) instruction to provide this critical foundation.

## Acknowledgement

## References

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