

The Link Between Responsive Classroom Training and Student–Teacher Relationship Quality in the Fifth Grade: A Study of Fidelity of Implementation

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Abstract. The Responsive Classroom (RC) approach is an instructional delivery and social–emotional learning intervention designed to provide teachers with skills needed to create caring, well-managed classroom environments that are conducive to learning. This study examines the extent to which RC training predicts close student–teacher relationships, as well as negative relationships. Sixty-three fifth-grade teachers and 387 students in 20 schools participated in this study. Schools in the study were randomly assigned to the treatment (RC) or a waitlist control. Observers rated teachers’ use of RC practices, and teachers reported their use of RC practices and relationship quality with each child. RC training did not directly predict close or conflictual student–teacher relationships; however, an indirect effect was noted. Training in the RC approach increased teachers’ use of RC practices, which in turn related to increased closeness. No indirect effect emerged when predicting conflict. Findings suggest that, with sufficient dosage and adherence, RC practices are one way of boosting close student–teacher relationships.

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Decades of research point to the importance of positive student–teacher relationships (Hamre & Pianta, 2001; Midgley, Feldlaufer, & Eccles, 1989; Rudasill, Reio, Stipanovic, & Taylor, 2010). However, supporting teachers’ capacity to foster close caring relationships is challenging. Upper elementary school teachers are often responsible for meeting the needs of 15 to 25 students and the pressures of accountability standards that emphasize core academic subjects shift the priorities away from creating warm caring classroom environments that facilitate close student–teacher relationships (Hallinan, 2008; Ryan & Weinstein, 2009).

The shift in priorities away from providing caring environments is concerning given the importance of positive student–teacher relationships to both student and teacher well-being. Close student–teacher relationships appear to have both short- and long-term social and academic benefits for students (Hughes, Luo, Kwok, & Loyd, 2008; Roorda, Koomen, Spilt, & Oort, 2011; Wentzel, 2002; Wu, Hughes, & Kwok, 2010). Furthermore, Spilt, Koomen, and Thijs (2011) suggest that close student–teacher relationships may positively contribute to teachers’ motivation and self-efficacy. Ignoring the quality of classroom interactions may lead to negative outcomes for both students (e.g., disengagement, poor school achievement; Eccles et al., 1993) and teachers (e.g., stress, burnout; Spilt et al., 2011). For these reasons, efforts to improve student–teacher relationship quality represent an important point of intervention.

Student–Teacher Relationship Quality

Two dimensions of student–teacher relationships are salient: closeness and conflict (Hamre & Pianta, 2001; McCombs & Miller, 2006; Pianta, 2001; Roorda et al., 2011). Students and teachers with close positive relationships display more pleasure and enjoyment when together. Teachers show closeness through responsive, sensitive, and respectful interactions with students (Ang, 2005; Hamre & Pianta, 2001, 2005), and teachers with close relationships to students tend to report higher

levels of warmth and affection and rarely report being irritable or aggravated by the student (Ang, 2005; Pianta, 2001). Teachers who have closer relationships with students have personal knowledge of students’ interests and academic strengths, encourage students to reflect on their thinking and learning, and offer students instrumental support to help them achieve academic and social objectives (Ang, 2005; Wentzel, 2003). In contrast, more conflictual student–teacher relationships are characterized by negative affect in which teachers and students show little pleasure when interacting. Teachers who have more conflictual relationships with students describe feeling friction when interacting with the student, feeling relief when the student is absent from class, and feeling drained of energy after interacting with the student (Ang, 2005; Pianta, 2001). In relationships with more conflict, teachers are less responsive to students and offer students less help than in close relationships. Teachers show more emotional distance and less awareness of students’ interests and academic strengths (Ang, 2005; Hamre & Pianta, 2001; Pianta, 2001).

Benefits of High-Quality Student–Teacher Relationships

Close student–teacher relationships benefit students in many ways. A recent meta-analysis of 99 studies reported associations between closer student–teacher relationships and higher levels of school engagement and achievement in students from preschool through 12th grade (Roorda et al., 2011). Moreover, student–teacher relationship quality may have long-lasting effects. Several studies have reported that students who had closer student–teacher relationships had better school adjustment and academic performance in later grades. Conversely, students who had more conflictual student–teacher relationships had more behavior problems and poorer academic performance (Birch & Ladd, 1997; Hamre & Pianta, 2001; Hughes et al., 2008; McCombs, 2004; Rudasill et al., 2010; Wentzel, 2002; Wu et al., 2010). For instance, children who had conflictual student–teacher rela-

tionships in kindergarten were more likely to have more behavior problems and lower grades in mathematics and language arts through the eighth grade (Hamre & Pianta, 2001). Closer relationships between high school students and teachers have been associated with gains in students' grade-point average (Murray & Malmgren, 2005). Support and guidance from teachers also have been shown to reduce the likelihood that high school students will drop out of school (Croninger & Lee, 2001). Thus, student–teacher relationship quality links to students' current and future academic performance, social development, school engagement, and high school completion.

The Responsive Classroom Approach

Social–emotional learning (SEL) interventions have been used as an avenue to promote students' academic and social competence (Brackett, Rivers, Reyes, & Salovey, 2012; Brown, Jones, LaRusso, & Aber, 2010; Domitrovich et al., 2009; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Raver et al., 2008). The Responsive Classroom (RC) approach is an SEL intervention developed by the Northeast Foundation for Children (NEFC) to create classroom environments that are conducive to children's social, emotional, and academic growth (Northeast Foundation for Children, 2007a, 2007b, 2009).

