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## Enhancing academic performance and social and emotional competence with the RULER feeling words curriculum

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## ABSTRACT

A pre- and post-test quasi-experimental design was used to test the impact of a 30-week, theoretically-based social and emotional learning (SEL) curriculum, The RULER Feeling Words Curriculum ("RULER"), on the academic performance and social and emotional competence of 5th and 6th grade students ( $N = 273$ ) in fifteen classrooms in three schools. Academic performance was assessed by report card grades. Social and emotional competence was assessed with teacher reports of student behavior. Students in classrooms integrating RULER had higher year-end grades and higher teacher ratings of social and emotional competence (e.g., leadership, social skills, and study skills) compared to students in the comparison group. This study provides preliminary empirical evidence that SEL programs like RULER improve important student outcomes.

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## 1. Introduction

Over the last two decades, numerous programs have been developed to promote social and emotional learning (SEL) among youth (Elias et al., 1997; Greenberg et al., 2003). SEL programs are designed to complement existing school curricula by teaching the social and emotional skills that contribute to better social and emotional adjustment and higher academic achievement (Salovey & Sluyter, 1997; Zins, Weissberg, Wang, & Walberg, 2004). A recent meta-analysis of 207 studies examining the effects of SEL programs revealed that students enrolled in such programs perform significantly better in school and on standardized tests compared to non-participating students (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, in press). The average effect size obtained for SEL programming on academic performance, Hedges'  $g = 0.22$ , is comparable to those obtained for other educational interventions.

In an era of academic accountability, receptivity toward integrating SEL programming into the curriculum is dependent upon empirical evidence demonstrating improvements in academic performance and social and emotional competence. The study presented here tests the effectiveness of a theoretically-based SEL program in enhancing student outcomes. The RULER Feeling Words Curriculum ("RULER"; Maurer & Brackett, 2004) is one component of a comprehensive approach to SEL, called The RULER Approach, that includes professional development for school leaders and educators,

as well as workshops for families (Brackett et al., 2009). Anchored in emotional intelligence theory (Mayer & Salovey, 1997) and research on emotional development (e.g., Denham, 1998) and emotional competence (e.g., Saarni, 1999), RULER was designed to be integrated into existing school curricula and to aid schools in achieving national educational goals such as those articulated by the *No Child Left Behind Act* (NCLB, 2001). RULER uses a skill-based approach to foster social, emotional, and academic competence. The program teaches children how to *recognize* emotions in oneself and in other people, *understand* the causes and consequences of a wide range of emotions, *label* emotions using a sophisticated vocabulary, *express* emotions in socially appropriate ways, and *regulate* emotions effectively (the "RULER" skills). RULER helps students to learn these skills by integrating formal lessons and opportunities to practice using them into regular classroom instruction. The premise is that teaching and providing opportunities to develop the RULER skills is necessary to build relationships, promote healthy living, prevent problematic behavior, and increase academic achievement (Brackett & Rivers, forthcoming). Indeed, research shows that emotions are pervasive in daily life and affect how children and adults think, learn, feel, and act (Damasio, 1994). Observe any classroom for any length of time—it is obvious that students' daily experiences are saturated with emotions such as frustration, loneliness, enjoyment, and interest (as are the experiences of their teachers, principals, and family members).

The cognitive (thoughts), physiological (bodily feeling), and behavioral (action) changes that accompany emotional experiences are adaptive when the information they provide is attended to, interpreted, understood, used, and managed effectively (Denham, 1998; Lazarus, 1991; Mayer & Salovey, 1997; Saarni, 1999). RULER is grounded in emotional intelligence theory, which suggests that

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the ability to process emotional information can enhance cognitive activities (i.e., thinking, decision-making, and remembering), promote well-being, and facilitate social functioning (Mayer & Salovey, 1997; Salovey & Mayer, 1990). We use the term “emotional literacy” to refer to the acquisition and development of the RULER skills, just as “literacy” refers to the acquisition and development of reading and writing skills. RULER is based on the premise that students will be more effective when they become *emotionally literate*, i.e., they develop their RULER skills, appreciate the value of these skills, and use these skills to problem-solve and interact effectively with others. The curriculum under evaluation here helps students acquire and develop the interrelated but distinct skills of recognizing, understanding, labeling, expressing, and regulating emotions and teaches these skills directly, just as reading programs teach the distinct skills that form the foundation for reading (phonemic awareness, sounds, symbols, etc.).