The RC approach is designed to provide teachers with skills needed to create a caring, well-managed classroom environment that ultimately strengthen teachers' instructional efforts, improve teachers' and students' social and relational skills, and enhance students' academic and social outcomes. The RC approach is composed of seven principles and 10 practices to integrate social learning into the classroom (Northeast Foundation for Children, 2007b, 2009). Examples of principles include “The social curriculum is as important as the academic curriculum” and “To be successful academically and socially, children need a set of social skills: cooperation, assertion, responsibility, empathy, and self-control.” Ten practices emanate from these prin-

ciples (e.g., morning meeting, rule creation, academic choice; Northeast Foundation for Children, 2007b, 2009; Table 1).

Teachers trained in the RC approach are encouraged to use practices that help them know their students individually and personally (Northeast Foundation for Children, 2007b, 2009). During a morning meeting, students and the teacher gather in a circle and greet one another; students share news about themselves; students and the teacher participate in fun, friendly, community-building interactions through an activity; and students respond to a message from the teacher designed to encourage academic and social learning (Northeast Foundation for Children, 2007b, 2009). The morning meeting may give teachers opportunities to know students better and form trusting relationships in which the teachers can be more responsive and sensitive to students' needs. Other hallmark RC practices include rule creation, which involves students in collaborative decision making to develop classroom rules; academic choice, which provides a structured approach that allows students the choice and pursuit of individual interests; and interactive modeling, which allows teachers to demonstrate and draw students' attention to behaviors that encourage social and academic learning (Northeast Foundation for Children, 2007b, 2009). Effective implementation of these practices requires teachers to display consistent, responsive behaviors. Such behaviors may help students develop positive representations of student–teacher interactions, foster students' security to approach challenging tasks, and provide students with a sense of relatedness and belonging. As teachers use more RC practices, shifts in teachers' perceptions of students may occur, which in turn may influence student–teacher relational outcomes.

In a quasi-experimental study, the use of RC practices related positively to teachers' reports of students' assertiveness and prosocial behavior and negatively to fearful–anxious behavior (Rimm-Kaufman & Chiu, 2007). Furthermore, teachers who used RC practices reported higher perceived closeness with students. Use of RC practices has also

Table 1
Responsive Classroom Practices

Practice	Description
Morning meeting	Teachers have a daily morning meeting in which teachers and students greet one another, share personal news, participate in community-building activities, and respond to a message.
Rule creation	Teachers collaborate with students to create rules that are designed to support all students' learning.
Interactive modeling	Teachers demonstrate and direct students' attention to important behaviors that promote academic and social learning.
Positive teacher language	Teachers carefully and conscientiously use words that show respect for students and promote and encourage learning.
Logical consequences	Teachers respond to students' misbehavior in ways that are respectful, are supportive, and help students learn from their mistakes.
Academic choice	Teachers allow students to pursue individual interests and help students plan, work, and reflect.
Guided discovery	Teachers encourage students to use materials in responsible, creative, and independent ways.
Classroom organization	Teachers organize their classrooms in ways that support students' learning.
Working with families	Teachers collaborate with students' families and establish open two-way communication.
Collaborative problem solving	Teachers help students develop skills to resolve conflicts and academic challenges positively and independently.

Note. Definitions are based on Northeast Foundation for Children (2007b, p. 4).

been associated with students' positive feelings about school (e.g., wanting to be at school, feeling that teachers and peers care; Brock, Nishida, Chiong, Grimm, & Rimm-Kaufman, 2008). Specific practices (i.e., morning meeting and academic choice) have been linked to higher emotional support in the classroom (Rimm-Kaufman, Curby, Abry, Thomas, & Ko, 2012).

Use of Practices

The RC approach could improve student-teacher relationships because it focuses on creating a caring classroom environment attuned to students' individual needs. However, training in the RC approach alone may not be enough to produce changes in relation-

ship quality. Noticing a change in relationship quality may require the examination of teachers' use of RC practices. The extent to which an intervention is implemented as intended is referred to as fidelity of implementation (FOI; Dusenbury, Brannigan, Falco, & Hansen, 2003; O'Donnell, 2008). FOI provides insight into the mechanisms explaining intervention effectiveness. High FOI has been linked to larger effect size changes in student outcomes (Durlak & DuPre, 2008).

RC practices share common theoretical roots with practices that constitute good-quality teaching; that is, there are similarities between RC practices and some best practices for classrooms (e.g., being proactive, providing opportunities for student choice; Brophy,

1999, 2010; Charney, 2002). Thus, teaching practices similar to RC practices are expected in all effective classrooms, but teachers who receive RC training should use more RC practices compared with those not receiving training.

Students' cognitive ability (e.g., working memory) and demographic characteristics (e.g., gender, poverty) have been linked to student–teacher relationships and children's classroom behavior (Roorda et al., 2011; Stuhlman & Pianta, 2009; Valiente, Swanson, & Eisenberg, 2011). Teacher and school characteristics (e.g., years of teaching experience, teaching efficacy, Title 1 status) are associated with interactions in the classroom and use of practices (Abry, Rimm-Kaufman, Larsen, & Brewer, 2013; Downer, Locasale-Crouch, Hamre, & Pianta, 2009; National Institute of Child Health and Human Development Early Child Care Research Network, 2005; Reyes, Brackett, Rivers, Elbertson, & Salovey, 2012).

Current Study

Approximately 13,000 individuals attended RC workshops in 2012 (<http://www.responsiveclassroom.org/faq>), but there has been surprisingly little work examining its efficacy and no research that used a randomized experimental design. This study reports findings pertaining to student–teacher relationships from a randomized design and was a follow-up volunteer study (the results of the randomized RC study on student academic achievement are reported in Rimm-Kaufman et al., 2014).

The purpose of this study is twofold. First, we examine the link between the RC approach and student–teacher relationship quality. Next, we investigate the role of fidelity. Specifically, we examine the extent to which relationship quality shifts as a function of both teacher training in the RC approach and teachers' classroom use of RC practices. The following research questions guided the study: (a) To what extent do teachers who are trained in RC report higher levels of closeness and lower levels of conflict within student–teacher relationships? (b) How well do RC

practices provide a pathway by which RC training is linked to student–teacher relationship closeness and conflict? We hypothesize that RC training will predict greater closeness and less conflict in student–teacher relationships and that use of RC practices will mediate these associations in a sample of fifth-grade teachers and their students.

Method

Twenty-four schools in one Mid-Atlantic district were selected to enroll in a 3-year randomized controlled trial of the RC approach. Schools were randomized into intervention ($n = 13$) and waitlist control ($n = 11$) conditions. Intervention and control schools did not differ significantly with regard to student free or reduced-price lunch (FRPL) status (range = 2%–72%, $M = 26\%$) or minority student composition (range = 17%–86%, $M = 55\%$). Teachers were studied as one cohort of students progressed from the end of second grade (2008, baseline data collection) through fifth grade (2011). In the final year (2010–2011) of the study, funding was obtained to examine student and classroom processes including student–teacher interactions. Schools, teachers, and students were invited to participate in this smaller study, and consent was secured. Sixty-four percent of families, 80% of teachers (82% intervention, 78% control), and 83% of schools ($n = 12$ intervention, $n = 8$ control) agreed to participate in this study.

Participants

This study consists of a sample of 63 fifth-grade teachers and 387 fifth-grade students at 20 elementary schools (41% Caucasian, 21% FRPL status, student and school level). Intervention schools had proportionately more students who received Title 1 service (50% intervention, 13% control) and FRPL (39% intervention, 24% control). Variance due to these differences between treatment and control schools were accounted for by entering percent FRPL at the school and school Title 1 status (1 = receiving funds) as control variables in analyses. Teachers were

mostly female ($n = 57$) and Caucasian ($n = 48$), with an average of 12.49 years of teaching experience. Approximately five students per classroom were selected (mean age = 10.47 years [$SD = 0.38$], 183 boys) from 479 students with signed parental consent. Selection of students was conducted randomly but within the limits of two constraints: (a) maintenance of equal numbers of girl and boy participants and (b) demographic match to the whole school (based on ethnicity, socioeconomic status, and English-language learner percentages). Most students spoke English at home (28% spoke a language other than English). Of parents who reported their highest level of educational attainment (321 mothers, 295 fathers), 61% of mothers and 62% of fathers had a 4-year college degree or higher.

Measures

Parent questionnaire. A 7-item survey was used to gather information from the parents. The items asked about the parents' highest educational attainment, language spoken at home, child's age, child's gender, and student FRPL status.

Teacher questionnaire. Items on the teacher questionnaire asked teachers about their instructional teaching efficacy and years of teaching experience. Instructional teaching efficacy was assessed by four items (e.g., How much can you use a variety of assessment strategies?) on a 5-point scale (1 = not at all; 5 = a great deal; National Institute of Child Health and Human Development Early Child Care Research Network, 2002). The internal consistency–reliability estimate for the four items was adequate ($\alpha = .75$).

Working memory. Students' working memory was directly assessed using the Auditory Working Memory subtest of the Woodcock–Johnson III Test of Cognitive Abilities (Woodcock, McGrew, & Mather, 2001). The subtest consists of 21 items administered via audio recording. For each item, students listened to a recorded set of words containing both objects and numbers. After listening, students repeated the words they heard, first list-

ing the objects and then listing the numbers in the order in which they heard them. The sequences of objects and numbers became increasingly difficult as the test proceeded. Students received one point for correctly listing the objects and one point for correctly listing the numbers. Scores per item ranged from 0 to 2 with possible total scores ranging from 0–42. The assessment was administered until students scored 0 on three consecutive sets of words. The Auditory Working Memory subtest is reported to have good internal consistency reliability with a median α of .88 in a sample of 5- to 19-year-old children (Mather & Woodcock, 2001). Age-normed scores were used in the analyses.