### 1.1. Program overview

The RULER Feeling Words Curriculum is a multi-year, structured curriculum designed to promote social, emotional, and academic learning with units and lessons centered on feeling words and related concepts (Maurer & Brackett, 2004). RULER aims simultaneously to enhance the social and emotional skills of adolescents and create an optimal learning environment that promotes academic, social, and personal effectiveness. Like other programs that effectively foster SEL, RULER uses a synergistic approach to education that incorporates the learner, the learning process, and the learning environment (McCombs, 2004).

Feeling word units are available for kindergarten through eighth grade and include developmentally appropriate lessons and content for each level. The curriculum is designed to help students gain a deep understanding of *feeling words* – words that characterize the gamut of human experience such as excitement, shame, alienation, and commitment. Each unit centers on one feeling word and includes multiple lessons or steps that are integrated into regular classroom instruction. Given the high demands on teachers, English language arts (ELA) and history are the most practical subject areas in which to incorporate an SEL curriculum that centers on literature, writing, and understanding human experience. ELA lessons, for example, invariably involve characters that experience a myriad of emotional experiences that need to be recognized, understood, labeled, expressed, and regulated. Characters in literature (from children's picture books to chapter books and novels) provide rich examples of how emotions play an integral role in human interaction. For example, one class was reading the book, *The Diary of Anne Frank*, during the *empathy* unit. Students identified instances in the book where one character felt empathy for another (which involves the recognition and labeling of emotion). They explored how feeling empathy caused one character to change her behavior toward another (treating him more kindly, for example), which involves understanding the causes and consequence of emotion as well as strategies for expressing and managing the emotion.

Each feeling word unit includes a set of steps that follows a basic structure and meets specific learning objectives. Table 1 outlines the unit structure and significance of each step, including a sample of the RULER skills each step addresses. The lessons are organized to help teachers differentiate instruction and offer different types of learning activities to meet the myriad learning styles and needs of students. Briefly, in the curriculum for middle school classrooms, teachers introduce the feeling word using a personalized connection (Step 1); students interpret an abstract design using the feeling word (Step 2); students connect the feeling word to academic material or current events (Step 3); students discuss the feeling word with family members and write a short paragraph about the conversation (Step 4); the class discusses the feeling word and its relationship to the family discussions, academic material, or current events (Step 5); and, finally, students write a short essay using the

feeling word (Step 6). The lessons vary in complexity across grade levels to meet the developmental capacity of the students. For example, kindergarten students draw images representing the feeling word but middle school students, as Table 1 shows, interpret an abstract image that represents the feeling word.

RULER adheres to best practice guidelines set forth by the Collaborative for Academic, Social, and Emotional Learning (<http://www.CASEL.org>). These guidelines include: linking social–emotional instruction to standard curricula without taking time and focus from other academic areas; providing differentiated instructional procedures; involving parents; training and supporting teachers and staff; and demonstrating program quality through empirical evidence (Elias, 2006; Elias et al., 1997; Zins et al., 2004). RULER is grounded in theory, provides developmentally appropriate instruction across time, offers classroom instruction that engenders positive student interactions, attempts to create a caring and engaging learning environment, and involves active participation from students, parents, and the school community in the planning, learning, and evaluation process.

In sum, RULER leverages existing curricula and provides lessons designed to enhance outcomes related to both academics (e.g., vocabulary, reading comprehension, writing, and creativity) and social and emotional competence (e.g., healthy relationships, better decision-making, and prosocial behavior). It is designed to last across the academic year with one feeling word unit taught about every two weeks.

### 1.2. The present study

This study used a quasi-experimental design with a pre- and post-test to evaluate the extent to which integrating RULER into existing curricula increases academic grades and social and emotional competence over the course of one academic year (about seven months). We tested two hypotheses. First, because RULER is designed to teach skills related to emotion management and understanding others' feelings and perspectives, we predicted that students in RULER classrooms would have greater gains in teacher ratings of social and emotional competencies compared to students in classrooms not using RULER (comparison classrooms) (Hypothesis 1). RULER infuses directly into ELA lessons, is writing-intensive, and teaches children to be more self-aware and self-managed, thus we expected to see gains in grades assessing performance in ELA but not in an unrelated subject, like math (Hypothesis 2a). We also looked at grades related to work habits and social development. We predicted that students in RULER classrooms would demonstrate greater gains in grades in these areas (Hypothesis 2b). Based on a meta-analysis of SEL programs (Durlak et al., *in press*), we expected a moderate effect size for social and emotional competencies and small effect sizes for the other outcomes.

## 2. Method

### 2.1. Participants

Three elementary schools on Long Island, New York volunteered their fifth and sixth grade classrooms to participate in the evaluation. The ethnic and racial background of students in these schools was diverse (58.6% White, 21.6% Hispanic, 10.3% Asian, 8.4% African American, and 1.1% unidentified). Relatively few students in these schools were eligible for free lunch ( $\leq 7\%$ ), an indicator of socioeconomic status (New York State Education Department, 2006).

Schools were assigned randomly, using a coin toss, to teach RULER in either their fifth or sixth grade classrooms. Schools would commit to teaching the program in only one grade and principals requested that the program be taught in each grade across the schools to see how it fit with both fifth and sixth grade classrooms. Thus, two schools

**Table 1**

Overview of six steps in the RULER feeling words curriculum.

Description	Example: Elated	Significance	RULER skills practiced during step (a sample)
<p>Step 1: Introduction of feeling word.</p> <p>Learning emotion-related vocabulary words by sharing personal experiences related to the meaning of the word.</p>	<p>Teachers and students talk about a time when they felt very excited and happy. Teacher formally introduces the word “elated” and its definition to students.</p>	<p>Students enhance their understanding and recall of words.</p>	<p><i>Recognize</i> emotions by remembering and describing an emotional experience and listening to peers and teachers describe theirs.</p> <p><i>Understand</i> the causes and consequences of different emotions.</p> <p><i>Label</i> emotional experiences using newly introduced vocabulary and its synonyms.</p>
<p>Step 2: Designs and personified explanations.</p> <p>Interpreting and explaining abstract designs in terms of their symbolic representations of feeling words.</p>	<p>Students explain how this design looks like the word “elated.”</p> 	<p>Students use divergent thinking and visualize the elements and actions that represent meanings of feeling words.</p>	<p><i>Recognize</i> emotions by identifying aspects of abstract designs that may represent their meaning.</p> <p><i>Express</i> emotions in nonverbal ways through designs.</p>
<p>Step 3: Academic and real world association.</p> <p>Relating feeling words to current events and academic topics.</p>	<p>Students are asked to link the word “elated” to a story about Lewis and Clark and to describe in a couple of sentences the experience of one of the characters who felt elated.</p>	<p>Students evaluate how people of different societies and time periods experience, express, and manage emotions.</p>	<p><i>Understand</i> emotions by analyzing the types of events and situations that cause and result from various emotions.</p> <p><i>Express</i> emotions by discussing how emotions are conveyed in various contexts by diverse groups of people.</p> <p><i>Regulate</i> emotions by considering the strategies that different types of people and characters use to manage emotions.</p>
<p>Step 4: Family association.</p> <p>Discussing feeling words with family members at home.</p>	<p>Students ask parents or caregivers about a time when they felt elated.</p>	<p>Parents are involved in students' academic work; Students have increased understanding of their parents' thoughts, feelings, actions, and pasts.</p>	<p><i>Understand</i> emotions by learning about the triggers and consequences of the emotional experiences of adults.</p> <p><i>Label</i> emotions and <i>Express</i> emotional experiences using feeling words to communicate with adults.</p> <p><i>Regulate</i> emotion by discovering different strategies adults use to handle their emotions.</p>
<p>Step 5: Classroom discussions.</p> <p>Discussing topics from Steps 3 and 4.</p>	<p>When a student says the team was elated after winning the World Series, the teacher asks students how they feel when they accomplish something significant.</p>	<p>Students expand each other's knowledge, are exposed to others' viewpoints, and learn strategies to enhance, maintain, or curtail emotions.</p>	<p><i>Express</i> emotions by discussing the appropriate ways to show how they are feeling in various situations.</p> <p><i>Regulate</i> emotions by creating, evaluating, and adopting strategies for managing emotions.</p>
<p>Step 6: Creative writing.</p> <p>Writing creative essays using feeling words.</p>	<p>Students are asked to tell a story with a beginning, middle, and end about a person who went from feeling “forlorn” to “elated.”</p>	<p>Students incorporate their own ideas and personal experiences into writing and think critically about how emotions progress and transform life experiences.</p>	<p><i>Recognize</i> emotions by describing in writing how people feel, look, think, and act as they experience emotions.</p> <p><i>Understand</i> emotions by thinking about what causes and results from emotions as they develop and change.</p> <p><i>Label</i> emotions using various feeling words in their writing.</p>