Use of RC practices. Data on RC practices were collected using three measures (Table 2). Because there are no published measures of the use of RC practices, the three measures were created for the study in close consultation with NEFC. Research assistants observed and rated teachers' adherence to RC practices using the Classroom Practices Observation Measure (CPOM; Abry, Brewer, Nathanson, Sawyer, & Rimm-Kaufman, 2010). Research assistants ($N = 7$) who were blind to school assignment rated teachers on 16 items during the morning observation ($\alpha = .88$) and a subset of 10 of those items during math instruction (i.e., dropping the six items specific to the morning meeting; $\alpha = .65$). Items were rated on a 3-point Likert scale (1 = not at all characteristic, 2 = moderately characteristic, 3 = very characteristic). Before data collection began, research assistants participated in a 2-day training session in which they coded a minimum of eight 60-minute master-coded videos. Exact agreement exceeded 80% for all coders. Interrater reliability was evaluated throughout data collection with intraclass correlation (ICC) values ranging from 0.74–0.88. These were based on raw scores.

Teachers completed two additional measures of the use of RC practices: Classroom Practices Teacher Survey (CPTS; Nathanson, Sawyer, & Rimm-Kaufman, 2007a), a 46-item teacher-reported assessment of their adherence

Table 2
Description of Measures Assessing Use of RC Practices

Measure	Informant	Scale	Example Items
CPOM	Observer	3 points: not at all characteristic to very characteristic	Teacher facilitates students in sharing brief, personal news with class. Students make individualized choices related to an academic lesson or goal. Choices may be about the content or process of their academic work.
CPTS	Teacher	5 points: not at all characteristic to extremely characteristic	My students and I collaborate to form classroom rules and expectations. During “time-out” or “take a break,” I hold a discussion with the student.
CPFS	Teacher	8 points: almost never to more than once per day	I prepare a message on a chart/blackboard to which students are expected to respond. I provide opportunities for students to choose how to do the work, what kind of work to do, or both.

Note. CPFS = Classroom Practices Frequency Survey; CPOM = Classroom Practices Observation Measure; CPTS = Classroom Practices Teacher Survey; RC = Responsive Classroom.

to RC practices ($\alpha = .91$), and Classroom Practices Frequency Survey (CPFS; Nathanson, Sawyer, & Rimm-Kaufman, 2007b), an 11-item survey of the frequency of practice use ($\alpha = .89$). Adherence was rated on a 5-point Likert scale (1 = not at all characteristic, 3 = moderately characteristic, 5 = extremely characteristic), and frequency was rated on an 8-point Likert scale (0 = almost never, 1 = once per month, 2 = two to four times per month, 3 = once per week, 4 = two to three times per week, 5 = four times per week, 6 = once per day, 7 = more than once per day). All items were worded to avoid specific RC terminology to allow researchers and teachers unfamiliar with the RC approach to complete measures. Raw scores were used to calculate reliability.

Student–teacher relationship quality. Student–teacher relationship quality was measured through the Student–Teacher Rela-

tionship Scale (Pianta, 2001), which is a 14-item teacher-reported questionnaire. Teachers reported on two dimensions of quality of relationships: closeness (e.g., “It is easy to be in tune with what this student is feeling”; “I share an affectionate warm relationship with this student”) and conflict (e.g., “This student and I always seem to be struggling with each other”; “Dealing with this student drains my energy”). Teachers rated each item on a 4-point scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). Average values were computed for each student for closeness (based on seven items, $\alpha = .88$) and conflict (based on seven items, $\alpha = .89$).

Procedures

The fifth-grade teachers in the treatment schools received RC 1 training and materials in summer 2009. This training was a standardized week-long (30-hour) training conducted

by NEFC (<http://www.responsiveclassroom.org/workshops-institutes>). During the 2009–2010 academic year, treatment teachers received three onsite coaching follow-up visits by NEFC coaches that focused on using specific RC practices (i.e., morning meeting, teacher language, and logical consequences). During months in which coaching visits were not scheduled, teachers received online support through short articles with timely ideas for teachers to consider or try. Teachers were given RC books and materials. In summer 2010, prior to the study year, teachers received RC 2 training. During the 2010–2011 academic year, teachers received three onsite coaching follow-up visits by NEFC coaches that focused on specific RC practices (i.e., doing math during the morning meeting, academic choice, and problem-solving strategies). Teachers also received online support. Along with teachers, principals at each intervention school were trained in the RC approach. Principals were invited to meet three times to focus on how to best support teachers, as well as to receive 6 hours of distance support and two 2-hour in-person planning sessions, once in the fall and once in the spring. Teachers and principals in control schools were put on a waitlist and received the same RC training starting in summer 2011 after all data collection was completed.

In fall 2010, parents completed demographic questionnaires and research assistants administered assessments of students' working memory. In spring 2011, teachers completed demographic questionnaires and the research team procured school records of school-level student FRPL status and school Title 1 status. Research assistants videotaped and coded teachers' adherence to RC practices on 5 separate days between September 2010 and May 2011 for 60 minutes each. Two observations were conducted during the first hour of the day, and three observations were conducted during math instruction. At the end of the 2010–2011 school year, teachers completed surveys measuring adherence to RC practices and frequency of use of RC practices. When responding to items on these surveys, teachers were asked to "think

about the 2010–2011 school year." In the spring, teachers also completed questionnaires on their relationships with participating students.

Analyses

Data were examined to ensure they were normally distributed. Residual plots were examined for outliers, defined as greater than three standard deviations from the mean. Three outliers were identified. Two outliers were for closeness (two boys in treatment schools) and one for conflict (one boy from a control school). Outliers were omitted from the final analyses. Missing data were also examined. Five of the 63 teachers had missing data on use of practices (likely because of missed observations or incomplete self-reports). Thirty students had missing data on closeness and conflict, which was likely because of students switching classes or schools before the end of the year (McCartney, Burchinal, & Bub, 2006).