taught the RULER Feeling Words Curriculum in fifth grade (six fifth grade classrooms), and one school taught the program in sixth grade (two sixth grade classrooms). Classrooms not teaching RULER served as comparison classrooms (two fifth grade and five sixth grade classrooms). All fifth and sixth grade classrooms within each school participated in the study.

Informed consent from parents and student assent were required for students to participate in the program evaluation. Eighty percent ( $N = 273$ ) of the fifth and sixth grade students ( $ns = 137, 136$  respectively; 55% female) from 15 classrooms had parental permission to participate. Approximately 57% of participating students were in the RULER group ( $n = 155$ ) and 43% were in the comparison group ( $n = 118$ ). Permission rates did not differ by condition,  $p > 0.05$ . The two groups of classrooms (RULER and comparison) were comparable

in terms of ethnicity ( $\chi^2(3) = 0.13, p > 0.05$ ) and gender ( $\chi^2(1) = 0.56, p > 0.05$ ). Students' average age was 11 years ( $SD = 1$ , range 9.3 to 12.5 years). Socioeconomic indicators were not collected for individual students. All students in RULER classrooms participated in the program as it was integrated into regular classroom instruction.

## 2.2. Materials and procedure

The institutional review board of the authors' university approved all materials and procedures.

### 2.2.1. Program evaluation

The program evaluation extended across one academic year and included two time points: approximately six weeks after the start of

the academic year (pre-test) and approximately six weeks prior to the end of the academic year (post-test). At pre-test (about two weeks prior to training) and post-test (seven months into teaching RULER), teachers completed behavioral assessments on each student with parental consent, which included ratings on each student's social and emotional competence. At the conclusion of the academic year, the superintendent of schools provided photocopies of participating students' report cards. Comparison classrooms received training on RULER the year following this evaluation.

### 2.2.2. Informed consent procedures

The parents of students in each classroom received a letter signed by the superintendent and the principal investigator describing the evaluation project as well as an informed consent letter to sign. Parents who agreed to let their child participate returned the completed informed consent form to their child's teacher.

### 2.2.3. Training procedure

Teachers in both conditions (RULER, comparison) participated in a three-hour overview of emotional literacy. Teachers in classrooms assigned to use RULER also participated in a highly interactive training that lasted one and a half days (approximately 9 h). Teachers in the RULER training learned how to implement the classroom lessons and received a detailed, easy-to-follow teaching manual. The manual provided teaching plans and student worksheets for each lesson. During the training, teachers observed sample lessons from the instructors and worked in small groups to practice the lessons. Each teacher then prepared an individual lesson to present to the training class. The trainers and teachers observed the lessons and offered feedback and suggestions for best practices. Finally, the trainers assisted the teachers in mapping out the integration of RULER across the academic year.

### 2.2.4. Quality assurance

This study was designed as a pilot effectiveness study to examine the impact of RULER in real world conditions with minimal contact with the program developers. The research team visited the schools four times throughout the year to meet with teachers who were implementing RULER. The goal of the meetings was to answer questions from the teachers and to review student worksheets to ensure that the program was being implemented properly. The principal of each school also reviewed each teacher's lesson plans regularly to ensure RULER lessons were being taught. By the end of the school year, all teachers had completed at least 12 of the possible 15 RULER units (an estimated 72 lessons).

## 2.3. Measures

### 2.3.1. Social and emotional competence

Teacher reports from the Behavioral Assessment System for Children (BASC) were used for a global behavioral assessment of social and emotional competence (Reynolds & Kamphaus, 1992). The BASC is a comprehensive multidimensional assessment that has been normed on large representative samples as well as clinical samples. The scales demonstrate high internal consistency and test-retest reliability (Reynolds & Kamphaus, 1992). Each survey was labeled with the name of a participating student and teachers indicated the extent to which each student in their class engaged in each of 148 behaviors (e.g., "Gives up easily when learning something new;" "Skips classes at school;" "Is creative;" "Studies with other students") using a four-point Likert-type scale where 0 = never, 1 = sometimes, 2 = often, and 3 = always. BASC items comprise four primary composite scales reflecting *externalizing problems* (e.g., hyperactivity, aggression, and conduct problems), *internalizing problems* (e.g., anxiety, depression, and somatization), *school problems* (e.g., attention problems, learning problems), and *adaptability* (e.g., social skills, leadership, and study

skills). Scale reliabilities (alphas) in this sample for pre- and post-test reports, respectively, were: externalizing = 0.77 and 0.79; internalizing = 0.69 and 0.72; school problems = 0.91 and 0.89; and adaptability = 0.90 and 0.92.

### 2.3.2. Student grades

Grades for the final academic term in ELA, math, and work habits/social development (e.g., works independently, follows directions, and demonstrates respect), were obtained from report cards.

## 2.4. Analysis plan

### 2.4.1. Missing data

We conducted chi square tests to examine incomplete versus complete data in RULER and comparison classrooms for the BASC at each time point and for year-end grades. No differences in missing data were found for either time point on the BASC; however, there was a significant difference in missing data for year-end grades with students in the comparison group being more likely to have missing data,  $\chi^2(1) = 12.52, p < 0.001$ .

### 2.4.2. Primary analyses

To examine the impact of RULER, a quasi-experimental design (adjusting for prior differences between groups) was utilized. Although the intervention was assigned at the level of school, the analyses were structured at the student level. Due to the limited number of schools in this study, the nonindependence in the design cannot be addressed in hierarchical linear modeling (HLM), the ideal analytic tool for nested data (Raudenbush & Bryk, 2002). Thus, the results presented here may represent inflated estimates of statistical significance and effect size. Like other preliminary, school-based quasi-experiments (e.g., Aber, Jones, Brown, Chaudry, & Samples, 1998; Caplan et al., 1992), we employed repeated measures MANCOVAs for most analyses with condition as the independent variable and student age as a covariate (Tabachnick & Fidell, 2001). Planned contrasts for group (RULER, comparison) by time (pre-test, post-test) interaction effects tested the hypothesis that at post-test, mean differences between the groups existed. A MANCOVA was conducted for student grades with condition as the independent variable and student age as a covariate. For all analyses, we rejected the null hypotheses when  $p < 0.05$ . Effect sizes were computed using partial  $\eta^2$ , and interpreted as follows: small = 0.01; medium = 0.06; large = 0.14 (Sink & Stroh, 2006).

## 3. Results

### 3.1. Descriptive analyses

The means and standard deviations for each time point for both conditions are summarized in Table 2. At pre-test, there was an overall difference in teacher reports of BASC scores between RULER and comparison groups,  $F(4, 248) = 4.13, p = 0.003$ , partial  $\eta^2 = 0.06$ . Specifically, students in the RULER group had higher adaptive skills than students in the comparison group,  $F(1, 251) = 8.48, p = 0.004$ , partial  $\eta^2 = 0.03$ .

To identify significant change from pre-test to post-test for each condition, we conducted paired sample *t*-tests for each of the outcome variables. In the comparison group, teacher reports of externalizing, internalizing, and school problems increased over time, but there was no significant change in adaptive skills. For the RULER group, teacher reports of externalizing and internalizing problems also increased over time; there were no significant changes in school problems. The RULER group also had a significant increase in adaptive skills.