Full information maximum likelihood was used to account for missing data (Muthén & Muthén, 1998–2010). Correlations among measures of teachers' use of RC practices were high (correlation coefficients ranging from 0.71 between CPOM and CPFS to 0.77 between CPTS and CPFS). The observer-reported use of practices (CPOM) and the teacher-reported measures of use of practices (CPTS and CPFS) were entered into a principal component factor analysis to create a factor score that represented teachers' use of RC practices. All factor loadings were 0.90 or above, and the internal reliability–consistency estimate was 0.86. Only the first factor had an eigenvalue over one (2.47) and accounted for 82.86% of the variance. Together, these findings suggest unidimensionality. This factor score was used in analyses to represent teachers' use of RC practices. To examine differences in teachers' use of RC practices and relationship quality between intervention and control classrooms, regression analyses were conducted with treatment status as a dichotomous predictor while accounting for nesting using Mplus 6.12 software (Muthén &

Muthén, 1998–2010; Tabachnick & Fidell, 2007).

Two path models were conducted in Mplus 6.12 (Muthén & Muthén, 1998–2010) while accounting for clustering (TYPE = TWOLEVEL). Three-level models were not used because ICCs at the school level were small (0.06 for both closeness and conflict) and the sample size at the third level was small (20 schools), making it difficult to estimate a random effect for school. Because the research questions focused on what teachers were doing in the classroom instead of school-level processes, analyses were examined at the classroom level. The ICCs at the classroom level were 0.15 for closeness and 0.30 for conflict. A nonparametric Bayesian credibility interval (BCI) was used to determine statistical significance. The BCI is significant at 95% probability if 0 is not contained within the lower and upper 2.5% limits (Muthén, 2010). One may refer to Muthén (2010) and Rupp, Dey, and Zumbo (2004) for more information on Bayesian estimation. All models controlled for student age, working memory, FRPL (1 = eligible), gender (1 = female), English-language learner status (0 = English proficient), teacher's teaching efficacy, years of teaching experience, percent FRPL at the school, and school Title 1 status (1 = receiving funds).

To address the first question, whether RC training predicts student–teacher relationship quality, the first model tested the direct effect from treatment status (1 = intervention) to the two dimensions of student–teacher relationship quality: closeness and conflict. To address the second question, examining the extent to which RC training is associated with student–teacher relationship quality via the use of RC practices, a second model tested the indirect pathway from treatment status to use of RC practices to closeness and conflict. As a follow-up to the second question, the pathways between specific practice composites (e.g., morning meeting, academic choice) were examined in relation to student–teacher relationship quality.

Results

To What Extent Do Teachers Who Are Trained in RC Report Higher Levels of Closeness and Lower Levels of Conflict Within Student–Teacher Relationships?

Use of RC practices was significantly higher in intervention than control classrooms ($M_{intervention} = 0.71$; $M_{control} = -0.73$; $b = 1.41$; $\beta = 0.72$; BCI [1.07, 1.67]). There were no significant differences between intervention and control classrooms in terms of average teacher-reported closeness ($M_{intervention} = 3.04$; $M_{control} = 2.95$; $b = 0.07$; $\beta = 0.15$; BCI [-0.08, 0.21]) and conflict ($M_{intervention} = 1.46$; $M_{control} = 1.45$; $b = 0.03$; $\beta = 0.05$; BCI [-0.14, 0.19]; Table 4). Over half (57%) of the teachers agreed or strongly agreed with statements describing a close relationship with students. Approximately one fifth of teachers reported that conflict with students was not present (23%), and approximately two thirds of teachers (66%) reported that conflict with students was rare. Teachers' use of RC practices correlated strongly with RC treatment status ($r = 0.72$, $p < .01$), indicating that teachers who participated in the RC training used more RC practices than teachers without RC training. Use of RC practices related to closeness ($r = 0.15$, $p < .05$) but not conflict ($r = 0.05$, $p > .10$). Closeness and conflict were inversely related ($r = -0.37$, $p < .01$).

How Well Do RC Practices Provide a Pathway by Which RC Training Is Linked to Student–Teacher Relationship Closeness and Conflict?

Model 1 was used to examine the direct effects between RC training and student–teacher relationship quality. Results indicated that neither path was significant (closeness: $b = 0.10$; $\beta = 0.24$; BCI [-0.05, 0.30]; conflict: $b = -0.02$; $\beta = -0.03$; BCI [-0.18, 0.16]). See Table 3 and Figure 1a (note that controls are not depicted in Figure 1a but estimates for control variables can be found in Table 3).