Table 3 shows that intercorrelations among the BASC ranged from [0.36] to [0.69] at pre-test and [0.34] to [0.76] at post-test. With respect to year-end grades, intercorrelations among ELA, math, and work



**Table 2**  
Individual differences by intervention group at pre- and post-tests.

	Pre-test		Post-test		<i>t</i> (df)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<i>Comparison</i>					
Teacher reports (BASC)					
Externalizing problems	9.23	11.51	13.30	11.73	−4.75 (106)**
Internalizing problems	4.06	4.41	7.00	6.12	−5.20 (106)**
School problems	12.46	10.55	13.64	9.33	−2.02 (106)*
Adaptability	42.62	19.38	43.88	19.40	−0.94 (106)
<i>RULER</i>					
Teacher reports					
Externalizing problems	8.31	9.82	12.16	12.62	−5.33 (140)**
Internalizing problems	4.46	4.60	7.54	6.31	−7.11 (140)**
School problems	12.26	8.85	11.43	8.69	1.71 (140)
Adaptability	48.22	18.18	54.27	21.43	−4.50 (140)**

Note. BASC = Behavior Assessment System for Children.

\* $p < 0.05$ ; \*\* $p < 0.001$ .

habits/social development were positive and statistically significant ( $r_s = 0.39$  to  $0.68$ ).

### 3.2. Main analyses

Table 4 presents the adjusted means and standard errors by group at pre- and post-test.

#### 3.2.1. Teacher reports of social and emotional competence

The multivariate main effect for time was not significant for teacher reports of students' social and emotional competence. However, the time by condition interaction was significant,  $F(4, 241) = 3.56$ ,  $p = 0.008$ , partial  $\eta^2 = 0.06$ . Follow-up univariate time by condition interaction effects revealed significant differences in two of the BASC scales: adaptability and school problems,  $F_s(1, 244) = 7.66$  and  $9.34$ ,  $p_s = 0.006$  and  $0.002$ , partial  $\eta^2_s = 0.030$  and  $0.037$ . Students in the RULER group had significantly higher adaptability scores and significantly lower school problem scores at post-test compared to students in the comparison group.

#### 3.2.2. Academic performance

At post-test, there was a condition main effect for year-end grades,  $F(3, 219) = 5.83$ ,  $p < 0.001$ , partial  $\eta^2 = 0.07$ . As predicted, students in RULER classrooms had higher grades in ELA and work habits/social development than students in comparison classrooms,  $F_s(1, 221) = 12.65$  and  $10.04$ ,  $p_s < 0.002$ , partial  $\eta^2 = 0.05$  and  $0.04$ , respectively. There was no condition effect for math.

**Table 3**  
Intercorrelations among teacher ratings of social and emotional competence and academic performance.

	1	2	3	4	5	6	7
1. Externalizing	–	0.51	0.58	−0.45	−0.33	−0.13	−0.55
2. Internalizing	0.47	–	0.43	−0.34	−0.21	−0.07 <sup>†</sup>	−0.22
3. School problems	0.57	0.63	–	−0.76	−0.74	−0.42	−0.58
4. Adaptability	−0.36	−0.39	−0.69	–	0.58	0.32	0.49
5. ELA GPA	–	–	–	–	–	0.60	0.68
6. Math GPA	–	–	–	–	–	–	0.39
7. Work habits/social development	–	–	–	–	–	–	–

Note. Coefficients below the main diagonal are pre-test correlations and those above are post-test correlations. No pre-test scores were available for GPAs or work habits/social development. All correlations  $p < 0.01$  except otherwise indicated.

<sup>†</sup>  $p > 0.10$ .

**Table 4**  
Adjusted means and standard errors by group at pre- and post-tests.

	Group		RULER	
	Comparison			
	Adj. <i>M</i>	<i>SE</i>	Adj. <i>M</i>	<i>SE</i>
<i>Pre-test</i>				
Teacher reports (BASC)				
Externalizing problems	9.09	1.05	8.48	0.91
Internalizing problems	4.05	0.45	4.48	0.39
School problems	12.49	0.96	12.31	0.82
Adaptive Skills	41.93	1.85	48.72*	1.60
<i>Post-test</i>				
Teacher reports (BASC)				
Externalizing problems	13.15	1.22	12.32	1.05
Internalizing problems	7.11	0.62	7.47	0.54
School problems	13.84	0.89	11.29*	0.77
Adaptive skills	42.84	2.01	55.17**	1.74
Year-end grades <sup>a</sup>				
English language arts	3.23	0.05	3.48**	0.04
Math	3.34	0.08	3.38	0.06
Work habits/social dev	3.63	0.05	3.82*	0.04

Note. Age was used as a covariate in all analyses. BASC = Behavior Assessment System for Children (teacher report). Adjusted means and standard errors shown are based on raw (unstandardized) year-end grades.