Model 2 was used to examine the indirect effect between RC training and student–

Table 3
Direct and Indirect Effect Coefficients Between RC Training and Student–Teacher Relationship Quality via Use of RC Practices

Measure	Model	
	Direct Effects (Model 1)	Indirect Effects (Model 2)
Treatment status		
Teaching efficacy	0.01 (0.11)	
Teaching experience	0.00 (0.01)	
Title 1	0.71 (0.23)	
% Free or reduced-price lunch	–0.01 (0.01)	
Use of RC practices		
Teaching efficacy		0.28 ^a (0.13)
Teaching experience		–0.04 ^a (0.01)
Title 1		–0.01 (0.36)
% Free or reduced-price lunch		0.01 (0.01)
Treatment status		1.28 ^a (0.18)
Closeness		
Child age	0.70 (1.58)	0.45 (1.42)
Working memory	0.00 (0.03)	0.01 (0.02)
Free or reduced-price lunch (child level)	–0.27 (0.24)	–0.31 (0.22)
Child gender	0.96 (1.53)	0.49 (1.61)
English-language learner status	–0.07 (0.22)	–0.04 (0.18)
Treatment status	0.10 (0.08)	–0.05 (0.12)
Use of RC practices		0.11 ^a (0.06)
Conflict		
Child age	0.05 (2.18)	–0.42 (1.83)
Working memory	–0.04 (0.03)	–0.05 (0.03)
Free or reduced-price lunch (child level)	0.10 (0.25)	0.10 (0.23)
Child gender	1.03 (1.83)	1.65 (2.27)
English-language learner status	0.04 (0.20)	0.02 (0.27)
Treatment status	–0.02 (0.09)	0.01 (0.12)
Use of RC practices		–0.01 (0.06)
Indirect effects		
Closeness		0.14 ^a (0.08)
Conflict		–0.02 (0.08)

Note. RC = Responsive Classroom. Unstandardized coefficients are shown. Numbers in parentheses are posterior standard deviations (similar to standard errors in maximum likelihood estimation).

^aZero was not contained in the 95% Bayesian credibility interval.

teacher relationship quality via use of RC practices. The results indicated that RC training was a significant predictor of the use of RC practices ($b = 1.28$; $\beta = 0.66$; BCI [1.00, 1.68]). In turn, the use of RC practices was associated with closeness ($b = 0.11$; $\beta = 0.41$; BCI [0.01, 0.23]) but not conflict ($b = -0.01$; $\beta = -0.04$; BCI [-0.15, 0.11]).

There was a significant indirect effect from training in the RC approach through the use of RC practices to the closeness dimension of student–teacher relationship quality ($b = 0.14$; $\beta = 0.27$; BCI [0.01, 0.31]). There was not a significant indirect effect for conflict ($b = -0.02$; $\beta = -0.03$; BCI [-0.18, 0.13]). See Table 3 and Figure 1b (note that con-

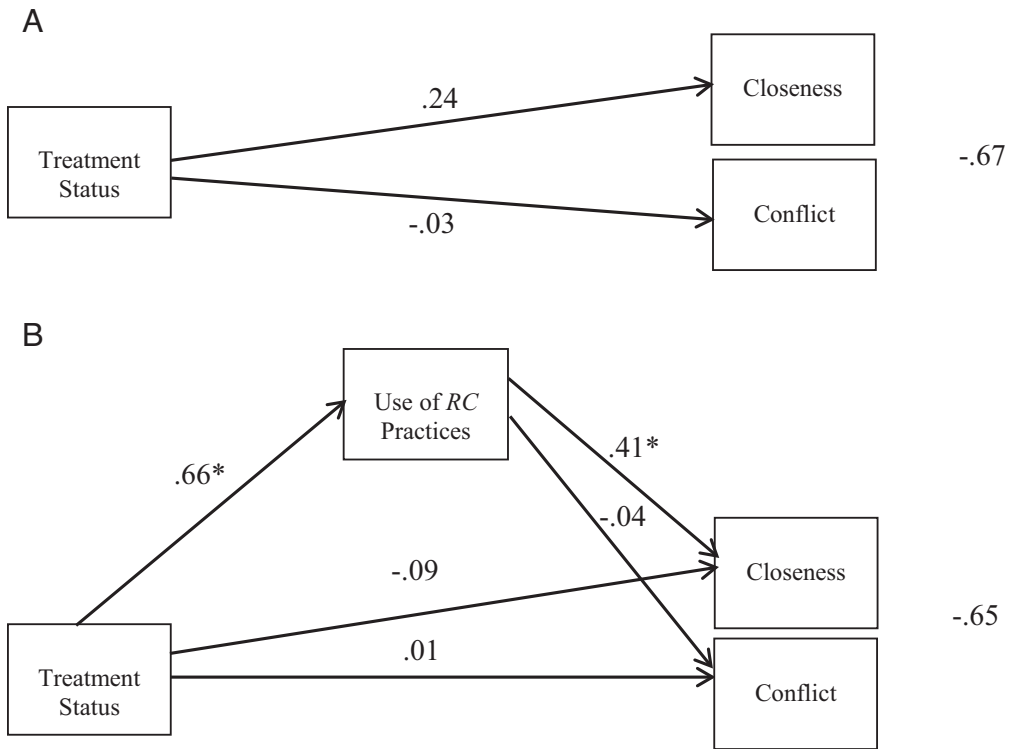


Figure 1. (a) Model of direct effects of treatment status to student–teacher relationship quality. Controls on treatment status were instructional teaching efficacy, years of teaching experience, Title 1 school status, and percent of free or reduced-price lunch (FRPL)–qualified students at the school. Controls on closeness and conflict were child age, gender, working memory, FRPL status, and English-language learner category. (b) Model of treatment status to use of Responsive Classroom (RC) practices to student–teacher relationship quality. Controls on use of RC practices were instructional teaching efficacy, years of teaching experience, Title 1 school status, and percent of FRPL-qualified students at the school. Controls on closeness and conflict were the same as in Model A. The indirect effect to closeness is 0.27, and the indirect effect to conflict is -0.03 . Controls are not depicted in the figures, but estimates appear in Table 3. Standardized coefficients are reported in both the models. Asterisks indicate that zero was not contained in the 95% Bayesian credibility interval.

controls are not depicted in Figure 1b but estimates for control variables can be found in Table 3).