\* $p < 0.01$ ; \*\* $p < 0.001$ .

<sup>a</sup> Math, ELA, and work habits/social development report card grades were standardized prior to analyses.

## 4. Discussion

This study provides preliminary data supporting the effectiveness of the RULER Feelings Word Curriculum. Consistent with our hypotheses, students in classrooms using RULER had higher academic performance in ELA and work habits/social development as well as higher social and emotional competence in some areas compared to students in classrooms not using RULER. The small to moderate effect sizes in this study are consistent with those reported in the literature (Durlak et al., in press). Teacher ratings indicated that at post-test, students in RULER classrooms, compared to those in the comparison group, had higher adaptability scores, which reflect ratings of behaviors related to positive relationships, leadership, and studying, and lower scores on school problems, which reflect ratings of behaviors related to attention and learning problems. No differences emerged among teacher ratings of the behaviors reflective of possible clinical disorders such as anxiety and depression or aggression and hyperactivity, which is not unexpected given that we evaluated this intervention after only seven months. Interventions impacting these outcomes tend to be more intensive and incorporate coaching at an individual or small-group level (Bierman & Welsh, 1997).

The results of this preliminary effectiveness evaluation suggest that RULER has impact on students' academic and social outcomes. As part of the curriculum, students write and think critically about their own emotions and the emotions of others, including family members and characters in literature. The lessons involve instruction in analyzing, synthesizing, and evaluating their own feelings and the feelings of characters in literature and the real world (see Table 1). The differences between student ELA grades in the RULER versus comparison classrooms are promising and in the predicted direction. Grades in math did not differ between the two groups, which narrows the short-term impact of RULER to ELA. This makes sense as RULER targets skills specific to ELA, thus, corroborating the effects we found in ELA as compared to math. However, because RULER is writing-intensive it is possible that the differences between the two groups may be linked to more opportunities to practice writing as opposed to the development of the RULER skills. Current investigations in our laboratory support the hypothesis that RULER enhances the development of RULER skills, which positively influence student performance in ELA classrooms.

With respect to work habits and social competence, many aspects of the program (e.g., classroom discussions) focus on problem solving about difficult emotional situations and perspective-taking, teaching students to consider how their emotions and behavior affect others. With this knowledge, students may be less likely to behave in ways that are disruptive and may be better able to regulate their emotions in order to focus on academic tasks. Moreover, the lessons are designed to engage students in learning; when students are more engaged, they are more likely to pay attention and apply themselves to school work (National Research Council and the Institute of Medicine, 2004). The present study provides preliminary evidence of this possibility, at least within the subject in which it is being taught (i.e., ELA).

Although these results are promising, we acknowledge the limitations of this study. Schools, not students, were assigned to intervention group (RULER, comparison); however, the analyses were conducted at the student level. As a pilot test of the effectiveness of RULER, recruiting a sample large enough to conduct a clustered randomized trial and randomizing at the classroom or school level was not feasible. Thus, the analyses do not account for the nonindependence of the students clustered within classrooms within schools, with randomization being assigned at the level of the classroom. The consequence of conducting the analyses without addressing the nested design is that estimates of statistical significance and effect size may be inflated (see Raudenbush & Bryk, 2002). Although the results suggest that RULER holds promise for impacting student outcomes, they should be interpreted as preliminary until replicated with a clustered randomized design, which is now underway.

Moreover, although the student sample was diverse racially and ethnically, the design of the study did not permit analyses of the independent influences of gender, race, ethnicity, socioeconomic background, and neighborhood type (e.g., inner-city versus suburban). Examining individual student differences would help to establish the cultural appropriateness of RULER as well as to examine the extent to which RULER may be more or less effective for students of different genders and backgrounds (Rotheram-Borus & Tsemberis, 1989).