Because Model 2 suggested that the use of RC practices mattered, the pathways between specific practice composites and closeness were examined. Four practice composites were examined: morning meeting, academic

choice, interactive modeling, and rule creation. These were assessed across all three fidelity measures. Items corresponding to these practices were entered into a confirmatory factor analysis resulting in factor scores for each of the four practice composites. Model fit was evaluated using Comparative fit index (CFL), Tucker-Lewis index (TLI), and

Table 4
Descriptive Statistics for Use of RC Practices and Student–Teacher Relationship Quality

Measure	<i>n</i>	<i>M</i>	<i>SD</i>	Range
Use of RC practices	58	0.01	1.00	–2.07 to 1.81
Treatment	30	0.71 ^a	0.53	–0.23 to 1.81
Control	28	–0.73 ^a	0.84	–2.07 to 1.30
Student–teacher closeness	354	3.00	0.49	1.71 to 4.00
Treatment	188	3.04	0.50	1.86 to 4.00
Control	166	2.95	0.47	1.71 to 4.00
Student–teacher conflict	354	1.46	0.47	1.00 to 3.00
Treatment	188	1.46	0.49	1.00 to 3.00
Control	166	1.45	0.45	1.00 to 2.71

Note. RC = Responsive Classroom.

^aMeans are significantly different between treatment and control classrooms at $p < .05$.

Root mean square error of approximation (RMSEA). Model fit was good (CFI = 0.92, TLI = 0.91, RMSEA = 0.06; see Rimm-Kaufman et al., 2012, for a detailed description of practice composites). These composites were simultaneously regressed on RC training, and closeness and conflict were simultaneously regressed on the four practice composites. These analyses suggested that RC training was significantly and positively associated with the use of a morning meeting ($b = 1.47$; $\beta = 0.78$; BCI [1.26, 1.71]) and the use of a morning meeting was significantly and positively associated with teachers' reports of closeness with students ($b = 0.08$; $\beta = 0.29$; BCI [0.01, 0.15]). The indirect effect was significant as well ($b = 0.11$; $\beta = 0.23$; BCI [0.01, 0.23]). None of the other three practice composites were statistically significant.

Discussion

Simply receiving training in the RC approach did not increase teachers' report of their closeness toward students. However, the RC training seemed to produce moderate to large increases in the use of RC practices, which in turn related to closer student–teacher relationships. In other words, teachers who were trained in the RC approach and who used

RC practices with high fidelity, on average, reported increased closeness with their students. This indirect effect was small to moderate. Teachers' training in the RC approach was not related (directly or indirectly) to teachers' report of decreased ratings of student–teacher conflict with their students.

Training in the RC approach led to increased use of RC practices. Furthermore, there was an association between RC practices and student–teacher relationship closeness. Because this finding is based on teachers' actual use of practices (which, in and of itself, was not experimentally manipulated), we cannot infer that there is a causal connection between the use of RC practices and the closeness of relationships. The current findings match prior work on the RC approach. Results from a quasi-experimental study showed an association between RC practices and enhanced teacher–student closeness among teachers and students in Grades 1 through 4 (Rimm-Kaufman & Chiu, 2007). It appears that when teachers use RC practices, they perceive greater closeness to individual students. Close relationships are characterized by sensitive, responsive interactions (Ang, 2005; Hamre & Pianta, 2001, 2005). RC practices likely lay a foundation on which teachers can

establish close relationships with individual students.

What does use of RC practices mean? To create a richer picture of the use of RC practices, we divided the sample above and below the mean on the FOI factor score to create “high” and “low” implementing groups. The high and low groups were similar on some practices. For instance, teachers who scored high on use of practices and teachers who scored low on use of practices reported on the CPTS and CPFS questionnaires that they, on average, tended to use certain practices in their classroom such as greeting students by name in the morning as children entered the classroom. For other practices, teachers who scored high and teachers who scored low were quite different. For example, teachers who scored high on use of practices held the morning meeting exercise almost every day. The meeting typically included student greetings, opportunities for students to share personal news about themselves, and a morning message intended to engage students and promote academic and/or social learning. Furthermore, teachers with high scores usually engaged students in activities that were very characteristic of RC community-building activities. In addition, they elicited students’ ideas many times a week and were likely to engage students in reflection on a weekly basis. Conversely, teachers with low scores on use of practices rarely had the morning meeting exercise and usually did not have students respond to any type of morning message. Furthermore, teachers with low scores infrequently engaged students in activities that were characterized as community building and seldom scheduled specific times for students to share personal news or stories about themselves. They were also less likely to elicit students’ ideas on a regular basis or engage students in reflection. Although we discuss the use of RC practices as a continuous variable in this study, future work should examine whether there is a threshold or cutoff point below which the use of practices does not seem to matter and above which the use of RC practices seems to contribute to relationship quality (Hulleman, Rimm-Kaufman, & Abry, 2013).

We tested a unidirectional model examining the extent to which teachers’ use of RC practices related to relationship quality. However, relationship quality may link to teachers’ use of practices as well. Relationships are bidirectional. Both teachers’ and students’ characteristics and attributes contribute to the quality (Pianta, 1999). Studies suggest that teachers tend to treat students differentially based on student characteristics and responses (Newberry & Davis, 2008; Skinner & Belmont, 1993). Spilt and Koomen (2009) reported that teachers felt higher levels of positive affect and lower levels of helplessness in close student–teacher relationships but higher levels of anger and helplessness when interaction with disruptive students. We can speculate and apply these findings to understand the bidirectional relation between RC practices and closeness. Engaging in a morning meeting may foster a positive atmosphere in the classroom and create opportunities for teachers to know children individually and, thus, teachers may feel closer to individual students. The reverse direction of association may be present as well; that is, if teachers feel closer to students in their classrooms, they may be more interested in making time for activities that students really enjoy (e.g., during a morning meeting) or using practices that allow children to make choices in how they engage in their learning (academic choice).

RC training via the use of RC practices did not predict decreased conflict between teachers and students. This is a surprising finding given the intent of the RC approach; nevertheless, the finding resembles the findings of a previous RC study (Rimm-Kaufman & Chiu, 2007). The limited range in teachers’ reports of conflict is one possible explanation for the lack of findings. Descriptive statistics show that teachers used the full range of the scale (1 to 4) in ratings of closeness but not in ratings of conflict (values did not exceed 3), a finding consistent with other work (Hughes et al., 2008; Rudasill et al., 2010). Teachers may rarely experience extreme conflict with their fifth graders, or teachers may be uncomfortable reporting high levels of conflict because of social desirability. Another explanation for

the lack of findings pertaining to conflictual relationships may be that RC is a more universal approach and that more targeted or intensive approaches may need to be present to decrease teacher–student conflict.

This study highlights the importance of measuring use of RC practices and accounting for their use in models when examining the relation between an intervention and student outcomes. The relation between the RC approach and greater student–teacher relationship quality was only evident in conditions of implementation. This finding is consistent with other work examining SEL interventions in which treatment status alone was not a significant predictor of outcomes (Reyes et al., 2012). Successful implementation of interventions requires changing teachers’ behavior, which can be a challenging task because it involves changing teachers’ beliefs and ways of thinking (Rimm-Kaufman & Hamre, 2010). Barriers to effective implementation (e.g., lack of principal buy-in) and supports (e.g., coaching, a psychologically safe context to try new strategies, receiving feedback) may be linked to the extent to which teachers use new practices (Domitrovich, Gest, Jones, Gill, & Sanford DeRousie, 2010; Wanless, Patton, Rimm-Kaufman, & Deutsch, 2013).

This study points to a distinction important for practitioners. Although training in an intervention is important, instruction in new strategies is not equivalent to the actual implementation of those strategies. Carefully examining what practices teachers are implementing can be illuminating. Teachers trained in the RC approach used the practices to varying degrees, and not surprisingly, the practices only related to improved relationship closeness if used as intended. School principals and school psychologists can help by directing efforts toward improved RC uptake. Rubrics focused on school-wide SEL implementation may help schools articulate goals for using RC practices and lead to consistent and sustained school-wide SEL efforts (Collaborative for Academic, Social, and Emotional Learning, 2006).

Limitations

The results of implementing the RC approach rested on the extent to which teachers used RC practices in their classrooms, which limited our ability to make causal inferences. It is possible that some teachers have qualities that we did not measure that predict both increased uptake of RC practices and close student–teacher relationships. Another limitation is the exclusive reliance on teachers’ reports of their perceptions of student–teacher relationship quality. Although teacher-reported measures are effective in capturing aspects of the student–teacher relationship that are predictive of student outcomes, such as engagement in learning (Doumen, Koomen, Buyse, Wouters, & Verschueren, 2012), they may be prone to social desirability bias. Moreover, it is equally important to understand students’ perceptions of these relationships and examine the bidirectional association between teacher and student interactions, an issue that is outside the scope of this study.

Implications

The quality of teachers’ relationships with students is a salient outcome of schools that predicts students’ academic and social success (Hamre & Pianta, 2001; Roorda et al., 2011). Furthermore, recent research suggests that student–teacher relationships not only may be linked to students’ well-being but also may be associated with teachers’ well-being (e.g., stress, self-efficacy, motivation, burnout; Spilt et al., 2011). In the current school environment in which demands on teachers and students are high, finding ways to promote well-being in the classroom is crucial to retaining high-quality teachers and promoting student success. The results of this study suggest that use of RC practices holds promise for enhancing relational support for students. If schools make the decision to adopt the RC approach, focused attention on how to promote the actual use of practices is a crucial step if improved student–teacher relationships are a desired outcome. School psychologists are well positioned to assist teachers’ implementation of SEL interventions, such as the

RC approach, because they are trained in consultation with teachers and understand the interconnected nature of academic learning and social and emotional health. Working with both teachers and principals to create a school environment in which teachers feel supported and encouraged to try new practices may be one of the vital roles that school psychologists play in promoting close student–teacher relationships in upper elementary grades.

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