RULER is a multi-year program intended to begin in kindergarten and last through eighth grade. This evaluation examined its effects after just seven months of implementation. One would expect the findings reported here to become stronger as students participate in ongoing lessons and schools both adopt RULER for all grade levels and provide professional development opportunities for educators, school leaders, and families. Examining dosage effects and quality of implementation on academic, social, and emotional outcomes would help to identify the optimal level of emotional literacy training necessary to maximize positive student outcomes (Greenberg, Domitrovich, Graczyk, & Zins, 2004).

Through the feeling words units, RULER teaches students to both be aware of the causes and consequences of the negative emotions that they encounter, such as those that arise from being alienated or preparing for a difficult test, and how to identify resources to help them cope with their feelings, such as asking a teacher, parent, or classmate for assistance. Students who are skilled emotionally tend to experience more positive emotions and have higher psychological well-being (Brackett & Mayer, 2003; Lopes, Salovey, & Straus, 2003). Future work examining the mediating factors between RULER and both academic achievement and social competence would allow us to test this hypothesis. Further, examining if and how RULER affects teaching quality is a worthwhile next step for understanding the processes by which RULER impacts student outcomes. In the present study, the RULER teachers participated in more hours of professional development than the comparison teachers. This added training may have some other impact on student outcomes. It is possible that integrating SEL programming into schools has a reciprocal benefit by helping to create greater engagement in and connection to school among students (and teachers), which are important for academic

success. For example, other research shows that when students feel connected to school, their grades improve, they become less disruptive in class, and they are more likely to aspire to higher educational goals (Christenson & Harvey, 2004; Stipek, 2005).

Future effectiveness trials of RULER will incorporate additional objective academic criteria, such as standardized test scores, which have the potential to provide more adequate experimental control for potential expectancy effects on student grades and ratings of students' social and emotional competence. Teachers assign grades to students, but they also are the implementers of the intervention and are participating in professional development as they learn how to use the curriculum; this may have affected how they rated students (i.e., making ratings to align more closely with the study hypotheses). Observational measures of student and teacher behavior also may provide more objective data for evaluating the impact of RULER on the learning and social climate of the classroom. The social processes within a classroom setting, including the extent to which teachers and students interact with each other in ways that are supportive, caring, and empowering, may prove to be a significant mediator of the effect of classroom interventions on student outcomes (Tseng & Seidman, 2007). Additionally, the theoretical foundation for RULER posits that the skills of emotional literacy (recognizing, understanding, labeling, expressing, and regulating emotions) help students make informed decisions about engaging in risky behaviors; thus, future research might examine the impact of RULER on other important criteria, such as substance abuse and bullying, (e.g., Johnston, O'Malley, Bachman, & Schulenberg, 2005).

## 5. Conclusion

Successful schools ensure that all students master basic skills, such as reading and math. However, most educators and parents support a broader educational agenda — one that involves enhancing students' social-emotional competencies (Greenberg et al., 2003). Economists are calling for a greater focus on these non-cognitive skills, proclaiming that the greatest returns on education investments are “from nurturing children's non-cognitive skills, giving them social, emotional and behavioral benefits that lead to success later in life...” (Committee for Economic Development, 2004). James Heckman, Nobel Laureate in Economics, argues that investments in social and emotional learning contribute to the quality and productivity of the workforce by increasing motivation, perseverance, and self-control (Heckman & Masterov, 2004). In fact, the common element among schools reporting an increase in academic success, improved quality of interpersonal relationships between teachers and students, and a decrease in problem behavior, is a systematic process for promoting SEL (Elias et al., 1997).

Although educators are aware of the importance of attending to the social and emotional development of children, school systems often are hesitant to integrate programs for which they cannot predict clear, discernable benefits for students' academic progress and school behavior. The case for teaching social and emotional skills, and emotional literacy, in particular, is stronger when accompanied by empirical evidence connecting the enhancement of these skills to academic and social outcomes. There is good reason to believe that programs teaching social and emotional skills will be of value in achieving school goals (cf. Greenberg et al., 2003; Mayer & Cobb, 2000). The present study provides preliminary evidence supporting the importance of incorporating lessons on emotions and emotion-related concepts into existing curriculum.

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